LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Process evaluation of the family planning intervention for young women (16-24 years) accessing CHIEDZA in Zimbabwe

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Statement of own work

I, Constancia Vimbayi Mavodza, confirm that the work presented in this thesis document is my own. For information obtained from other sources- I confirm that this is indicated in the thesis

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Abstract

Background: Although Zimbabwe has one of the highest rates of modern contraceptive use in sub-Saharan Africa, it also has among the highest prevalence of adolescent pregnancy in east and southern Africa. CHIEDZA is a community-based intervention that integrated HIV and sexual and reproductive health (SRH) services for young people in the context of a cluster randomised controlled trial across three provinces in Zimbabwe (April 2019-March 2022). CHIEDZA provided information and a wide choice of contraceptive methods to young women at its one-stop-shop "youth friendly" venues. This PhD applied the Medical Research Council's Process Evaluation framework to analyse fidelity, feasibility and quality of the family planning intervention **(implementation)**; the family planning needs and experiences of young women, and how this influenced access to and use of family planning **(mechanisms of change**); and local factors shaping delivery and uptake of family planning within CHIEDZA **(context).** As part of understanding implementation and providing context, the routine family planning uptake data from CHIEDZA is presented as background information within the thesis.

Methods: The PhD study utilised qualitative (interviews, observations, meeting minutes and field notes) methods between April 2019 and March 2022. The interviews began at the start of the COVID-19 pandemic (April 2020), and therefore methods were adapted to explore adaptations and changes related to COVID-19. A total of 42 interviews with providers implementing CHIEDZA, 49 interviews with young people accessing CHIEDZA, and 18 non-participant

observations were conducted. Field notes and meeting notes also captured contextual nuances throughout the intervention implementation phase. Reflexive thematic analysis was iterative, inductive and theory driven.

Results: This is a “thesis by publication” consisting of four manuscripts. The first manuscript analyses primary providers’ experiences and perspectives of delivering the family planning intervention including the adaptations and effects on feasibility and quality. The second manuscript examines provider and client experiences of the intervention in light of the COVID-19 pandemic. This paper details how the CHIEDZA intervention functioned before the pandemic, and then tracks the effect of the pandemic on access and use of family planning methods. The third manuscript analyses the family planning needs and experiences of young women living with and without HIV, and demonstrates how integrated family planning interventions support young women living with HIV by acknowledging their SRH needs beyond HIV status and thus can positively contribute to both HIV and family planning outcomes. The fourth and last manuscript then explores young women’s decision-making about family planning use.

Conclusion: Process evaluations that purposefully address context may be better equipped to interpret what works or does not work, and is transferrable for family planning intervention for young people. Young women are not a homogenous group. Socio-cultural expectations, physiological changes, and/or the contexts in which they live in can determine how they perceive, access and use family planning services and methods. In addition to engaging with these

determinants, public health interventions need to ensure method-mix and competent, youth-friendly providers are available to provide services. Providers' perceptions and values around family planning use by young people, also need to engaged with.

Table of contents

STATEMENT OF OWN WORK I
ACKNOWLEDGEMENTS II
ABSTRACT IV
TABLE OF CONTENTS VII
TABLE OF FIGURES IX
ABBREVIATIONS X
CHAPTER 1 : BACKGROUND 1
1.1 FAMILY PLANNING 1
1.1.1 Unmet need for family planning in Zimbabwe 2
1.2 FAMILY PLANNING INTERVENTIONS FOR YOUNG PEOPLE IN ZIMBABWE 3
1.2.1 Access to sexual and reproductive health services for young people in Zimbabwe 4
1.2.2 Integrated service provision for young people in Zimbabwe 6
1.3 ASSESSING SEXUAL AND REPRODUCTIVE HEALTH INTERVENTIONS FOR YOUNG PEOPLE 9
1.3.1 Process evaluations of complex interventions 10
1.4 CHIEDZA TRIAL 11
1.4.1 Process evaluation of CHIEDZA 13
1.4.2 Family Planning Intervention in CHIEDZA 14
1.4.3. Uptake of family planning services and methods 16
1.5 PROCESS EVALUATION OF THE FAMILY PLANNING INTERVENTION IN CHIEDZA 18
1.5.1 Aims and Objectives 20
1.6 THESIS OUTLINE 23
1.7 CONTRIBUTIONS OF THE AUTHOR 25
1.8 FUNDING 27
1.9 REFERENCES 27
CHAPTER 2 : LITERATURE REVIEW 31
2.1 FAMILY PLANNING IN SUB-SAHARAN AFRICA 31
2.2 UNMET NEED FOR FAMILY PLANNING IN SUB-SAHARAN AFRICA 33
2.3 FAMILY PLANNING METHODS 35
2.3.1 Natural and traditional methods 36
2.3.2 Modern methods 37
2.3.2.1 Oral contraceptives 37
2.3.2.2 Injectables 38
2.3.2.3 Long-acting methods 39
2.3.2.3.1 Implants 40
2.3.2.3.2 Intra-uterine devices 41
2.3.2.3.3 Other contraceptive methods 42
2.3.2.4 Condoms 43
2.3.3 HIV and hormonal contraception 45
2.4 FAMILY PLANNING INTERVENTIONS IN SUB-SAHARAN AFRICA 45
2.5 FAMILY PLANNING INTERVENTIONS FOR YOUNG PEOPLE 50
2.5.1 Access to family planning and SRH care for young people. 52
2.5.2 Integrated sexual and reproductive health services for young people 55
2.5.3 Policies and guidelines for young people's family planning 60
2.5.4 Existing SRH interventions for young people, and their challenges in Zimbabwe 61
2.6 SUMMARY 69
2.7 REFERENCES 70
CHAPTER 3 : METHODOLOGY 87
3.1 STUDY DESIGN AND RESEARCH APPROACH 88
3.1.1 Process evaluations of complex interventions 88
3.1.1.1 Implementation within Context 91
3.1.1.2 Process evaluations of SRH interventions 93
3.1.2 Qualitative Methods Approach 97
3.1.2 Theoretical Approaches and Epistemological Position 100
3.2 STUDY SETTING AND CONTEXT 102

3.2.1 External and Internal Events ... *103*
3.3 Participation in the study ... 105
3.3.1 Participant demographics ... *108*
3.4 Qualitative Data Collection ... 110
3.4.1 Semi-structured interviews ... *111*
3.4.2 Observations ... *117*
3.4.3 Meeting minutes ... *120*
3.4.4 Field notes ... *122*
3.4.5 Qualitative Data Analysis ... *123*
3.5 Quantitative data collection and analysis ... 126
3.6 Triangulation of data ... 127
3.7 Reflexively doing field work ... 127
3.8 Ethical considerations ... 130
3.9 Summary ... 134
3.10 References ... 134
CHAPTER 4 : FIDELITY, FEASIBILITY AND ADAPTATION OF A QUALITY FAMILY PLANNING INTERVENTION FOR YOUNG WOMEN IN ZIMBABWE: PROVIDER PERSPECTIVES AND EXPERIENCES ... 142
Overview ... 142
References ... 143
CHAPTER 5 : INTERRUPTED ACCESS TO AND USE OF FAMILY PLANNING AMONG YOUTH IN A COMMUNITY-BASED SERVICE IN ZIMBABWE DURING THE FIRST YEAR OF THE COVID-19 PANDEMIC ... 183
Overview ... 183
Citation ... 186
References ... 186
CHAPTER 6 : FAMILY PLANNING EXPERIENCES AND NEEDS OF YOUNG WOMEN LIVING WITH AND WITHOUT HIV ACCESSING AN INTEGRATED HIV AND SRH INTERVENTION IN ZIMBABWE-AN EXPLORATORY QUALITATIVE STUDY ... 211
Overview ... 211
Citation ... 212
References ... 212
CHAPTER 7 : FERTILITY PROTECTION, AND PRESERVATION: A QUALITATIVE ANALYSIS OF YOUNG WOMEN'S DECISION-MAKING ABOUT CONTRACEPTIVE USE IN ZIMBABWE ... 225
Overview ... 225
References ... 226
CHAPTER 8 : DISCUSSION ... 261
8.1 Conducting Process evaluations ... 264
8.2 Synthesising the findings ... 266
8.2.1 Implementing adaptative family planning interventions ... *266*
8.2.2 Context matters ... *270*
8.2.3 Critical approach to intervention design, delivery, and evaluations ... *275*
8.2.4 What works for delivering family planning interventions for young women ... *276*
8.3 Recommendations and policy implications ... 283
9.4 Strengths and Limitations ... 284
9.5 Dissemination ... 286
8.6 Opportunities for future research ... 290
8.7 Conclusions ... 291
8.8 References ... 292
APPENDICES ... 299
Appendix 1: Phase 1 CHIEDZA Providers Interview Guide ... 299
Appendix 2: Phase 2 CHIEDZA mobilisers Interview Guide ... 300
Appendix 3: Phase 3 CHIEDZA Providers Interview Guide ... 305
Appendix 4: Phase 4 CHIEDZA Clients Interview Guide ... 314
Appendix 5: Phase 5 CHIEDZA Clients Interview Guide ... 324
Appendix 6: Phase 6 CHIEDZA providers Interview Guide ... 334

Table of Figures

Figure 1-1: Flow of clients through a CHIEDZA centre, as intended in April 2019 13
Figure 1-3: Process evaluation framework for the family planning intervention (adapted from Moore et al. 2015) 21
Figure 4-1: Model describing the implementation of the family planning Intervention as intended, as well as the anticipated outcomes and Impact 182

Table 1-1: Proportion of women who ever took up family planning 18
Table 1-2: Study Communities 19
Table 1-3: Study objectives, associated research questions and corresponding chapters. 22
Table 2-1: SRH challenges for family planning/HIV integration in Zimbabwe 62
Table 3-1: Process evaluation frameworks, their domains and definition of these domains 90
Table 3-2: Phases of data collection, interview participants and areas of exploration 97
Table 3-3: Demographic information of all the providers who participated in this study 109
Table 3-4: Demographic information of phase two CHIEDZA mobilisers participants in this study 109
Table 4-1: Qualitative data collection timelines, participants, methods, and areas of exploration 177
Table 4-2: Timeline of contextual factors and events interacting with family planning service implementation in CHIEDZA 178
Table 8-1: Recommendations for improving family planning interventions 283

Abbreviations

AGYW	Adolescent girls and young women
ART	Anti-retroviral treatment
AYP	Adolescents and young people
CBD	Community-based Distribution
CHIEDZA	Community Based Interventions to Improve HIV Outcomes in Youth: a Cluster Randomised Trial in Zimbabwe
CHW	Community Health Workers
COC	Combined oral contraceptive
CSE	Comprehensive Sexuality Education
DHS	Demographic and Health Survey
EC	Emergency Contraceptive
FGD	Focus Group Discussion
FP	Family planning
GBV	Gender-based Violence
HCW	Health Care Workers
HIV	Human immune-deficiency virus
HTC	HIV testing and counselling
IEC	Information education and communication
ICPD	International Conference on Population and Development
IUD	Intra-uterine device
LARCS	Long-acting reversible contraceptives
mCPR	Modern contraceptive prevalence rate
MHM	Menstrual health management
MMR	Maternal Mortality Rate
MoHCC	Ministry of Health and Child Care
MRC	Medical Research Council
NAC	National AIDS Council
NGOs	Non-governmental organisation
OSC	One Stop Centres
PHC	Primary Health Care
PMTCT	Prevention of mother to child transmission
PoP	Progesterone only pill
PrEP	pre-exposure prophylaxis
PSZ	Population Services Zimbabwe
RA	Research Assistants
RCT	Randomised control trial
SASA!	Start Awareness Support and Action
SDG	Sustainable Development Goals
SRH	Sexual and reproductive health
SRHR	Sexual and reproductive health and rights

SSA	Sub-Saharan Africa
STI	Sexually transmitted infections
VHT	Village Health teams
WRA	Women of Reproductive Age
YFHS	Youth-friendly health services
YWLHIV	Young women living with HIV
ZACH	Zimbabwe Association of Church-related Hospitals
ZIMPHIA2020	Zimbabwe Population-based HIV Impact Assessment Survey 2020
ZNFPC	Zimbabwe National Family Planning Council

Chapter 1 : Background

This chapter introduces the PhD's research aims and objectives. Before that introduction, I provide a preliminary introduction on family planning needs, services, and programs for young people in Zimbabwe, the CHIEDZA intervention, within which I conducted my fieldwork, as well as some foundational ideas on process evaluations. This introductory overview aims to situate, justify, and contextualise the research focus. After the research aims and objectives, the chapter closes with an overview of the rest of the thesis document, as well as a description of my role in, and the funding for the research study.

1.1 Family Planning

Family planning reduces the burden of unplanned pregnancies, promotes smaller families, and increases maternal and child survival and family well-being (1).

Everyone, including adolescents and young people (AYP), has the right to access, choose and benefit from a full selection of family planning methods (2). The WHO currently defines young people as those aged between 10-24 years, and within this age range, adolescents are aged 10-19 years; and youth are aged 15-24 years (3). These age cohorts are not homogenous as socio-economic, parity, employment, education, and marital status differ. Hence, sexual, and reproductive health (SRH) behaviours and family planning needs are also diverse, and unique for this group. While adolescence is generally characterised as a "healthy" phase of life, it is laden with SRH challenges.

Overall, among both married and unmarried women, 15-19 year olds have greater unmet need for contraceptives than women over nineteen (4). Within this age group, unmet need is greater for unmarried young women compared to married young people (5). Sexually active young people may want to delay, limit, or stop pregnancies, but often have limited control over their reproductive health, including meeting their family planning needs.

1.1.1 Unmet need for family planning in Zimbabwe

In Zimbabwe, where this study was conducted, the latest national data from the demographic and health survey (DHS) in 2015 showed that the unmet need for contraception was 12.6% (6). This need is higher among young women aged 15-24 years old. For those who are married, unmet need is 12.6% (15-19 years) and 10% (20-24 years). For sexually active unmarried young women this need increases to 37% (15-19 years) and 17% (20-24 years) respectively (6). The unmet need for family planning among young people interacts with the high fertility rates: 110 (15-19 years) and 190 (20-24 years) per 100 000 live births, and contributes to the high rates of teenage pregnancies (1 in 5 adolescents), in Zimbabwe (7, 8).

Zimbabwe has one of the highest modern contraceptive prevalence rates (mCPR) in the region: 65% for 15- 49 year old women of reproductive age (WRA) (6), compared to the average 29% for sub-Saharan Africa (SSA) (9). Like other parts of SSA, several factors are associated with limited access to family planning methods and services for young women. These include limited knowledge of and access to family planning services, driven by conservative socio-cultural factors

that deny young women's sexuality and stigmatise their use of contraceptives; as well as health system factors like health provider judgement, and supply challenges; and underpinned by legal limitations that mandate parental consent for SRH services (3).

1.2 Family planning interventions for young people in Zimbabwe

Globally, adolescents in SSA have the highest birth rate – 101 births per 1000 adolescent girls, compared to the global average of 44 births per 1000 girls (10). Several family planning interventions have been developed to try and meet the family planning needs of young people. In Zimbabwe, adolescent girls, and young women (AGYW) aged 15-24 years, remain a priority target group that needs to be reached by family planning interventions. A situational analysis to inform Zimbabwe's National Family Planning Strategy found that provider attitudes, and judgemental actions from older clients or community members, make health facilities unappealing to young people seeking family planning services. Young people prefer non-clinic based providers (community-based) or other private providers as service access points (8). The Ministry of Health and Child Care (MoHCC) is invested in increasing efforts to reach young, unmarried sexually active women as well as strengthen the availability of a variety of family planning methods (11). Evaluations detailing which elements have or have not worked would aid in customising these efforts.

1.2.1 Access to sexual and reproductive health services for young people in Zimbabwe

While the MoHCC is committed to improving the availability and use of family planning methods and services for young women (8, 11), there are broad system-level challenges to accessing family planning. Most people (73%) access family planning health services from the public sector which has facility-based services and community-based distribution (CBD) programs (8). The CBD program offers information on all contraceptive methods but only provides pills and condoms in the community (8). Yet, interventions that offer and have more users of long-term methods are more effective at pregnancy prevention (12). The facility services are meant to offer the full method mix but are often inadequately equipped with few skilled personnel to provide long-acting reversible contraceptives (LARCs) (8). Additionally, Zimbabwe does not have commodity security which allow a person to choose, obtain and use quality contraceptives when they need them (8). This means young people may be unable to access the contraceptive method of their choice.

Despite several efforts, youth- friendly SRH services remain inaccessible to young people (12). In 2014, only 13% of Zimbabwean adolescents (15-19 years) had access to media-based family planning information, compared to 24% of the rest of the population (6). In 2018, Amnesty International investigated barriers to SRH for young people in Zimbabwe and nearly all the girls who participated believed that if a girl has never been pregnant then using contraceptives would result in infertility (13). The same fertility misconceptions were a key finding in a

Zimbabwe National Family Planning Council (ZNFPC) study with tertiary institution students assessing knowledge, practices, and attitudes towards contraception (14). The ZNFPC study also cited lack of partner and family support as contributors to poor uptake of SRH services. In one example, a young woman refused to get an implant (even though after discussion with provider this could have been her best option), in the fear that she would get home and her mother would notice (14).

The MoHCC noted that only 3% of adolescents reported receiving family planning advice when they came into contact with the health system in 2017 (12). In the Amnesty study, adolescents said that providers insult and chase them away when they seek services, and pre-marital sex is regarded as 'taboo' by community members and teachers who refer to young women who engage in pre-marital sex as prostitutes, lazy, materialistic, and lacking in discipline (13).

Research has been conducted to identify and implement interventions that can address some of these access barriers. A survey of youth preferences in Kenya and Zimbabwe found that young people valued low-cost, short wait time, being able to receive all services at one place, and friendly staff attitudes but did not necessarily prioritise youth-specific areas like youth-only sections and centres (15). Beyond research, interventions have been delivered in response to access challenges. In 2013, Population Services Zimbabwe (PSZ), ran a program that used trained peer-educators to provide pre-paid vouchers to young people (financial barrier), so that they could access family planning services from a

private provider (8, 16). Even with these supply side access interventions, coverage of SRH services (including contraceptives) was low at 20 - 25% (8). This may indicate that interventions that address both supply side and demand side factors, may be needed to improve coverage and/or access to SRH services.

Community-based approaches that are culturally appropriate, and sensitive to the context may be more likely to succeed as demand and supply interventions, than passive clinical approaches. Demand side challenges to accessing SRH like socio-cultural expectations or community support may hinder young people from even going to the clinic. Additionally, the quality of services- which includes readily available commodities, provided by competent, non-judgemental providers, in a safe environment is a crucial but often overlooked issue. Lastly, political support determines budget, resources and health system efforts towards SRH and is essential for SRH (including family planning) programs to thrive (17).

1.2.2 Integrated service provision for young people in Zimbabwe

Evidence is building that integrating different types of health services is a cost-effective, client-centred way to address challenges and increase access to information and services (18). Integration can take many forms but requires that health care workers can provide an appropriate, comprehensive health services package under one roof, and/or refer clients to other services through a determined pathway as needed. In Zimbabwe, when compared, most young women have a greater fear of unintended pregnancy than contracting HIV, although HIV remains a threat for AGYW in Zimbabwe (3). According to the 2020

Zimbabwe Population-based HIV Impact Assessment Survey (ZIMPHIA2020), there were about 5300 new HIV infections among 15-24-year-old men and women that year, and 72 800 of this age group – from both acquisition at birth and horizontal acquisition- were living with HIV (19). The factors that drive HIV and family planning risks and vulnerabilities are similar (8, 20, 21) and already mentioned in this section. Condomless sex is the dominant pathway for both HIV infection and pregnancy and young women continue to have elevated HIV risk and vulnerability as well as a persistent unmet need for family planning.

Family planning and HIV services may be needed by the same AGYW client (e.g., a young woman who transacts sex), making the case for integrated SRH services for young women. Integrating family planning and HIV services would target young women's unmet family planning needs and provide an opportunity to access HIV services for this high-risk target population. Such services would increase accessibility by providing a one stop shop of comprehensive HIV and family planning health services in the same place: and improving service efficiency and potentially, health outcomes. Integrating HIV and SRH services may increase access and coverage of services like family planning, and could lead to higher acceptability and greater potential for scalability (18).

Young Zimbabweans value being offered multiple services in one place; it saves time and effort and provides confidentiality since a client could likely be coming for general health services as well as more sensitive services like contraceptives (15). In the public sector, integration occurs to some degree at service delivery points (14). ZNFPC's youth-friendly corners, for example, are situated at local

clinics or hospitals and aim to improve engagement with HIV and SRH services through providing a health and social space specifically for youth (12). However, efforts for integrated services substantially remain uncoordinated, non-routine, with minimal implementation guidance and inadequately trained providers (8). On the HIV cascade, integration usually occurs only within HIV testing and counselling (HTC) services. A young person diagnosed with HIV and linked to care who also wants family planning would have to get at least one of the services at another location. This limited level of integration is in part driven by vertical SRH and HIV funding structures that inhibit coordination amongst stakeholders (22); and subsequently restricts knowledge about what HIV and family planning integration models can look like and work.

HIV and unmet family planning need are highly prevalent is SSA, but there has been limited evidence on effective HIV and SRH integration models for young people in the region. Implementing and scaling up such integrated packages remains a particularly complex and critical challenge (3). To address this gap, the Integra Initiative was a five year project implemented from 2008 to December 2012 to assess the feasibility, impact, cost and effectiveness of four HIV/SRH integration models in Kenya, Malawi, and Swaziland aimed at reducing HIV infections and unintended pregnancies (23). The research was embedded in the daily activities of health facilities. In Kenya only, some facilities offered HTC, STI screening & management, cervical cancer screening and condom promotion during family planning consultations. In both Kenya and Swaziland, some facilities integrated post-natal care and HIV services. In Malawi, the operational research evaluated integrated youth-friendly services. Over the course of the five

year project, Integra showed that across the different country settings, HIV/SRH integration has the potential to increase both range and uptake of available services; improve service efficiency and quality; be context specific; and can enable health system responses to client needs and satisfaction (24, 25). Integra findings suggest that intervention effectiveness and implementation need to be contextually tailored. Multi-component family planning interventions that simultaneously address various barriers could have positive effects. Identifying these key strategies to reach young people with comprehensive SRH services is critical to reducing high rates of unintended pregnancies and maternal mortality and morbidity.

1.3 Assessing sexual and reproductive health interventions for young people

Interventions are continuously being designed and implemented to improve access to family planning and other SRH services for young people. Assessing these interventions to describe and understand why and how the intervention works or doesn't is necessary (26, 27). Many program interventions have robust monitoring and evaluation frameworks that enable these assessments, and research interventions usually include evaluation matrices, frameworks and methodologies (25, 28). In trial or experimental contexts that may occur over a long period of time within shifting environments, process evaluations have been increasingly used to capture evidence of trial implementation and processes (29, 30).

1.3.1 Process evaluations of complex interventions

Conceptual frameworks have been developed and implemented over time to capture and synthesise process information for complex interventions. The UK Medical Research Council (MRC) guidance for evaluating complex interventions combines discrete aspects of process evaluations into three key components: implementation, mechanisms of impact, and context (31, 32). The RE-AIM framework explores reach, efficacy, adoption, implementation and maintenance (33). Steckler and Linnan (2002)'s framework on implementation identifies dose, fidelity and reach as the key aspects to stop the nullification of credible intervention theories if there is poor implementation efficacy (34). In other implementation fidelity frameworks, quality has been viewed as either a discrete component of implementation or as a moderator of the relationship between an intervention and the fidelity with which it is implemented (35). This role has not been thoroughly explored in the literature to date. All these frameworks enable synthesis of process information to give an in-depth understanding of how and why complex interventions result in their observed effect in a particular setting, and inform the transferability, scalability, or sustainability of the intervention.

My PhD was a process evaluation of the family planning service embedded as part of a community-based complex HIV and SRH intervention for young people in Zimbabwe, implemented in the context of a trial (CHIEDZA).

1.4 CHIEDZA trial

CHIEDZA was a cluster randomised control trial (RCT) at the Biomedical Research and Training Institute (BRTI), providing a community-based, comprehensive and integrated package of HIV and SRH services for 16-24 year olds, across three provinces in Zimbabwe (Harare, Bulawayo and Mashonaland East), over two and a half years (36). Each province had four intervention and four control clusters. The primary objective of the trial was to determine the impact of the intervention on population-level HIV viral load suppression in high prevalence settings. To meet its primary objective, the CHIEDZA intervention was designed to address barriers to access of HIV and SRH services for young people.

A key component of CHIEDZA was training in youth-friendliness and inclusion of young people in the intervention/implementation teams. The trained team of health providers consisted of nurses, community health workers (CHWs), a counsellor, and youth workers. This team provided the health package of HTC; Linkage to care; HIV care and treatment; ART adherence support; family planning services; condoms, Sexually Transmitted Infections (STI) screening, testing and management; Menstrual Health Management (MHM) products and information; and risk reduction and general health counselling. Delivery of this comprehensive package was predicated by stakeholder partnerships, including with the national health system, that streamlined commodity supplies; and supported by community mobilisation efforts to sensitise and raise awareness of the CHIEDZA services within the study clusters. The mobilisation and

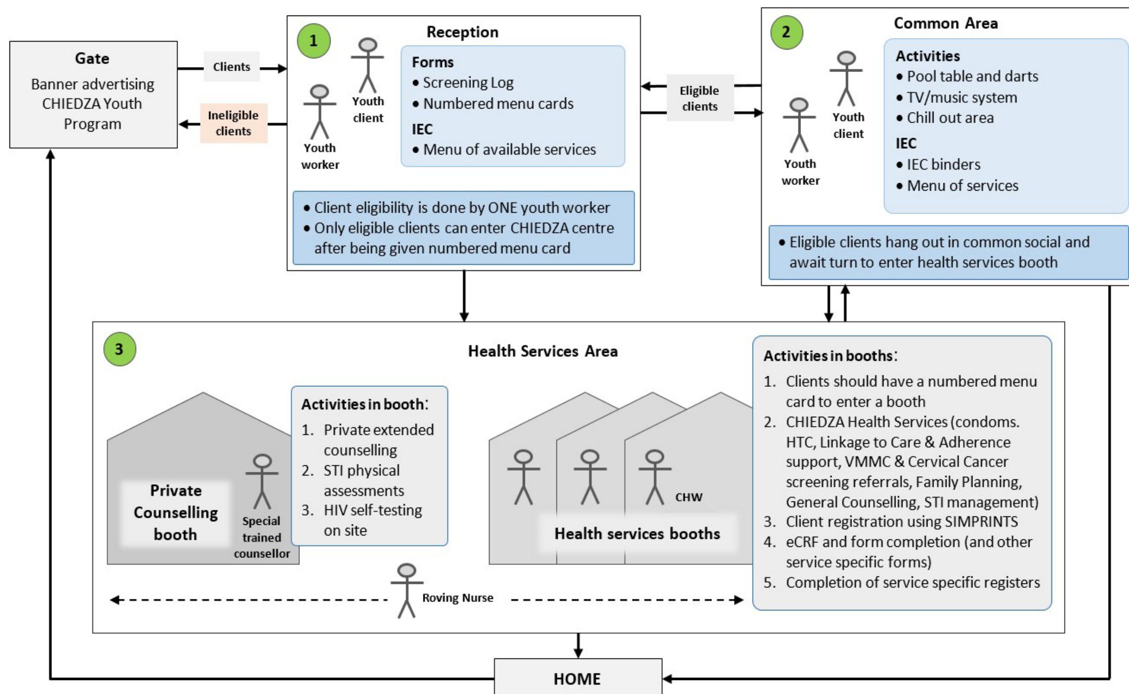
sensitisation were done by young people employed by CHIEDZA to engage with their peers and the intervention communities.

Before the COVID-19 pandemic, young people would visit these centres that were made socially attractive through provision of games (pool, darts); music, television and Information Education and Communication (IEC) materials. Upon arriving at the centre, young people were screened for eligibility by the youth workers (age and geographical location of home). Eligible young people (clients) would be offered a menu of the services at CHIEDZA, and the youth workers would provide information about these services in the social area as the young people waited to enter a health booth. The health booth was a small tent-room were the nurses and CHWs offered health services. When their turn arrived, the client entered the health booth and received all the services they requested from the same CHW. The exceptions were certain family planning and STI services that could only be provided by a nurse, for example, the first family planning consultation visit, insertion of LARC products, and all STI- related physical examinations and prescriptions (Figure 1-1). Due to COVID-19 infection and prevention control measures, social activities had to be stopped in May 2020 (37).

Youth-friendly integrated SRH/HIV interventions for young people have been the focus of much research and policy-level support (24), but evaluation of the implementation experience is limited (18). While RCTs like CHIEDZA can provide information on the degree of effectiveness, they cannot, by themselves, provide

critical information on how the intervention might be replicated elsewhere, or effectively scaled-up.

Figure 1-1: Flow of clients through a CHIEDZA centre, as intended in April 2019



1.4.1 Process evaluation of CHIEDZA

Process evaluations have become an integral element of RCTs, especially those evaluating complex interventions that by nature have multiple components and are dependent on social context (38). The broad purpose of process evaluations is to explore the causal mechanisms at work during implementation processes. The research questions seek to understand what works, for whom, when, and how by generating and synthesizing evidence on how an intervention occurs and is experienced. Process evaluations can help in distinguishing between poorly designed and poorly delivered interventions (39). They seek to make sense of the complexities in RCTs like CHIEDZA.

In a multi-site trial like CHIEDZA, implemented over a long period of time, a process evaluation was useful to understand how the 'same' intervention could possibly be implemented and received in different ways. There were numerous stakeholder collaborations and partnerships as a strategy for delivering quality youth-friendly health services; and the interactions between community-based CHIEDZA and social contexts presented methodological and interpretation complexities that could be addressed by a process evaluation. A detailed mixed-methods process evaluation based on the Medical Research Council's guidance on Process Evaluations Framework (38) was embedded in the trial to address several research questions and key areas of investigation related to implementation, mechanisms of impact and context.

1.4.2 Family Planning Intervention in CHIEDZA

The family planning intervention in CHIEDZA aimed to contribute to the MoHCC goals of providing quality family planning services, contacting hardly reached cohorts like young people, strengthening the provision of long-acting reversible contraceptives, and supporting the access and use of family planning by young people (8, 40).

The family planning intervention was offered as part of the comprehensive health service package in the CHIEDZA trial. Family planning and HIV/SRH services were integrated at the design and implementation level: all clients who entered a CHIEDZA health booth were offered HIV services. Young women aged 16-24 years old, and staying in CHIEDZA intervention clusters, could access and

were offered family planning services in the health booths. If the client wanted family planning, and it was their first time, the nurse provided the first consultation, counselling and information on all family planning commodities that were being offered at CHIEDZA. The client then made their contraceptive decision, and this was provided to them. For subsequent visits to CHIEDZA, the CHW would provide oral contraceptive refills to the client. If the client had complications/side effects, the nurse provided the service. For the Depo injectable and LARCs (implants & Intrauterine contraceptive devices) only a trained nurse could provide these, according to national guidelines (12).

CHIEDZA aimed to offer mixed method family planning services for young women. When CHIEDZA began, the CHIEDZA nurses were not trained in LARC provision and could therefore only offer oral and injectable contraceptives, and condoms. Young women who wanted LARCs were referred to Population Services Zimbabwe (PSZ), an NGO that provides family planning services. In response to need and referral challenges (see Chapter 4), CHIEDZA early on decided to have its nurses undergo government-run training in LARC provision to be able to offer both short term contraceptives and LARC at the CHIEDZA community centres. This would remove the need for PSZ referrals at other health sites. Outside of the CHIEDZA community centres, information on the available family planning services were also offered through community mobilisation efforts which include flyers and one-on-one interactions between potential clients and youth mobilisers.

CHIEDZA may have been the first intervention offering a full method mix of contraceptives for young women aged 16-24 years old within an integrated SRH services model in a community setting in Zimbabwe. When implementing CHIEDZA, and this family planning intervention, the trial had no or limited control over contextual events like partners' implementation models, COVID-19, and government response/action towards integrated services. Therefore, it was crucial to have a responsive process evaluation that could pursue the impact of unexpected events and the real-life settings of implementation.

1.4.3. Uptake of family planning services and methods

Routine service uptake data was collected as part of CHIEDZA service delivery. This section presents some of the family planning service uptake information to provide context and background for the upcoming findings and discussion chapters.

The family planning services and methods received by a young woman client were digitally entered into a tablet, using the SIMPRINT digital tool that was part of CHIEDZA's routine service uptake data collection. SIMPRINT allowed clients to be completely anonymised by digitally collecting their unique thumbprint, which was the only way they could be identified (41). Once their thumbprint was saved, module forms for data collection would open up on the tablet, and providers would follow the guidance on the tablet to enter information on services uptake. For family planning data, information on the client's age, cluster, province and type of service taken up (contraceptive method, pregnancy test, information/counselling only, emergency contraceptive, condoms, PAC) were

recorded. CHIEDZA did not routinely collect information on parity, sexual active status, marital status, education status etc- these were collected in the prevalence survey exploring population outcomes that occurred after the trial intervention ended.

During implementation, all young women who came to CHIEDZA and lived within the demarcated geographical boundaries were offered family planning information and methods. To maintain youth-friendliness, CHIEDZA did not ask young people about their sexual activity as part of the routing monitoring data. Therefore, regardless of whether sexually active or not, they were considered eligible.

The total number of visits, including repeat visits, done by young women who attended CHIEDZA was 56 351. Of these total visits, 37.5% (N = 21 2154) were family planning visits (Figure 1.2). The total number of women responsible for these visits was 27 275 across all three provinces of the CHIEDZA intervention, and 38.7% (10 721) took up family planning services in CHIEDZA. This proportion does not include stock outs, condoms or information only, and rather refers to uptake of hormonal contraceptive methods including emergency contraception.

Additionally, of the 27 275 women who ever came to CHIEDZA, 16 600 (60.9%) of them only came for one visit and then never returned to CHIEDZA. Of these one-time visitors, 4619 of them (27.8%) took up family planning on that visit. For the 11 125 women who repeatedly came to CHIEDZA (more than one visit), 6102

(54.9%) ever took up family planning. 4203 took it up on a first visit and 1899 took it up on a later visit.

Table 1-1: Proportion of women who ever took up family planning

		Total (N)	Took up Family Planning		
			Yes (%)	**No (%)**	**p-value**
Age at first visit	16-19	14428	2705 (18.8)	11723(81.2)	<0.001
	20-24	13297	8016 (60.3)	5291 (39.8)	
Province	HRE	9612	3769 (39.2)	5843 (60.8)	<0.001
	BYO	8404	3005 (35.8)	5399 (64.2)	
	ME	9709	3947 (40.7)	5762 (59.3)	

Young women aged 20-24 years had significantly higher uptake of family planning at 60.3%, compared to those aged 16–19 years (Table 1-1).

1.5 Process evaluation of the family planning intervention in CHIEDZA

This PhD focused specifically on the process evaluation of the family planning intervention for young women (16-24 years old), accessing CHIEDZA services. Although consensus is growing about the need to make reproductive health services more youth-friendly, there is little evidence indicating which parts of such efforts increase service use among youth and/or improve reproductive health outcomes (18). This PhD sought to track, assess, and understand the implementation, experience, and context of the family planning intervention to determine what worked, what worked less well or what did not work. The findings could contribute to informing family planning services for young people

in Zimbabwe. Additionally, the findings could be used in SRH program assessments, priority setting and resource allocation.

This study was conducted in the intervention communities of the three trial provinces: Harare, Bulawayo, and Mashonaland East (Table 1-1). Teenage (15-19 years) childbearing is approximately 12% in Bulawayo, 10% in Harare and 25% in Mashonaland East (6). In the CHIEDZA uptake information, compared to other provinces, Mashonaland East had significantly higher uptake in family planning at 40.7% (Table 1.1). Culturally, there is more similarity between Harare and Mashonaland East, compared to Bulawayo. The majority of Bulawayo is Ndebele people who historically migrated from South Africa, and their culture reflects this migration. The majority of Mashonaland East and Harare is vaShona people with Shona culture which is the dominant culture in Zimbabwe. Shona and Ndebele cultures are distinctly different and could manifest in health seeking decisions and behaviours. All three provinces are economically and socio-politically diverse.

Table 1-2: Study Communities

Province	Harare	Buluwayo	Mashonaland East
CHIEDZA Clusters	Hatcliffe	Nkulumane	Hopley
	Tafara	Nketa	Ruwa
	Warren Park	Tsabalala	Marondera
	Budiriro	Pelandaba	Zengeza

1.5.1 Aims and Objectives

The overall aim of this study was to describe and understand the effects and/or unintended consequences of the family planning intervention in CHIEDZA; and to inform transferability and future implementation of this family planning delivery model if the intervention shows plausible effectiveness. To do this, the U.K. MRC framework based specific objectives were (Figure 1.2):

I. **Implementation:** To investigate how the intervention was *delivered* through assessing *fidelity to, and adaptations of the* intended intervention including how this shapes *feasibility* and *quality* of the intervention *[RQ1, RQ2, RQ3, RQ4]*.

II. **Mechanisms of Change:** To explore the experiences and perspectives of the intervention from both CHIEDZA clients and providers/implementers *[RQ5, RQ6].*

III. **Mechanisms of Change:** To understand the effects of the intervention through participants' expectations and perceptions of the intervention *[RQ5, RQ6,]*.

IV. **Context:** To identify and assess the influence of *context*ual factors, including COVID-19 and any adaptations based on these factors, to implementation and mechanisms of change for family planning *[RQ7, RQ8, RQ9]*

V. **To generate practise and research recommendations to improve family planning interventions for young people.**

These objectives and their associated research questions (Figure 1.2) are outlined in Table 1.3, together with the corresponding chapters in this thesis where the objectives will be addressed.

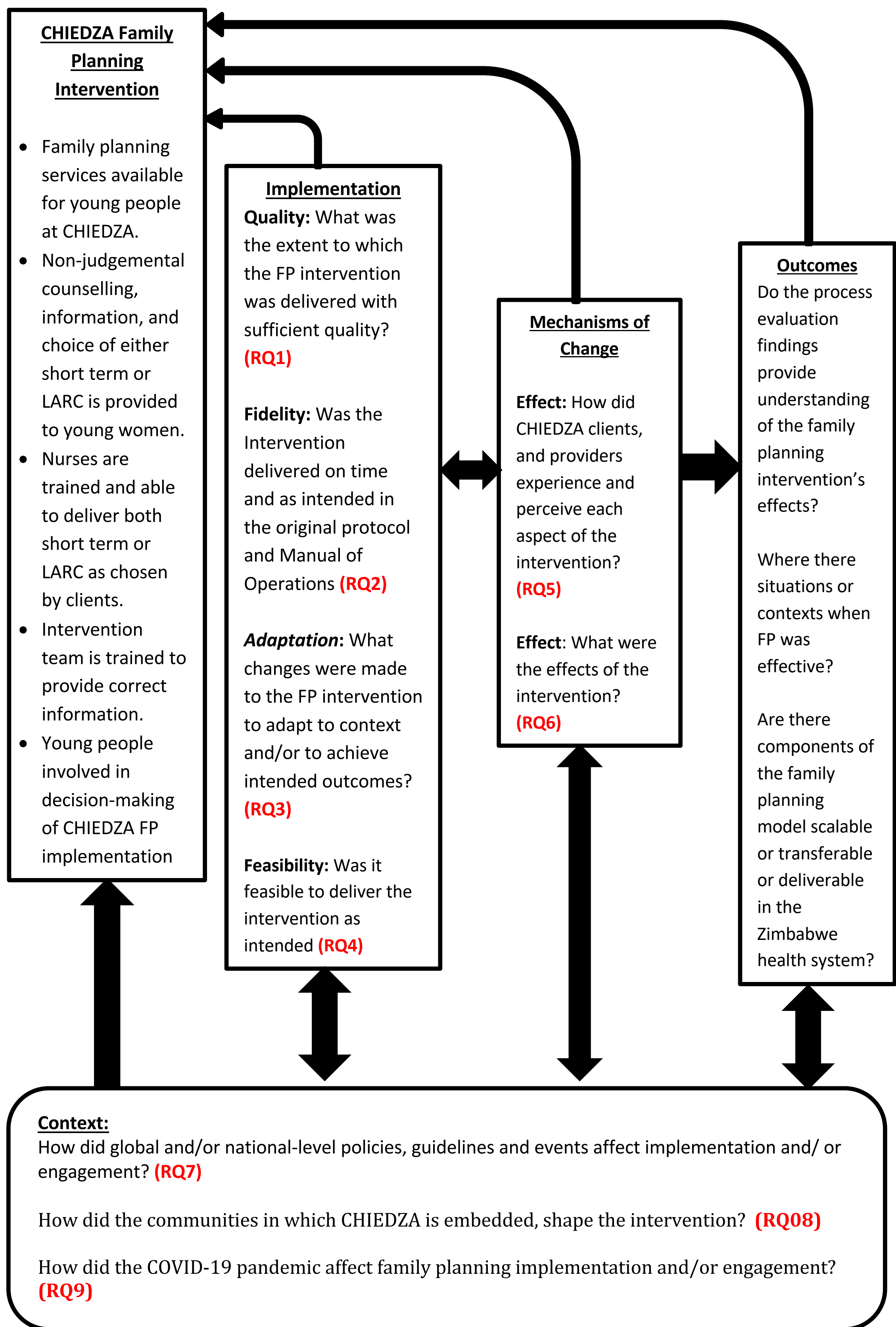


Figure 1-2: Process evaluation framework for the family planning intervention (adapted from Moore et al. 2015)

Table 1-3: Study objectives, associated research questions and corresponding chapters.

Objective	Paper that addresses the objective
1. To investigate how the family planning intervention was *delivered* through assessing *fidelity to, and adaptations of* the intended intervention including how this shapes *feasibility* and *quality* of the intervention *[RQ1, RQ2, RQ3, RQ4]*	• Chapter 4: Implementation of family planning Paper • Chapter 6: Covid-19 and family planning Paper
2. To explore the experiences and perspectives of the intervention from both CHIEDZA clients and providers/implementers *[RQ5, RQ6]*	• Chapter 6: Covid-19 and family planning Paper • Chapter 7: Family planning experiences of young women living with and without HIV • Chapter 8: family planning decision-making of young women at CHIEDZA
3. To understand the effects of intervention through participants' expectations and perceptions of the intervention *[RQ5, RQ6]*	• Chapter 6: Covid-19 and family Planning Paper • Chapter 7: Family planning experiences of young women living with and without HIV • Chapter 8: family planning decision-making of young women at CHIEDZA
4. To identify and assess the influence of *context*ual factors, including COVID-19, and any adaptations based on these factors, to implementation and mechanisms of change for family planning *[RQ7, RQ8, R9]*	• Chapter 4: Implementation of family planning Paper • Chapter 6: Covid-19 and family Planning Paper
5. To generate practise and research recommendations to improve family planning interventions for young people	• Chapter 9: Discussion

1.6 Thesis outline

This is a "research paper style" thesis in accordance with the London School of Hygiene and Tropical Medicine's guidelines. Four research papers are presented in this thesis (Chapters 4, 5, 6 and 7). The beginning of each research paper chapter provides an overview of the work: a rationale for the study and explains how it links to the other research papers and overall thesis.

This first chapter has outlined the background information, aims and objectives of the PhD. Chapter 2 is a narrative literature review focusing on key family planning topics, interventions and issues for young people and includes literature on process evaluations and the relevance to this PhD. Chapter 3 is the Methodology section describing the data collection and analysis (what, why, when, and how) for this PhD. It also includes my experiences and reflections of conducting data collection and analysis.

Chapter 4 is a submitted research paper (Research Paper 1) that uses the implementation of the family planning intervention as study for describing to understand, the complexities, adaptations, and responses of delivering such an intervention in the Zimbabwean setting. This research paper was submitted in July 2022 and is currently under peer review to Global Implementation Research and Applications journal.

Chapter 5 is a published research paper (Research paper 2) that describes the effects of COVID-19 on access to, and use of, family planning by young people. The

paper is titled *“Interrupted access to and use of family planning among youth in a community-based service in Zimbabwe, during the first year of the COVID-19 pandemic”,* and was submitted in September 2021, and published in Studies in Family Planning journal in June 2022.

Citation (Research paper 2): **Mavodza CV**, Bernays S, Mackworth-Young CRS, Nyamwanza R, Nzombe P. Dauya E, Chikwari CD, Tembo M, Apollo T, Mugurungi O, Madzima B, Kranzer K, Ferrand RA, Busza J. Interrupted access to and use of family planning among youth in a community-based service in Zimbabwe, during the first year of the COVID-19 pandemic. Studies in Family Planning 2022.

Chapter 6 is a published research paper (Research Paper 3) that explores and describes the family planning experiences of young women living with and without HIV. The paper is titled *“Family planning experiences and needs of young women living with and without HIV accessing an integrated HIV and SRH intervention in Zimbabwe-an exploratory qualitative study”*, and was submitted in September 2021, and published in Frontiers in Global Women's Health-Contraception and Family Planning in May 2022.

Citation (Research paper 3): **Mavodza CV**, Busza J, Mackworth-Young CRS, Nyamwanza R, Nzombe P, Dauya E, Dziva Chikwari C, Tembo M, Simms V, Mugurungi O, Apollo T, Madzima B, Ferrand RA, Bernays S. Family Planning Experiences and Needs of Young Women Living With and Without HIV Accessing an Integrated HIV and SRH Intervention in Zimbabwe-An Exploratory Qualitative

Study. Front Glob Womens Health. 2022 May 19;3:781983. doi: 10.3389/fgwh.2022.781983.

Chapter 7 is a research paper (Research Paper 4) that is not yet submitted. The paper is on contraceptive decision-making among young women titled *"Fertility preservation and protection: a qualitative analysis of young women in Zimbabwe's decision-making about contraceptive use"* and will be submitted to Social Science Medicine-Population Health journal in September 2022. At the time of this thesis submission, the manuscript was with the co-authors for their final approval to submit to the journal.

Chapter 8 is the discussion synthesising the study findings and situating them in the literature. This chapter includes strengths and limitations of the study, recommendations for family planning interventions for young people, future research, and evaluation considerations, as well as dissemination activities for this PhD.

1.7 Contributions of the Author

I was part of the broader process evaluation team for CHIEDZA, and my PhD was a component of this process evaluation. The study procedures for my PhD were part of the CHIEDZA protocol which embedded the process evaluation sections. I collaborated in writing this section with one of my supervisors, Sarah Bernays, and Stefanie Dringus. The ethical approval processes were part of the CHIEDZA

trial, and I led some of the protocol amendment approvals to accommodate COVID-19 in the process evaluation and my PhD.

I designed the detailed concept, research questions and study design for the process evaluation of family planning within CHIEDZA (my PhD). I collaborated with Sarah Bernays and Constance Mackworth- Young in creating the study tools for CHIEDZA process evaluation; and designed all the study tools and questions specifically related to family planning with support from my supervisors, Joanna Busza and Sarah Bernays.

I recruited, trained, and supervised the research assistants (RA) who supported me in qualitative data collection. I personally conducted roughly 50% of the qualitative data collection, and the RAs conducted the rest and did the transcriptions, before filing them into LSHTM's Filr system. I oversaw the family planning data management in Filr as well.

The quantitative services uptake data provided as background and contextual information was managed, cleaned, and analysed by Tsitsi Bandason and Vicky Simms, with support from Lovemore Sigwadhi. A Masters student, Romina Pacel, conducted the analysis on associations between HIV and family planning.

I led in the conceptualisation and conduct of all the qualitative analysis in this thesis, with support from my supervisors and co-authors.

I wrote all the manuscript drafts completed in this thesis and was responsible for journal submission and reviewer comments.

1.8 Funding

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1.9 References

1. Walton-Roberts M, Runnels V, Rajan SI, Sood A, Nair S, Thomas P, et al. Causes, consequences, and policy responses to the migration of health workers: key findings from India. Human resources for health. 2017;15(1):28.

2. Endriyas M, Belachew T, Megerssa B. Missed opportunities in family planning: process evaluation of family planning program in Omo Nada district, Oromia region, Ethiopia. Contracept Reprod Med. 2018;3:14-.

3. WHO. Evidence Brief: The importance of sexual and reproductive health and rights to prevent HIV in adolescent girls and young women in East and Southern Africa. Geneva, Switzerland: WHO, hrp; 2017. p. 24.

4. MacQuarrie K. Unmet Need for Family Planning among Young Women: Levels and Trends2014.

5. Presler-Marshall E, Jones N. 'Empowering Girls to Prevent Early Pregnancy'. Overseas Development Institute; 2012.

6. Zimbabwe National Statistics Agency, International. I. *Zimbabwe National Demographic and Health Survey 2015: Final Report*. Rockville, Maryland, USA: ZIMSTAT, ICF International; 2016.

7. Zimbabwe National Statistics Agency (ZIMSTAT), UNICEF. Zimbabwe 2019 Multiple Indicator Cluster Survey 2019 Report. Harare, Zimbabwe: ZIMSTAT; 2019.

8. MoHCC. Zimbabwe National Family Planning Costed Implementation Plan 2016-2020. Harare, Zimbabwe: MoHCC; 2016.

9. Ahinkorah BO, Kang M, Perry L, Brooks F, Hayen A. Prevalence of first adolescent pregnancy and its associated factors in sub-Saharan Africa: A multi-country analysis. PLOS ONE. 2021;16(2):e0246308.

10. Kamuyango A, Yu T, Ao C-K, Hu SC, Hou W-H, Tseng C-C, et al. The public-sector family planning program impact scores in association with long-acting reversible contraceptive use among young women in 22 Sub-Saharan African countries: A pooled multi-level analysis. 2022;108:44-9.

11. Govt. of Zimbabwe, editor Family Planning 2020 Commitment. Family Planning Summit; 2017; London: FP2020.

12. MoHCC. *Zimbabwe National Family Planning Strategy (ZNFPS) 2016-2020*. Zimbabwe; 2016.

13. Amnesty International. Barriers to Sexual and Reproductive Health Information in Zimbabwe. London, UK: Amnesty International Limited; 2018.

14. Zimbabwe National Family Planning Council. Knowledge, Attitudes and Practices of Contraceptive Use among Students in Selected Universities in Zimbabwe. Harare, Zimbabwe: Zimbabwe National Family Planning Council; 2019.

15. Erulkar AS, Onoka CJ, Phiri A. What is youth-friendly? Adolescents' preferences for reproductive health services in Kenya and Zimbabwe. African journal of reproductive health. 2005:51-8.

16. Burke E, Gold J, Razafinirinasoa L, Mackay A. Youth Voucher Program in Madagascar Increases Access to Voluntary Family Planning and STI Services for Young People. Global Health: Science and Practice. 2017;5(1):33-43.

17. Bongaarts J. The measurement of wanted fertility. Population and development review. 1990:487-506.

18. Warren CE, Mayhew SH, Hopkins J. The Current Status of Research on the Integration of Sexual and Reproductive Health and HIV Services. Studies in Family Planning. 2017;48(2):91-105.

19. Ministry of Health and Child Care, ICAP. Zimbabwe Population-Based HIV Impact Assessment 2020 (ZIMPHIA2020)- Summary Sheet New York: Columbia University; 2020

[Available from: https://phia.icap.columbia.edu/wp-content/uploads/2020/11/ZIMPHIA-2020-Summary-Sheet_Web.pdf.

20. Care MoHaC. *Zimbabwe National Adolescent Fertility Study*. In: Dr. Naomi N. Wekwete PSRaMG, (Consultants) Z, editors. Technical Report. Harare: MoHCC2016.

21. Remez Lisa, Woog Vanessa, Marvelous. M. Sexual and reproductive Health Needs of Adolescents in Zimbabwe. Washington, D.C.: Guttmacher Institute; 2014.

22. Wilcher R, Cates W, Jr., Gregson S. Family planning and HIV: strange bedfellows no longer. AIDS (London, England). 2009;23 Suppl 1(Suppl 1):S1-S6.

23. Warren CE, Mayhew SH, Vassall A, Kimani JK, Church K, Obure CD, et al. Study protocol for the Integra Initiative to assess the benefits and costs of integrating sexual and reproductive health and HIV services in Kenya and Swaziland. 2012;12(1):973.

24. Warren Charlotte, Ndwiga Charity, Abuya Timothy, Kivunaga Jacqueline, Kikuvi Joshu a, Lawrence O, et al. Assessing the Benefits of Integrated HIV and SRH Services in Public Health Facilities in Kenya and Swaziland Intervention Report. Integra Initiative, IPPF, LSHTM, Population Council; 2012.

25. IPPF, LSHTM, Population Council, Foundation BMG. Integra Initiative:KEY RESEARCH FINDINGS 2014 [Available from: http://www.integrainitiative.org/projects/integrainitiative/key-research-findings/.

26. Greenhalgh T, Papoutsi C. Studying complexity in health services research: desperately seeking an overdue paradigm shift. 2018;16(1):95.

27. Evans RE, Craig P, Hoddinott P, Littlecott H, Moore L, Murphy S, et al. When and how do ‘effective’interventions need to be adapted and/or re-evaluated in new contexts? The need for guidance. BMJ Publishing Group Ltd; 2019. p. 481-2.

28. Paparini S, Papoutsi C, Murdoch J, Green J, Petticrew M, Greenhalgh T, et al. Evaluating complex interventions in context: systematic, meta-narrative review of case study approaches. 2021;21(1):225.

29. Cohn S, Clinch M, Bunn C, Stronge P. Entangled complexity: Why complex interventions are just not complicated enough. Journal of health services research & policy. 2013;18(1):40-3.

30. Campbell M. Framework for design and evaluation of complex interventions to improve health. BMJ. 2000;321(7262):694-6.

31. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. bmj. 2015;350:h1258.

32. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. Bmj. 2008;337:a1655.

33. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. American journal of public health. 1999;89(9):1322-7.

34. Linnan L, Steckler A. Process evaluation for public health interventions and research: An overview. San Francisco: Jossey-Bass; 2002.

35. Mohanan M, Vera-Hernández M, Das V, Giardili S, Goldhaber-Fiebert JD, Rabin TL, et al. The Know-Do Gap in Quality of Health Care for Childhood Diarrhea and Pneumonia in Rural India. JAMA Pediatrics. 2015;169(4):349-57.

36. Dziva Chikwari CaD, E and Bandason, T and Tembo, M and Mavodza, C and Simms, V and Mackworth-Young, C and Apollo, T and Grundy, C and Weiss, H and Kranzer, K and Mavimba, T and Indravudh, P and Doyle, A and Mugurungi, O and Machiha, A and Bernays, S and Busza, J and Madzima, B and Terris-Prestholt, F and McCarthy, O and Hayes, R and Francis, S and Ferrand, R. The impact of community-based integrated HIV and sexual and reproductive health services for youth on population-level HIV viral load and sexually transmitted infections in Zimbabwe: protocol for the CHIEDZA cluster-randomised trial [version 1; peer review: awaiting peer review]. Wellcome Open Research. 2022;7(54).

37. Mackworth-Young CRS, Mavodza C, Nyamwanza R, Tshuma M, Nzombe P, Dziva Chikwari C, et al. "Other risks don't stop": adapting a youth sexual and reproductive health intervention in Zimbabwe during COVID-19. Sex Reprod Health Matters. 2022;30(1):2029338.

38. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. BMJ. 2015;350(mar19 6):h1258-h.

39. Oakley A, Strange V, Bonell C, Allen E, Stephenson J. Process evaluation in randomised controlled trials of complex interventions. BMJ. 2006;332(7538):413-6.

40. UNFPA. Policy Brief: Investing in Sexual and Reproductive Health and Rights. Harare, Zimbabwe: UNICEF; 2018.

41. SIMPRINTS technology Cambridge, UK [Available from: https://www.simprints.com/solution.

Chapter 2 : Literature review

This chapter provides a narrative literature review of family planning in sub-Saharan Africa (SSA), including unmet need for family planning, family planning methods, and types of family planning service provision from the 1960's to present. The focus is only on SSA because it is the region where Zimbabwe, the setting for my PhD, is located. SSA also has the highest unmet need for family planning, and one of the highest rates of unintended pregnancies among young people. Understanding this evidence base situates my process evaluation in the relevant literature as my study ultimately seeks to provide research and program recommendations for family planning interventions in Zimbabwe and SSA.

After setting this baseline, the review then goes on to discuss access and barriers to family planning for young people, followed by a brief overview of family planning interventions, and their rationale, that have been implemented for young people. Lastly, because this PhD is a process evaluation, this chapter also synthesises assessments of family planning interventions, and describes the relevance of process evaluations in these assessments.

2.1 Family planning in sub-Saharan Africa

Overall, the world population is increasing. Most of this increase is in SSA, where an estimated increase in the working age population (15 – 64 years) from 750 million in 2019 to roughly 1.1 billion is expected by 2035 (1). Leaving population growth untethered can have pernicious health, economic and social outcomes (2). Family planning is a primary strategy for containing population growth

through prevention of unwanted pregnancies; and using contraceptives averts approximately 230 million births every year, globally (3, 4). Family planning is the freedom and responsibility of individuals and/or couples to limit or space the number of children they desire, and are equipped with the information and tools to make these decisions (5). Contraception is the use of either traditional or modern methods to prevent pregnancies (6).

Family planning is considered key to accelerating progress across most of the sustainable development goals (SDGs), specifically SDG3 which is about ensuring good health for all people (5, 7). Unintended pregnancies and births are known to have adverse health effects and outcomes which increase maternal morbidities and mortalities (8, 9). For women living with HIV (WLHIV), they are eight times more likely to die from pregnancy related death, compared to those without (36). SDG3.7 specifically supports universal access to SRH services including family planning. Analyses indicated that between 2012-2020, when family planning was valued as a basic human right, it could avert 7 million under-5 deaths, and 450 000 maternal deaths in USAID's 22 high focus countries (3). It is estimated that 308 million unintended pregnancies, 90% of abortion-related, and 20% of pregnancy related mortality and morbidity, as well as 32% of maternal deaths could be prevented by the use of effective contraceptive methods (9, 10). In 2012, 55% (Southern Africa), 26% (West Africa) and 44% (East Africa) of pregnancies were unintended (8). Despite the progress in increasing contraceptive use, SSA is still characterised by high fertility rates, and high unmet need for family planning (9).

2.2 Unmet need for family Planning in sub-Saharan Africa

Unmet need for family planning refers to the number or proportion of married, fecund women who do not want any more children or want to delay their next birth for two years and are not using a modern contraceptive method (4, 11). The total number encompasses both women who have an unmet need for limiting and those who have an unmet need for spacing. The idea of unmet need dates to the 1960s. It became a driver for investments in family planning interventions as cognizance of unmet need provides estimated demand for family planning in a population (5, 6). The concept of unmet need is simple but its definition by measurement has remained quite complex (12-15) which might limit its comprehensive usefulness in health programming and policy. However, the approximations from unmet need measures still manage to provide areas of overarching gaps and challenges.

As of 2019, there were an estimated 1.9 billion women of reproductive age (15-49 years) worldwide and 1.1 billion of these needed family planning; with 842 million of these using modern contraceptive methods, and about 270 million with an unmet need (16, 17). In SSA, one in every five women of reproductive age (WRA) has an unmet need (18), and for adolescent girls and young women (15-24 years) this is higher (19, 20). Fifty percent of the roughly 14 million unintended pregnancies that occur annually are among 15-24 year old women (21); and young women aged 15-19 years in SSA, account for half of the unintended pregnancies among 15-24 year olds (22).

Contraceptive use in sub-Saharan Africa has increased over time, although slowly compared to other regions (23, 24). Progress in family planning began to stall in the 1990s, likely due to the emergence of the HIV epidemic that shifted resource priorities (25). Some countries like Kenya noted that their fertility decline stagnated due to shrinking donor support for family planning in favour of HIV and other STIs (26, 27). For others, stagnation in fertility decline was related to increase in HIV prevalence (ref). In Zimbabwe for example, estimates showed that in the absence of HIV, total fertility would have been 8.5% lower in the late 1990s and early 2000s (28)

The use of contraception among HIV-infected women has remained low (29-31) such that there are high numbers of unintended pregnancies among women living with HIV (31), including young ones (32-35). This demonstrates a potential unmet need for family planning among this population cohort. Various factors limit contraceptive use among WLHIV. Many of these factors such as sociocultural norms and traditions, lack of comprehensive knowledge on contraceptive methods, lack of advice from health professionals, fear of side effects, illiteracy, and inaccessibility of preferred contraceptives (15, 16) are similar to contraceptive use barriers that women without HIV also face. Yet others such as not starting ART, inadequate information on the interactions between ART and hormonal contraceptives; disclosure challenges; and/or lack of clarity in policies and guidelines about how/when to provide family planning services for those living with HIV (17-19) are unique barriers for HIV infected women. Preventing unwanted pregnancies, through increasing access to and use of effective contraception in this population cohort is needed and some evidence

has shown that the injectable and male condom are popular among married and/or nulliparous WLHIV (37).

Young women in SSA have high risk of unintended pregnancies. As of 2017, roughly 36 million married or sexually active young women (15- 19 years) did not intend to be pregnant in the next two years, and about 12.1 million of them had unmet need for family planning (38). Studies have shown that over 70% of young women in SSA aged 15- 24 years have had at least one sexual activity by the age of 20 (39, 40) and almost half of women aged 20-24 years are married by the age of 18 (41). Family planning is a key intervention to mitigate these risks. Satisfying women's unmet need for family planning methods requires in part identifying where in the population the need is high, increasing or failing to decline (14).

2.3 Family planning methods

Family planning methods assist women in avoiding unwanted pregnancies, and have been categorised into natural and modern, temporary, and permanent methods. The 'ideal' method - one that is safe, inexpensive, acceptable, effective, reversable, does not require frequent administration, and needs little to no medical attention- does not exist (42). However, increasing the diversity of family planning methods available to women can significantly reduce unmet needs.

Contraceptive method mix refers to the combination of methods available within family planning programs (23). Method mix is mostly driven by supply

(availability of affordable options) and demand (individual capabilities and preferences). In many family planning programs, the most common approach is to have a range of methods available (method mix), all of which are offered to individuals, with information about these methods, so that individuals can make an informed choice based on need and desire (43). While there is no standard method mix agreed upon by the international community, it is considered a concern when a country has only one or two predominant methods which creates a method skew (23, 44).

At the individual level, most women in a global systematic review about method choice and preference, noted that side effects and safety were the most common considerations when deciding on a family planning method to use (45). Women want a method that has the least side effects possible, and if these effects cannot be avoided, they want to be able to anticipate, tolerate and manage said effects.

2.3.1 Natural and traditional methods

Traditional family planning methods are defined as those that are non-hormonal and do not involve orthodox medicine. Traditional practices that are natural, do not require a third party (health provider) and do not fall under any religious bans continue to exist and currently account for about 11% of all contraceptive use (23).

Fertility awareness is a natural family planning method that involves an individual's observation of physiological signs and symptoms occurring in their menstrual cycle, such that they avoid unprotected vaginal sex during their fertile

period (17). Natural family planning, based on biological knowledge and understanding of the reproductive system, is an alternative for women who do not wish to use artificial/modern methods. In low-income countries, examples of natural family planning include women practising prolonged breast feeding which lengthens their amenorrhea, and in Central and West Africa, women abstain from sex for long periods after birth (46). The withdrawal method (coitus interruptus) is also one of the oldest methods, but a slight mistake in the timing of withdrawal can result in semen deposits and risk of pregnancies. The safety and effectiveness of natural methods cannot be guaranteed and is often contested (23).

2.3.2 Modern methods

Modern family planning methods often involve mainstream medicine, and there are a variety of them: oral contraceptives (pills), injectables, patches, vaginal rings, diaphragms, implants, intra uterine devices, sterilization and condoms (17).

2.3.2.1 Oral contraceptives

Oral contraceptives were the first methods to be marketed in the 1960s and represented what would become modern contraception (47). The broad range of oral contraceptives available are often referred to as "the pill". They remain the most widely used hormonal methods there is, and when taken correctly, are highly effective, convenient, and safe. Women have reported a preference for a contraceptive method like the pill, because they are in control of stopping it when

they desire (45). In Zimbabwe, oral contraceptives are the most common contraceptives (48) and 33% of married women use the pill (5). There are two common types: combined oral contraceptives (COC) and progesterone-only pill (POP). The emergency contraceptive (EC) is also an oral pill method.

Combined oral contraceptives (COC) are taken every 24 hours and work by preventing egg release from the ovaries (17). Additionally, COCs have been associated with benefits such as reduced menstrual flow and in effect reduced risk anaemia and iron deficiency in women (5). Progesterone-only pills (PoP) are also taken every 24 hours within the same three hours every day, and work by thickening the cervical mucous which blocks sperm and egg from meeting (49). The emergency contraceptive pill on the other hand works by preventing or delaying the release of eggs from the ovaries; and is most effective when taken within five days of an unprotected sex event (17). Historically, oral contraceptives were the breakthrough in family planning programs. However, their effectiveness has often been compromised - many women fail to adhere to the administration schedule (49). This led to the creation of an injectable contraceptive option.

2.3.2.2 Injectables

Injectable contraceptives were also first marketed in the 1960s (5). Depot medroxyprogesterone acetate (DMPA), commonly known as Depo Provera, is provided as an intramuscular injection every 12 weeks (49). Advantages of injectables are that they have no user error and are independent of sexual intercourse, user memory or compliance (49). One must only remember the 12-

week appointment. The common side effects which should be discussed in pre counselling include menstrual changes (irregular spotting), amenorrhoea and sometimes weight gain (49). Some adolescent and young women have often noted a desire to resume fertility right after discontinuation, or at the very least to know that using a method will not affect their ability to conceive when they want to have children (45, 50). Depo has been found to have prolonged return to fertility compared to oral options and is sometimes not advised for women who want to conceive within two years. These side effects are a common reason why women stop taking the injectables, and in many cases such women have not received pre counselling or support around these effects (51).

2.3.2.3 Long-acting methods

Historically, women have predominantly used oral contraceptives and injectables (47, 49). Among young women (15-19 years), the use of LARCs remains low (52, 53). There has been a concerted effort to improve uptake and use of LARCS in this age group. According to the WHO, young people may have more sporadic periods of intercourse. This makes non-daily options like LARCS, more appropriate for this age cohort (54). WHO now considers LARCS as the first line of contraceptives for AGYW (55, 56). A multi-level analysis evaluated the role of public sector family planning program impact scores on the use of LARCs among young women (15-24 years) in 22 SSA countries, and found that among the 163 242 women in the study, only 3.1% used LARCs (57). Associated barriers to LARCs include but are not limited to, availability, provider skill set, perception of cost, as well as misconceptions about hormonal contraceptives and their side effects (58).

2.3.2.3.1 Implants

Implants were first marketed in the 1980's and release hormones when inserted beneath the skin of the upper arm. They thicken cervical mucous to block the sperm and egg from meeting (17, 59). One of the main benefits of implants is the discrete use and not needing to worry about adherence. They are approved for continuous use up to three or five years and the discontinuation rate of implants is fuelled by side effects of irregular and sometimes persistent menstrual bleeding (51, 59). Implant removals are time-consuming and technically difficult, which sometimes creates supply side barriers to their provision (59).

There has historically been limited information on implants and youth i.e. implant uptake data has often not been disaggregated by smaller age bands among WRA (60). However, overall, the use of implants has been increasing in a number of Africa countries like Ethiopia (over 17-fold), Rwanda (over 15-fold), Malawi (over two fold) and Tanzania due mostly to government efforts to ensure wider availability and accessibility of LARCS (59). Increased implant use has been a driver in some SSA countries' improvements in mCPR, and in countries like Kenya, Ghana and Senegal, implants now account for 25-50% of modern method use (61). Among LARCs, uptake and acceptability of implants has progressed better than that of intra-uterine devices (IUDs).

2.3.2.3.2 Intra-uterine devices

The IUD is one of the most effective and reversible contraceptive methods with fewer than 1 per 100 typical users getting pregnant in the first year of use (5). It is inserted into the uterine cavity and works by preventing fertilisation. There are two types of IUDs, copper and hormonal, and IUDs can provide continuous contraception for up to ten years (51). Compared to oral contraceptives or injectables, they have a long continuation rate and higher effectiveness (49). However, of all contraceptives, IUDs are the only ones that have expulsion concerns, with many women worried that the IUD would be unexpectedly expelled from their bodies. There has been some evidence that nulliparous young women experience increased rates of IUD expulsion or removal compared to multiparous women (62-64). Alton et al. found that women under 18 were 3.5 times more at risk of expulsion/removal, compared to their 18–21-year-old counterparts; and women who've never had a child were 2.9 times more at risk of expelling an IUD compared to those who'd had children before (63).

Common side effects of IUDs include heavy menstrual flow and cramps. In SSA, IUDs are not a popular contraceptive method, and their uptake has remained low (65). This has often been due to beliefs and misconceptions about side effects. A study in Uganda showed that 52% of surveyed women believed that the IUD would damage the womb, cause cancer, or reduce sexual pleasure (66). In Zimbabwe, like other SSA countries, supply side limitations include not having enough health care workers (HCW) trained to insert IUDs (48), and myths and misconceptions that undermine acceptability (67).

2.3.2.3.3 Other contraceptive methods

Beyond the above-mentioned methods, others like the patch, diaphragm and vaginal rings are not as common in SSA. The vaginal ring prevents pregnancy in the same way that COC works, and is a great alternative for women who may have difficulties adhering to oral contraceptive schedules (68). It's a small soft plastic ring, releasing a continuous dose of hormones when inserted into the vagina (69). The patch has similar advantages to the vaginal ring, due to the reduced dosing schedule (70). Its efficacy is similar to oral contraceptives but unlike the pill, only needs to be administered once and has been found to have better compliance amongst young women (70, 71). The diaphragm is a barrier method were a small plastic cap (usually with spermicide) is inserted inside the vagina so that sperm does not enter the uterus. It can be removed up to 6 hours after a sex event (72).

In the presence of diverse contraceptive method options, sterilization is widely used in the world, particularly amongst women over 35 years and wishing to limit births (73). In one study, women in Kenya who chose sterilization to limit births, did so for socio-economic reasons (74). The hysteroscopic approach to sterilization has become the most common way to get sterilized due to its ease of application, low morbidity and convenience to clients (75). In this non-surgical approach, an expanding device is micro inserted onto the fallopian tube where it generates benign tissue to anchor the device until it occulates the tube (75). Male sterilization, also known as vasectomy, is highly effective for individuals or couples who want to stop having children; and compared to female sterilization it is less risky with a faster recovery period (76). In SSA, the uptake of vasectomy is low, due in part to the more dominant acceptance of women-focused

contraceptive methods (77). Overall, sterilization is highly effective due to its independence from user error or discontinuation.

2.3.2.4 Condoms

Globally, condoms are the most widely known and used barrier method by male partners. They are an easy, effective and safe method to use and provide dual protection against STIs and unwanted pregnancies, and are often used as a proxy for reducing HIV risk (78). They work as dual protection for both HIV infection and unwanted pregnancies. In SSA, rate of condom use has been low, but HIV education and prevention programs have contributed to increased use (79).

Quantifying condom use in a reliable way has remained contested as there is no standard measure to do this. One of the most common measurements is condom use at last sex which can have varying interpretations when compared to frequency of condom use, or number of protected sex acts in the last month for example (78). Also, condom use is a sensitive topic to self-report, which leaves it vulnerable to influences like social desirability bias, participation bias, response bias and/or memory error influences (80). Therefore, while the correct and consistent use of condoms is an effective family planning method, establishing linkages between self-reported condom use, and family planning or SRH outcomes can become a challenge (78). Rather, when intervening for family planning, condom distribution should be layered with other interventions where assessments and measurements can track progress and changes.

As part of early HIV control efforts, such as the ABC approach (Abstinence, Being faithful, Condom use), condoms were heavily promoted (81-83), but as a proportion of contraceptive method mix in developing countries, it's remained relatively unchanged (24). This could be due to cultural systems that support high levels of fertility were in high HIV prevalence societies, they may be more vulnerable to extensive HIV transmission, through limited condom use. Among young women for example, fear of unintended pregnancy- which is often diluted by such cultural systems- promotes condom use, and not the fear of HIV (84). Condom use is the only contraceptive that can also reduce HIV transmission, and yet the injectable is the most prevalent form of contraception used across SSA (81). Low condom use, even when they are readily available, may indicate that women desire other contraceptive methods.

While condoms are often a preferred method among people living with HIV, the overall use has remained consistently low in sub-Saharan Africa. Some of the reasons for this low use could be that sexual partners do not disclose their HIV status (85, 86). More evidence needs to be generated on the condom acceptance rates as a family planning method among HIV infected and uninfected women in high HIV prevalence areas, at a population level. More imminently, increasing the availability of condoms in low-resource settings; as well as improving the awareness and acceptability of condoms in both HIV prevention and family planning is needed.

2.3.3 HIV and hormonal contraception

There is a lack of clarity on the interactions between HIV and hormonal contraceptives (87). Hormonal contraceptives have been implicated in elevates rates of HIV infection. Female sex workers in Asia were found more likely to be HIV positive if they took oral contraceptives, compared to those who didn't (87). A meta-analysis explorative study of oral contraception among African women and HIV infection found a 45% increase in HIV cases among women using oral contraceptives (88). However, the latest results from the ECHO trial show that there is no association between HIV acquisition and use of injectables, implants or IUDs (89). This unclear relationship could mean that women using non-condom modern contraception may be at higher risk of HIV-transmission. More studies assessing women's perceptions of HIV risk while using modern forms of contraception are needed.

2.4 Family planning interventions in sub-Saharan Africa

Family planning programs have steadily progressed in SSA since the 1960s (5). The International Conference on Population and Development (ICPD) in 1994, highlighted family planning's role in social and economic development as well as sexual and reproductive health and rights (SRHR) and women's empowerment, compared to previous conferences that had focused only on demographic and economic relevance (90, 91). There is now a near universal knowledge of contraceptives in SSA, but contraceptive prevalence rates remain low, and unmet need for family planning remains high, revealing gaps in access to and family planning practises (19, 92, 93).

In SSA, many healthcare systems do not operate effectively, and access to existing family planning interventions is riddled with weaknesses and challenges (93). Some of the challenges include long distances to intervention sites; and limited methods being offered due to restricted availability, biased promotion of some methods, and poor knowledge of others (94, 95). Contraceptive use is contingent on a demand and supply balance. Generating demand is necessary for contraceptive uptake, but uptake cannot happen if the supply system/chain does not guarantee consistent availability (96, 97). Additionally, the availability of trained health providers to deliver family planning services and commodities where both short and long-acting methods are available, strengthens the quality of family planning and contraceptive services (6, 14) .

Health system responsiveness, where governments and family planning stakeholders understand and act on the family planning unmet needs of their populations is essential. For example, the Kenyan government was one of the first to produce country guidelines for continued reproductive, maternal, newborn and child health as well as family planning care and services during the COVID-19 pandemic in April 2020 (98). However, these guidelines did not provide age-appropriate instruction on how to meet young people's family planning needs during this time, and in November 2020 one in three 15-24 year old contraception users in Nairobi had faced challenges accessing contraception (99). In Rwanda, total contraceptive use among married women increased from 17% to 24% between 2005 and 2020 due to the government's mobilisation and demand generation efforts. The visible Rwandan government support for family

planning shifted talking about family planning between married individuals from a once taboo subject into a normative one (100).

As part of health system responsiveness, the WHO has released guidelines for contraceptive use among those living with HIV, which state that women living with HIV are eligible to use all hormonal contraceptives (27). While national policies and guidelines exist for HIV, family planning and/or integrating the two, there have been some gaps identified. In South Africa for example, programmers and policy makers have noted that these policies do not address critical socio-cultural practices and beliefs that affect HIV prevention and care efforts as well as family planning use (28). Many of these policies and guidelines are made with an implied assumption that clients will be HIV negative or without clear intention about how to support the family planning needs (which might be unique) of those clients living with HIV.

In SSA, governments dominate most family planning programs and they have three common distribution models: 1) health facilities 2) commercial outlets, and 3) community-based systems. These have been developed to increase uptake of family planning, including among young people (58, 101). Zimbabwe is one of five countries where the national family planning program succeeded in increasing contraceptive use (102). The public sector in Zimbabwe is responsible for 73% of contraceptive distribution, while the private sector accounts for 22% , which include pharmacies that account for 13.5% of contraceptives access in Zimbabwe (103).

Health facility interventions are where family planning is provided through government (public sector) or private health facilities. In SSA, these interventions often follow the Primary Health Care (PHC) approach in an attempt to boost the relatively low contraceptive prevalence rates (6). The PHC approach focuses on health care for people, rather than specific diseases. Its principles include efficient, effective, and equitable health service delivery to improve health at community levels (104). Geographical access usually influences demand generation for facility-based programs. When distance and the time to travel to the supply source for contraceptives increases, a modest fall in the use of family planning methods has been shown to occur (105). In rural settings, for example, physical accessibility can become risky and unpredictable in the rainy season, when roads are sometimes impassable, and/or where transport is only available once or twice a week, creating challenges to contraceptive use (14). The benefits of health facility interventions are that family planning can be integrated or layered onto other health services that should be done at the health facility, for example maternal and newborn services. However, there are some family planning components like oral refills or counselling that do not have to be restricted to a health facility setting.

Interventions at commercial outlets include family planning provision that earns the supplier profits, for example through pharmacies, drug retail stores, non-governmental organizations (NGOs), faith-based clinics, and/or street vendors (5). Commercial outlets have played significant roles in the distribution of oral pills and condoms. Zimbabwe for example, is currently exploring avenues to offer dual HIV/FP innovations (PrEP/oral contraceptive pill) potentially distributed

using private-public partnerships that include commercial outlets (106). NGOs and international organizations commonly run social marketing schemes with subsidised advertising, logistics and product price, to promote contraceptive use (6). These schemes have been shown to be most effective in settings were 1) both pills and condoms are popular methods, 2) the demand for contraceptives has already been established, 3) a mass media strategy and infrastructure (radio/television) are available, and 4) the political and socio-cultural landscape actually allows for the promotion of family planning methods (107). In settings where these conditions are limited, commercial outlet-based interventions have less effect, and other delivery models must be harnessed.

Community-based distribution (CBD) programs contribute to PHC coverage goals by making family planning care available in the community in an acceptable and affordable way with full participation from the community (108). Settings where CBD is most effective usually have low prevalence of contraceptive use, lack of awareness of family planning, low usage of existing family planning services, poor geographical access to family planning clinics and/or cultural barriers that hinder clinic attendance (108, 109). CBD has often been layered onto existing government, private and commercial distribution of contraceptives. It addresses access barriers of the other distribution models because CBD is usually cheap, easier for people to reach, and can be available in a wide range of urban, rural, and poorly reached settings.

CBD programs must be adapted to suit local contexts and leverage non-family planning service providers like community organisations, structures and

institutions that can contribute to supporting and/or promoting contraception (108, 110). Such tailored approaches enhance acceptability and convenience as they not only resolve cost challenges but also expand the use of CBD interventions by clientele who may want to use contraceptives but will not seek these services if they are confined to a clinical or commercial setting (111, 112). The Ethiopian government, for example, mandated provision of family planning in the community to be able to reach women who may not be visiting health facilities (113).

CBD programs usually involve home visits, group/workshop education meetings, fixed and mobile posts where contraceptive distribution, health education, and referrals for clinic-based services are then made (112). Zimbabwe was the first country in SSA to begin a CBD program in the 1970s and this has contributed to the high mCPR in the country (114). However, since 1987, there has been a steady decline in CBD programs' contributions due to not only increasing demand but also that CBD agents spend more time providing contraceptive refills for existing clients than recruiting new ones (115). As of 2022, the Zimbabwe National Family Planning Council (ZNFPC) which supports the CBD program, has been planning to recruit and train a new batch of CBD agents to both meet demand, and also replace agents who have left the program due to age.

2.5 Family planning interventions for young people

Some of the above sections have underlined the unmet need for family planning among young women. Family planning interventions designed and implemented

specifically for young people may contribute to reducing high rates of unintended pregnancies and unmet need.

Age-appropriate family planning interventions have been developed due to recognised differences in access challenges and family planning needs faced between young women, and their older counterparts (116). One study in Uganda used community-based Village Health Teams (VHTs) to deliver family planning education and services as a means of improving access (101). The study found that, VHTs were mainly used by older married women as young people were reluctant to use VHTs because they feared not only being judged but also their privacy and confidentiality being violated (101). They would have preferred having young VHTs of the same sex.

Over and beyond the family planning interventions that have been implemented or evaluated in SSA, there have been efforts to design, implement and evaluate interventions specifically for young people. The aim of interventions tailored for young people is to redress access challenges and improve the utilisation of family planning services. In Zimbabwe and Kenya, young people noted that for interventions within the health system setting, they valued confidentiality, short wait times and low costs (117). Such youth-focused interventions include youth-specific drop-in spaces, mobile services connecting clinics and schools, peer groups/clubs and other once-off opportunities by organizations (57). Community and school-based interventions aimed at improving SRHR information have been common, and shown to reduce adolescent SRHR health

and knowledge gaps, but have had limited effect on behaviour change outcomes (43, 118).

2.5.1 Access to family planning and SRH care for young people.

Young women in SSA are often unable to receive comprehensive SRH information and services, including family planning. Information and knowledge on contraceptive methods are a necessary component for informed choices and utilization (40, 119). Lack of knowledge layered onto legal, cultural, social and religious impediments further hampers the utilization of family planning services and methods (120) and is a common predictor of unintended pregnancies amongst young people. Consent and law requirements also often constrain young women's access to SRH services, as countries may only allow independent access when one is over 18 years old, and yet sexual debut and associated consequences may have occurred before then (121, 122). Other predictors also include poor socio-economic status, coerced contraceptive decision-making, and contraceptive failure (123-125).

Health system barriers to service delivery and access for young people include judgemental health providers, limited skillsets for LARC provision, and inconsistent supply stock (124). A study in Soweto found that although young women knew where to access SRH services and information, their access was hindered by unsupportive provider attitudes, being in sexual relationships that did not support contraceptive use, and communication issues with parents and community members (126). In Lagos Nigeria, girls revealed health providers shouted crude remarks when they were seeking family planning care (127). The

study revealed that even when there was individual agency and information, health system, community and structural barriers still hindered use and access to family planning for young people.

Beyond health system, legal and policy challenges with access, acceptability and demand for family planning services (128, 129), young people face heightened social and cultural barriers to care (119, 130, 131). Socio-cultural norms are engrained in the way societies and communities function and influence how young women experience and decide on their reproductive lives- which includes contraceptive use or non-use (132, 133). When they are not adhered to, sociocultural norms and expectations often stigmatize, sanction and judge women's sexual and reproductive lives (123). Community norms intersect with personal beliefs to inform personal health seeking behaviour, and the lived context of women can influence their contraceptive decisions (119, 134, 135). Women can choose to accept (or not) family planning, or a particular method based on the methods adopted or information prevailing in their communities (132, 134). In a study in Kenya, adolescent postpartum family planning use conflicted with social norms of early fertility, which undermined the use of often accessible family planning services (136). A study in Zomba, Malawi attributed teenage pregnancies to low contraceptive use due to prevailing misconceptions about contraception (sterility, condoms disappearing within the woman's body, development of cancer, prolonged menstruation, heart palpitations, and excessive weight gain or loss) (137). Such information restrictions and sociocultural notions of sexuality and contraception, constrain young people's ability to make choices regarding their own SRHR.

On the part of service provision, socio-cultural norms and beliefs can be at friction with the professional expectations of health providers. Health system factors like health providers, and their attitudes, and expertise influence reproductive decision-making (119, 133). For young people, the presence of adequate well-trained health providers who are motivated to provide these services; and do not have a negative attitude around youth sexuality, is necessary (138). However, health providers are also community members whose behaviours and attitudes towards contraceptive use can be influenced by prevalent social and cultural norms- despite the trainings they may receive (139-142). Additionally, the health system is embedded in communities and not only shapes but is also shaped by socio cultural norms. While values and beliefs shape health care delivery and systems across all levels but this is more visible at the individual service provision (micro level); and becomes less visible at macro-levels for example. This demonstrates not only the value of highlighting the tension in health providers when they exercise agency, but also that this tension could be present with and among other actors in the health system, beyond the providers who are more readily able to consider or view as being part of the community. The influence of these intersecting dynamics between cultural norms and the health system factors contributes to shaping how, when, and why young women may decide to access and/or use family planning methods or services.

Studies and evidence reviews have shown that vertical, siloed approaches such as implementers singularly working on either HIV or SRH; free-standing youth

centres as service provision sites; abstinence-only programs; 'one size fit all' approaches that ignore local context and heterogeneity of AGYW; and once-off training sessions on youth-friendliness, have not worked to improve SRH outcomes for young people (19, 20, 94, 95, 116, 123, 126, 143). Improving the use of contraceptives may require interventions that account for gendered and relational decision-making and consider one-stop-shop service provision approaches, that can be adapted in response to need and context as well as person-centred care service provision.

2.5.2 Integrated sexual and reproductive health services for young people

Integration is being used by countries in SSA as a strategy to improve access to SRHR for young women. Kenya introduced programmes that trained teachers on HIV and provided girls with education subsidies; and this resulted in slight reduction in teenage pregnancies as well as girls' longer retention in school (144). In Cameroon, young women were empowered to make better informed choices through a peer-education program that educated girls on dating, peer pressure and SRH issues (145). Integrated family planning interventions can mean the combination of family planning with a spectrum of other services like maternal care, immunisation programs and often other reproductive and sexual health services (146-148). When integration between family planning and HIV happens, it is usually through providing family planning in HTC or Prevention of Mother to Child Transmission (PMTCT) settings, whereas HTC is less commonly provided in family planning settings (149). This section focuses on the

integration of family planning with other sexual and reproductive health services.

The high levels of HIV and unwanted pregnancies have revived the interests in HIV and SRH integration (150). One stop shops approaches to integration, where young clients receive all multiple services in the same setting or from the same provider have been commended (151). They increase convenience and access, by reducing number of facility visits and lowering barriers to access, such that one stop shops can be effective for targeting high risk AGYW, or those who are motivated to access services but multiple barriers exist (152). In low resource settings like Zimbabwe, were financial, systemic, and infrastructural constraints may limit the provision of comprehensive 'one stop shops' at scale. However, in the case of high risks for HIV and unintended pregnancies- accessing, uptake and usage of condoms is an effective one stop measure that integrates family planning and HIV services.

Preventative approaches, which usually also include condom provision are applicable to both high risk and low risk clients. This could arguably make condom provision highly effective and resource-friendly, due to its potential reach (providing condom use is acceptable). The consideration of condom provision/distribution as a one stop approach, is at tension with the typical understanding or interpretations of 'one stop approach' integration models. This tension may side-line or undermine the value and importance of improving condom access, uptake, and usage as a strategy of integrated service delivery models and reducing HIV and unintended pregnancies. At the same time- a

targeted approach to service provision may be more efficient, cost-effective, and likely to link to improved outcomes more directly (152, 153). Overall, to result in positive outcomes, youth-friendly services require dedicated resources, careful planning, community buy in, as well as health provider and system buy-in

In Eastern and Southern Africa, 15–24-year-old girls and young women bear the brunt of the HIV pandemic. The preventative interventions that are aimed at increasing knowledge and understanding of SRH for young people often, in their design and delivery, have implied assumptions that they are HIV negative; such that there is very few assessment of interventions targeting young people living with HIV (YPLHIV) (154). There has been limited effort on the SRH needs such as contraception and condom use, of young people living with HIV (YPLHIV), even though the intersections of HIV status and attributes like age, gender, educational attainment, socioeconomic situations and cognitive abilities could influence how YPLHIV perceive, receive and make decisions about their family planning care (154-156).

Being HIV positive can pose additional barriers to accessing and engaging with family planning services, which has implications for decision-making about using or not using contraceptive methods for example (154, 156). Due to the successes of ART, and HIV care programming, there is now growing number of children and adolescents living with HIV. Coupled with that is gaps in parental/caregiver knowledge or understanding of these young people's SRH dynamics which can eventually become negative health seeking behaviours and poor access to SRH services. Barriers to SRH care for YPLHIV include low financial capability,

mistrust of health providers and concerns about confidentiality and disclosure, challenges negotiating the health care system as well as limited availability of providers with expertise in both HIV and family planning care for them (154).

Regardless of HIV status, AGYW have been shown to have strong reproductive aspirations, such that understanding the role of family planning services and methods in realising these aspirations is needed. A quantitative study that surveyed adolescents living with HIV in South Africa showed that they were less likely to report hormonal contraception use; and adolescent mothers, regardless of their HIV status reported poor condom use at last sex (32). Health providers involved in patient-care could be trained to emphasize how family planning can be a preventive measure to mitigate the spread of HIV. That is, use of contraception prevents unintended pregnancies; and when those pregnancies are intended (through limiting or spacing as part of family planning), then the likelihood of PMTCT being effective is heightened. In essence, promoting access to and use of contraceptives for both young women with and without HIV is essential.

As part of the value of integrated service delivery models there is also now an established desire to meet the SRH (family planning included) needs of people living with HIV (153, 157). Inadequate information about the interactions between hormonal contraceptives and some ART regimens (158, 159) has, among other factors, potentially contributed to low uptake of contraceptives among people living with HIV; as counselling for both HIV and family planning becomes more complicated and further deters provision of family planning

within HIV programs. (160-162). In the HIV and SRH Linkages Project, women living with HIV in Southern Africa noted that they preferred family planning to be integrated into HIV clinics/units because they already trusted the providers there and desired the continuity of care from them. At these HIV clinics they would benefit from peer to peer engagement with other women living with HIV, and they now had a reduced fear of stigma attending these clinics (163). Such a setting, with adequate provider training, could address misinformation about HIV and contraceptive interactions.

Recent results from the ECHO trial found that for among the 16-35 year old women who were seeking effective contraception in Kenya, eSwatini, South Africa and Zambia, the overall HIV incidence was high at 3.8% (89) compared to 1.1% in the general population in eSwatini, a country that has one of the highest HIV prevalence in the world (164). These women, most of whom were under 25 years were able to be diagnosed during family planning care. Integrating HIV and family planning has a potential benefit of increasing contraceptive use among clients living with HIV who do not want to become pregnant (153, 165, 166).

The evidence presented so far, highlights the potential for integrated HIV and family planning services, which has so far been implemented unevenly. While the rationale for integrating HIV and family planning services for young people is strong, adaptations to address additional barriers to engagement and access faced by young women living with HIV and devising effective integrated interventions and developing focused guidelines may be required. Quite recently, there has been a concerted effort and call to integrate HIV prevention

like PrEP into family planning services for AGYW (106), but the evidence on how to do this well is still limited.

2.5.3 Policies and guidelines for young people's family planning

To strengthen interventions for success, continued political will and support is pre-requisite for sustainability and acceptability of family planning interventions (5, 48, 59). To show its political will and investment in family planning for its population, the Zimbabwe government is a signatory of conventions that promote and recognise voluntary family planning as a right, like the ICPD, Abuja and Maputo declarations, the SDGs, as well as the Every Woman, Every Child and Every Adolescent global strategy (167). Zimbabwe is also one of very few countries with a parastatal institution that is completely dedicated to family planning- the Zimbabwe National Family Planning Council (ZNFPC). Family planning and SRH for young people is featured in both national development and health strategies and policies in Zimbabwe. Among them, the National Health Strategy (2016-2020) has objectives to strengthen ASRH through integrated youth-friendly service provision, Comprehensive Sexuality Education (CSE), advocacy for legislative changes against child marriages; and reduce pregnancy-related risks for women, including adolescents, through strengthening family planning method mix, and integrating family planning with maternal and child health (MCH), HIV/AIDS and chosen SRH services (167). The National HIV and AIDS Strategic plan (2021-2025) notes that family planning and HIV services must be integrated across the HIV care cascade, and PMTCT, and the AGYW programme should offer comprehensive HIV and SRH services for this age group (168). The National Adolescent Sexual and Reproductive Health strategy (2016-

2020) states that family planning should be part of the minimum package of community-based and facility-based services available and provided to adolescents (169). Additionally, the national service guidelines for integrating SRHR and HIV services and programs provides examples of how family planning can be provided at the community level, by community cadres and with HTC, ante-natal care (ANC), post-natal care (PNC), and STI care at the facility level (48).

Despite the presence of family planning in all these national polices, strategies and guidelines and the existence of ZNFPC, gaps and weaknesses in the policy environment and in policy implementation continue to exist. For example, the Zimbabwe National Family Planning Act, and the national guidelines of youth friendly health services (YFHS), have not been updated, and this creates access and service delivery challenges. Additionally, when resources became scarce, it became clear that there was a lack of coordination, role definition, and common understanding between the complementary roles of the Reproductive Health Unit which sits in the MoHCC's Family and Health Division, and ZNFPC which had been established in 1985 with no guidance on these distinctions (170). The lack of clarity then contributes to challenges in translating otherwise progressive policies into practise and interventions.

2.5.4 Existing SRH interventions for young people, and their challenges in Zimbabwe

AGYW, HIV, and SRH stakeholders in Zimbabwe have identified challenges related to SRH provision and access for young people (Table 2.1). These stakeholders have sought to address some of these challenges, through

delivering interventions that address some of these challenges to improve SRH outcomes for young people.

Table 2-1: SRH challenges for family planning/HIV integration in Zimbabwe

Challenges identified in Zimbabwe
• Low comprehensive knowledge on SRH and HIV/AIDS prevention methods- leading to low-risk perception, high risk sexual behaviours, teenage pregnancies, unsafe and illegal abortions • High HIV infections among AGYW • Low HIV testing and FP coverage among young people • Lack of defined minimum comprehensive package of SRH services for adolescents and young people • Poor access of SRH, and HIV/AIDS services owing to age of consent to access services, consultation fees, low risk perception, stigma, and discrimination • Inadequate youth friendly SRH services for tertiary institutions and out of school youth • Weak policy environment for integration at the national level
Source: EXTENDED ZIMBABWE NATIONAL HIV AND AIDS STRATEGIC PLAN (ZNASP) 2015-2020

One of these interventions was a large scale collaboration between MoHCC and UNFPA which ran between 2013-2019 and was called the Sista2sista program (171). The program used a structured 40 exercise peer group intervention aimed at improving health outcomes for AGYW (10-24 years). The intervention consisted of age-stratified girls-only clubs that were a safe space for supporting and mentoring vulnerable AGYW and were led by female mentors and behaviour change facilitators. Vulnerability was determined using a risk assessment tool. Selected girls met in their clubs once a week, over a year to go through the 40-exercise curriculum led by the mentor. The program used a referral system to youth-friendly public health facilities for AGYW to access HIV testing services at

the beginning and end of the program, and this was tracked using referral slips and family planning use was self-reported.

Although significant, overall uptake of HIV testing was low at 15%, compared to the national average- 62.7% of AGYW have ever been tested for HIV. Only 2.4% of AGYW in the program reported using a modern family planning method, compared to the national average of 12.1% contraceptive use among married 15–19-year-olds (103, 171). These findings could have been due to the dependence of referrals to public health facilities for HIV testing. Even though the referrals were to youth-friendly facilities, young people are often resistant to go to public sector facilities. For family planning, fear of stigma and judgement, may have resulted in young people not self-reporting family planning use. Also, the program participants were selected for their high vulnerability and scoring where non-use of family planning could be an indicator of this risk.

Another large-scale intervention to improve HIV and SRH outcomes for young people in Zimbabwe was the DREAMS partnership between 2016-2019 supported by PEPFAR. DREAMS aimed to reduced HIV incidence among AGYW by 25% in year 1 and 40% be the end of two years, through enabling Determined, Resilient, Empowered, AIDS-free, Mentored and Safe lives in HIV high-burden countries (172). DREAMS has had an integration model that layers health, educational and social (biomedical, behavioural, and structural) interventions, customised to the needs of AGYW in the districts of focus, and delivered with urgency and the maximum coverage possible (173, 174). Diverse partners working across the types of interventions participate in DREAMS, and AGYW are

referred to them for services as appropriate, either during outreach events, or facility and community-based referrals (172). For example, at an outreach event, Population Services International (PSI) could offer HTC to the same client to whom FHI360 would provide family planning. Most of the evaluation studies on DREAMS in Zimbabwe so far, have focused on young women selling sex (YWSS), who are a target population of the program due to their high risk for HIV (174-177). The partner structure of DREAMS utilises a sexual and reproductive health referral model to improve access to SRH services, including the full range of contraceptives. Challenges with tracking referrals and adherence to the program have emerged, which has implications for effectiveness (178). However, findings from the DREAMS partnership on PrEP delivery and acceptability amongst high risk young women, have contributed to national policy discussions and implementation of PrEP (179).

The Global Fund for HIV/AIDS, Tuberculosis, and Malaria ('the Global Fund'), in partnership with the National AIDS Council (NAC), MoHCC, Plan International, Zimbabwe Association of Church-related hospitals (ZACH), CeSHHAR and UNFPA began an AGYW program in 2018 that emphasizes CSE, social protection, provision of HIV and SRH services, gender-based violence (GBV) prevention and post violence care (180). It includes a 'modified DREAMS approach' package adopted from the PEPFAR version, a Sista2sista (S2S) package model adopted from the program already mentioned in this section, the Start Awareness Support and Action (SASA!) model for the prevention of GBV that started in Uganda, as well as One Stop Centres (OSC) targeting AGYW who need post-violence care and support (168). In 2021, UNDP tendered an end of term evaluation for the project

to document what is or isn't working for improving AGYW's health outcomes in this program (180). The findings of which are not yet readily available.

Another government partner, ZNFPC also provides family planning and SRH interventions for young people in Zimbabwe (123). ZNFPC has 13 stand-alone static clinics at provincial level, and 27 dedicated youth friendly centres at district level offering comprehensive family planning, reproductive health, and HIV prevention integrated services. It also provides the MoHCC with technical support to provide youth-friendly services in roughly 63 public sector health facilities, but only 23 were functionally providing youth services in 2016 (48, 170). The ZNFPC program for young people has faced resource challenges after reductions in funding, which has limited its effectiveness and scope. Studies evaluating youth services in Zimbabwe have shown that young people remain hard to reach, and youth centres are not cost-effective, as they are operating at a very small scale for the level of impact desired (48, 181).

The HIV/SRH interventions for young people in Zimbabwe described here are not exhaustive, but rather seek to show the enablers and challenges of some of the major interventions that are currently being implemented to support AGYW's SRH outcomes in the country. CHIEDZA is also an intervention seeking to address young people's HIV and SRH challenges to improve their outcomes (146). Unlike the other programs, CHIEDZA is a pragmatic trial whose design was built on the challenges faced by other interventions to provide SRH service diversity with nearly every type of SRH service and approach being offered in the intervention (146). For example, instead of relying on referral slips and self-reporting for

service uptake information, CHIEDZA offered HIV testing and family planning onsite, at the community centre, as part of the intervention. The CHIEDZA intervention limited off site referrals unless that was the only option available. A key feature of the trial was to investigate which components of the intervention work to improve health outcomes, and to provide recommendations for policy guidelines as well as other programs like the ones mentioned in this section.

Beyond providing adequate interventions, there is an emerging awareness that effective health communication involves co-creating solutions and dialogue through participatory, empowering approaches involving community contributions to making decisions about their own health (171). This awareness exists, and often it is reported that all relevant stakeholders (including young people) were consulted, but how it translates and looks on in real time and implementation remains vague. In Zimbabwe, it is clear that partner implementing/funding stakeholders have been participatory co-creators in how interventions such as DREAMS, the Global Fund ASRH programs, and MoHCC /ZNFPC's youth-centred approaches mentioned earlier in this section, have been designed and implemented (146), but how the participatory co-creation role manifests in the implementation of the policies, strategies, guidelines and programs is not always clear.

Despite all these interventions and efforts, the mCPR of young people in Zimbabwe remains low at 44.9% for married adolescents (15-19 years) compared to the highly successful 65.6% overall for married WRA in the country (48, 103). More efforts that engage clear policies and guidelines on YFHS,

financial and human resources for AGYW's SRH, and capacitating health providers in youth-friendly service provision may be needed. Stakeholder alignment and co-production of SRH interventions for young people, as well as assessing the effectiveness, and acceptability of SRH interventions within context would also contribute to positively shifting family planning outcomes for young people. Chimbindi et al. who reports on the DREAMS experiences of AGYW (182), as well as other researchers working in the HIV and SRH for AYP (183, 184), note that there are many high quality programs and practises that are delivering AYP services (123, 185, 186). However, documentation on what works at scale is particularly sparse (184).

Addressing individual and system barriers to SRH for young women has not managed to adequately improve their health outcomes (43). After accounting for supply side issues around access and availability, the experiences and behaviours of these women within their communities, outside of the health care delivery system may be significant contributors to young people's family planning decision-making and health seeking behaviours. Improving our understanding of these socio-cultural and community-based factors, outside of health services, that influence family planning health seeking behaviours of young women who have access to readily available health services, should lead to better tailored interventions and health outcomes.

Examining community-level factors includes recognising how cultural representation and understanding of fertility, and contraceptive use can impact and shape the experience of family planning healthcare (158). For many young

women, gender norms in their communities support fertility which then comes with high socio-cultural acceptance (19, 187-189), which can shape when and how they decide to use of contraceptive methods

Evaluations need to capture the non-linear effects on family planning uptake and use, of youth centred SRH interventions that focus on or include family planning. Such effects may be obscured by more programmatic focuses on quantitative targets. For example, understanding young women's trajectories through family planning methods and services would contribute to designing, delivering and evaluating culturally appropriate and context sensitive interventions. Culturally sensitive interventions, are ones that ground their practise and implementation within local culture and context (context sensitive) (190, 191). Additionally, methodologies that can capture the effect of context on the interventions, and effects of interventions on context are necessary. Such methodologies would need to consider and be responsive to the cultural and contextual setting (192, 193); and these approaches are usually process- oriented (194, 195).

A process evaluation approach that can explore implementation in depth may be an appropriate methodology to help us understand why success of SRH interventions may be limited, and provide evidence for future interventions, policies, and guidelines. The MRC's process evaluation framework (196) for example, including the amended version that centralises adaptability (197) provides guidance towards assessments that consider how context influences interventions and vice versa. The next chapter is a methodology chapter that describes the process evaluation approach for this PhD, and the opportunities

this approach presented to enable me to explore to understand family planning interventions and experiences for young women in Zimbabwe.

2.6 Summary

This chapter was a narrative literature review that began by setting out the foundation on what is known about family planning, unmet needs, and family planning methods in SSA more broadly. This foundation was followed by a synthesis of the barriers/challenges and facilitators/enablers of family planning access and use by young people in SSA, which included the interventions and activities that have been implemented to address these barriers and the successes/limitations of these efforts.

In synthesising access and use of SRH and family planning services for young people in Zimbabwe, this chapter illustrated that the existing policies and guidelines; as well as large scale interventions for youth-friendly health services for family planning have not been able to complement each other, and comprehensively meet the needs of young people. In the final part of the chapter, I then proposed that not only where interventions that considered culture and context necessary, but an appropriate methodological approach to help us better understand the gaps in practising, implementing, and experiencing family planning interventions for young people in Zimbabwe is process evaluation. The insights that this approach could produce would advance our understanding of these complex implementation challenges; and would contribute

recommendations for future programs and policies targeting family planning for young women.

2.7 References

1. United Nations. The 2019 Revision of World Population Prospects: Highlights. New York,: United Nations Department of Economic and Social Affairs Population Division; 2019.
2. Wilmoth J, Menozzi C, Bassarsky L. Policy Brief: Why population growth matters for sustainable development. New York, USA: United Nations Department of Economic and Social Affairs; 2022.
3. Starbird E, Norton M, Marcus R. Investing in Family Planning: Key to Achieving the Sustainable Development Goals. Global Health: Science and Practice. 2016;4(2):191-210.
4. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. Lancet (London, England). 2012;380(9837):111-25.
5. Nazli Sensoy and Yasemin Korkut and Selcuk Akturan and Mehmet Yilmaz and Canan Tuz and Bilge T. Factors Affecting the Attitudes of Women toward Family Planning. In: Zouhair OA, editor. Family Planning. Rijeka: IntechOpen; 2018.
6. Cleland J. Contraception in historical and global perspective. Best Practice & Research Clinical Obstetrics & Gynaecology. 2009;23(2):165-76.
7. Jain M, Caplan Y, Ramesh BM, Isac S, Anand P, Engl E, et al. Understanding drivers of family planning in rural northern India: An integrated mixed-methods approach. PLOS ONE. 2021;16(1):e0243854.
8. Sedgh G, Singh S, Hussain R. Intended and unintended pregnancies worldwide in 2012 and recent trends. Stud Fam Plann. 2014;45(3):301-14.
9. Guttmacher Institute. Adding It Up: Investing in Contraception and Maternal and Newborn Health, 2017 (Fact Sheet). New York: Guttmacher Institute Inc; 2017.
10. Gaffield ME, Kiarie J. Setting global standards: The paramount importance of considering contraceptive values and preferences of clients and providers. Contraception. 2018.
11. MacQuarrie K. Unmet Need for Family Planning among Young Women: Levels and Trends2014.
12. Senderowicz L. Contraceptive Autonomy: Conceptions and Measurement of a Novel Family Planning Indicator. Studies in Family Planning. 2020;51(2):161-76.

13. Moreau C, Shankar M, Helleringer S, Becker S. Measuring unmet need for contraception as a point prevalence. BMJ Global Health. 2019;4(4):e001581.

14. Cleland J, Harbison S, Shah IH. Unmet need for contraception: issues and challenges. Studies in family planning. 2014;45(2):105-22.

15. Bradley SE, Casterline JB. Understanding unmet need: history, theory, and measurement. Studies in family planning. 2014;45(2):123-50.

16. Kantorová V, Wheldon MC, Ueffing P, Dasgupta ANZ. Estimating progress towards meeting women's contraceptive needs in 185 countries: A Bayesian hierarchical modelling study. PLOS Medicine. 2020;17(2):e1003026.

17. WHO. Family Planning/Contraceptive Methods: Fact sheet. Geneva: WHO; 2020.

18. Teshale AB. Factors associated with unmet need for family planning in sub-Saharan Africa: A multilevel multinomial logistic regression analysis. PLOS ONE. 2022;17(2):e0263885.

19. Prata N, Weidert K, Sreenivas A. Meeting the need: youth and family planning in sub-Saharan Africa. Contraception. 2013;88(1):83-90.

20. Hindin MJ, Fatusi AO. Adolescent sexual and reproductive health in developing countries: an overview of trends and interventions. Int Perspect Sex Reprod Health. 35. United States2009. p. 58-62.

21. Hubacher D, Mavranezouli I, McGinn E. Unintended pregnancy in sub-Saharan Africa: magnitude of the problem and potential role of contraceptive implants to alleviate it. Contraception. 2008;78(1):73-8.

22. Yah CS, Ndlovu S, Kutywayo A, Naidoo N, Mahuma T, Mullick S. The prevalence of pregnancy among adolescent girls and young women across the Southern African development community economic hub: A systematic review and meta-analysis. Health promotion perspectives. 2020;10(4):325-37.

23. Bertrand JT, Ross J, Sullivan TM, Hardee K, Shelton JD. Contraceptive Method Mix: Updates and Implications. Global Health: Science and Practice. 2020;8(4):666-79.

24. Seiber EE, Bertrand JT, Sullivan TM. Changes in contraceptive method mix in developing countries. International family planning perspectives. 33. United States2007. p. 117-23.

25. Ahmed S, Choi Y, Rimon JG, Alzouma S, Gichangi P, Guiella G, et al. Trends in contraceptive prevalence rates in sub-Saharan Africa since the 2012 London Summit on Family Planning: results from repeated cross-sectional surveys. The Lancet Global health. 2019;7(7):e904-e11.

26. Aloo-Obunga C. Country analysis of family planning and HIV/AIDS: Kenya. Washington, DC: the Policy Project. 2003.

27. Blacker J, Opiyo C, Jasseh M, Sloggett A, Ssekamatte-Ssebuliba J. Fertility in Kenya and Uganda: a comparative study of trends and determinants. Population studies. 2005;59(3):355-73.

28. Terceira N, Gregson S, Zaba B, Mason P. The contribution of HIV to fertility decline in rural Zimbabwe, 1985-2000. Population studies. 2003;57(2):149-64.

29. Heys J, Kipp W, Jhangri GS, Alibhai A, Rubaale T. Fertility desires and infection with the HIV: results from a survey in rural Uganda. Aids. 2009;23 Suppl 1:S37-45.

30. Homsy J, Bunnell R, Moore D, King R, Malamba S, Nakityo R, et al. Reproductive intentions and outcomes among women on antiretroviral therapy in rural Uganda: a prospective cohort study. PloS one. 2009;4(1):e4149.

31. Akelo V, Girde S, Borkowf CB, Angira F, Achola K, Lando R, et al. Attitudes toward Family Planning among HIV-Positive Pregnant Women Enrolled in a Prevention of Mother-To-Child Transmission Study in Kisumu, Kenya. PLOS ONE. 2013;8(8):e66593.

32. Toska E, Cluver L, Laurenzi CA, Wittesaele C, Sherr L, Zhou S, et al. Reproductive aspirations, contraception use and dual protection among adolescent girls and young women: the effect of motherhood and HIV status. Journal of the International AIDS Society. 2020;23(S5):e25558.

33. Wani M, Nakigudde J, Nansikombi HT, Orishaba P, Kalibbala D, Kalyango JN, et al. Contraceptive acceptability and associated factors among young women (15-24) living with HIV/AIDS: a hospital-based study in Kampala, Uganda. African health sciences. 2022;22(1):21-7.

34. Yaya I, Nambiema A, Dieng S, Djalogue L, Agboyibor MK, N'Dri MK, et al. Factors associated with unmet need for limiting childbirth among women living with HIV in Togo: An averaging approach. PLoS One. 2020;15(5):e0233136.

35. Yaya I, Patassi AA, Landoh DE, Bignandi EM, Kolani K, Namoro A-DD, et al. Modern contraceptive use among HIV-infected women attending HIV care centres in Togo: a cross-sectional study. BMJ Open. 2018;8(4):e019006.

36. Calvert C, Ronsmans C. The contribution of HIV to pregnancy-related mortality: a systematic review and meta-analysis. AIDS (London, England). 2013;27(10):1631.

37. Gedefaw G, Wondmieneh A, Demis A. Contraceptive Use and Method Preferences among HIV Positive Women in Ethiopia: A Systematic Review and Meta-analysis. BioMed Research International. 2020;2020:6465242.

38. Darroch JE, Audam S, Biddlecom A. Adding It Up: Investing in Contraception and Maternal and Newborn Health, 2017—Supplementary Tables. New York, NY: The Guttmacher Institute. 2017.

39. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. Reproductive health. 2009;6:3-.

40. Pulerwitz J, Blum R, Cislaghi B, Costenbader E, Harper C, Heise L, et al. Proposing a Conceptual Framework to Address Social Norms That Influence Adolescent Sexual and Reproductive Health. The Journal of adolescent health : official publication of the Society for Adolescent Medicine. 2019;64(4S):S7-S9.

41. Fatusi AO. Young People's Sexual and Reproductive Health Interventions in Developing Countries: Making the Investments Count. Journal of Adolescent Health. 2016;59(3):S1-S3.

42. Sitruk-Ware R. Contraception: an international perspective. Contraception. 2006;73(3):215-22.

43. Mwaikambo L, Speizer IS, Schurmann A, Morgan G, Fikree F. What Works in Family Planning Interventions: A Systematic Review. Studies in Family Planning. 2011;42(2):67-82.

44. Ali MM, Cleland JG, Shah IH, World Health O. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys. Geneva: World Health Organization; 2012.

45. Yeh PT, Kautsar H, Kennedy CE, Gaffield ME. Values and preferences for contraception: A global systematic review. 2022.

46. Brown M. When ancient meets modern: the relationship between postpartum non-susceptibility and contraception in sub-Saharan Africa. J Biosoc Sci. 2007;39(4):493-515.

47. Tyrer L. Introduction of the pill and its impact. Contraception. 1999;59(1 Suppl):11s-6s.

48. MoHCC. Zimbabwe National Family Planning Costed Implementation Plan 2016-2020. Harare, Zimbabwe: MoHCC; 2016.

49. Bigrigg A, Evans M, Gbolade B, Newton J, Pollard L, Szarewski A, et al. Depo Provera. Position paper on clinical use, effectiveness and side effects. Br J Fam Plann. 1999;25(2):69-76.

50. Whitaker AK, Johnson LM, Harwood B, Chiappetta L, Creinin MD, Gold MA. Adolescent and young adult women's knowledge of and attitudes toward the intrauterine device. Contraception. 2008;78(3):211-7.

51. Kaunitz AM. Long-acting contraceptive options. Int J Fertil Menopausal Stud. 1996;41(2):69-76.

52. Ajong AB, Njotang PN, Kenfack B, Essi MJ, Yakum MN, Iballa FBS, et al. Contraceptive method mix and preference: A focus on long acting reversible contraception in urban Cameroon. PloS one. 2018;13(8):e0202967.

53. Pradhan MR, Dwivedi LK. Changes in contraceptive use and method mix in India: 1992–92 to 2015–16. Sexual & Reproductive Healthcare. 2019;19:56-63.

54. WHO. The sexual and reproductive health of young adolescents in developing countries: reviewing the evidence, identifying research gaps, and moving the agenda: report of a WHO technical consultation, Geneva, 4-5 November 2010. Geneva: World Health Organization; 2011.

55. Altshuler AL, Gaffield ME, Kiarie JN. The WHO's medical eligibility criteria for contraceptive use: 20 years of global guidance. Current opinion in obstetrics & gynecology. 2015;27(6):451.

56. Kungu W, Khasakhala A, Agwanda A. Use of long-acting reversible contraception among adolescents and young women in Kenya. PLoS One. 2020;15(11):e0241506.

57. Kamuyango A, Yu T, Ao C-K, Hu SC, Hou W-H, Tseng C-C, et al. The public-sector family planning program impact scores in association with long-acting reversible contraceptive use among young women in 22 Sub-Saharan African countries: A pooled multi-level analysis. 2022;108:44-9.

58. Ngo TD, Nuccio O, Pereira SK, Footman K, Reiss K. Evaluating a LARC expansion program in 14 sub-Saharan African countries: a service delivery model for meeting FP2020 goals. Maternal and child health journal. 2017;21(9):1734-43.

59. Jacobstein R, Stanley H. Contraceptive implants: providing better choice to meet growing family planning demand. Global health, science and practice. 2013;1(1):11-7.

60. Health Communication Capacity Collaborative. Barriers to LARC Uptake Among Youth: Highlights from the Research Brief. Washington, DC.: USAID; 2014.

61. Jacobstein R. Liftoff: The Blossoming of Contraceptive Implant Use in Africa. Global Health: Science and Practice. 2018;6(1):17-39.

62. Allen RH, Goldberg AB, Grimes DA. Expanding access to intrauterine contraception. 2009;201(5):456.e1-.e5.

63. Alton TM, Brock GN, Yang D, Wilking DA, Hertweck SP, Loveless MB. Retrospective review of intrauterine device in adolescent and young women. Journal of Pediatric and Adolescent Gynecology. 2012;25(3):195-200.

64. Gold MA, Johnson LM. Intrauterine devices and adolescents. Curr Opin Obstet Gynecol. 2008;20(5):464-9.

65. Castle S, Schroffel H, Nzau Mvuezolo JJ, Mupenda B, Mumbere J, Shapiro R. Successful programmatic approaches to facilitating IUD uptake: CARE’s experience in DRC. 2019;19(1):104.

66. Twesigye R, Buyungo P, Kaula H, Buwembo D. Ugandan Women's View of the IUD: Generally Favorable but Many Have Misperceptions About Health Risks. Global health, science and practice. 2016;4 Suppl 2(Suppl 2):S73-82.

67. ZNFPC Ma. *Family Planning:Guidelines for Zimbabwe* Harare: MoHCC and ZNFPC; 2018.

68. Delvaux T, Jespers V, Benova L, van de Wijgert J. Acceptability and Satisfaction of Contraceptive Vaginal Rings in Clinical Studies: A Systematic Review and Narrative Synthesis. Front Glob Womens Health. 2021;2:799963.

69. Roumen FJ, Apter D, Mulders TM, Dieben TO. Efficacy, tolerability and acceptability of a novel contraceptive vaginal ring releasing etonogestrel and ethinyl oestradiol. Hum Reprod. 2001;16(3):469-75.

70. Graziottin A. A review of transdermal hormonal contraception : focus on the ethinylestradiol/norelgestromin contraceptive patch. Treat Endocrinol. 5. New Zealand2006. p. 359-65.

71. Lopez LM, Grimes DA, Gallo MF, Stockton LL, Schulz KF. Skin patch and vaginal ring versus combined oral contraceptives for contraception. Cochrane Database of Systematic Reviews. 2013(4).

72. Cook LA, Nanda K, Grimes DA, Lopez LM. Diaphragm versus diaphragm with spermicides for contraception. The Cochrane database of systematic reviews. 2003: Copyright © 2011 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.; 2003.

73. Chapman L, Magos A. Female sterilization. Expert Rev Med Devices. 2008;5(4):525-37.

74. Ruminjo JK, Lynam PF. A fifteen-year review of female sterilization by minilaparotomy under local anesthesia in Kenya. Contraception. 1997;55(4):249-60.

75. Collins GM, Herbst SJ, Aqua KA. Permanent sterilization for the 21st century using the hysteroscopic approach. Surg Technol Int. 2004;13:115-9.

76. Shongwe P, Ntuli B, Madiba S. Assessing the Acceptability of Vasectomy as a Family Planning Option: A Qualitative Study with Men in the Kingdom of Eswatini. Int J Environ Res Public Health. 2019;16(24).

77. Koffi TB, Weidert K, Bitasse EO, Mensah MAE, Emina J, Mensah S, et al. Engaging men in family planning: Perspectives from married men in Lomé, Togo. Global Health: Science and Practice. 2018;6(2):317-29.

78. Fonner VA, Kennedy CE, O'Reilly KR, Sweat MD. Systematic assessment of condom use measurement in evaluation of HIV prevention interventions: need for standardization of measures. AIDS Behav. 2014;18(12):2374-86.

79. Haberlen SA, Narasimhan M, Beres LK, Kennedy CE. Integration of Family Planning Services into HIV Care and Treatment Services: A Systematic Review. Stud Fam Plann. 2017;48(2):153-77.

80. Noar SM, Cole C, Carlyle K. Condom use measurement in 56 studies of sexual risk behavior: review and recommendations. Arch Sex Behav. 2006;35(3):327-45.

81. Center KE, Gunn JK, Asaolu IO, Gibson SJ, Ehiri JE. Contraceptive Use and Uptake of HIV-Testing among Sub-Saharan African Women. PLoS One. 2016;11(4):e0154213.

82. Reid-Hresko J. Our bodies are our own: resistance to ABC-based HIV-prevention programmes in northern Tanzanian conservation organisations. Culture, health & sexuality. 2014;16(7):765-79.

83. Weller SC, Davis-Beaty K. Condom effectiveness in reducing heterosexual HIV transmission. Cochrane database of systematic reviews. 2002(1).

84. Cleland J, Ali MM. Sexual abstinence, contraception, and condom use by young African women: a secondary analysis of survey data. The Lancet. 2006;368(9549):1788-93.

85. Abubeker FA, Fanta MB, Dalton VK. Unmet Need for Contraception among HIV-Positive Women Attending HIV Care and Treatment Service at Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia. Int J Reprod Med. 2019;2019:3276780.

86. Johnson KB, Akwara P, Rutstein SO, Bernstein S. Fertility preferences and the need for contraception among women living with HIV: the basis for a joint action agenda. Aids. 2009;23 Suppl 1:S7-s17.

87. Organization WH. Programmatic and research considerations for hormonal contraception for women at risk of HIV and women living with HIV. World Health Organization; 2012.

88. Wang CC, Kreiss JK, Reilly M. Risk of HIV infection in oral contraceptive pill users: a meta-analysis. JAIDS Journal of Acquired Immune Deficiency Syndromes. 1999;21(1):51-8.

89. Ahmed K, Baeten JM, Beksinska M, Bekker L-G, Bukusi EA, Donnell D, et al. HIV incidence among women using intramuscular depot medroxyprogesterone acetate, a copper

intrauterine device, or a levonorgestrel implant for contraception: a randomised, multicentre, open-label trial. The Lancet. 2019;394(10195):303-13.

90. Rosenfield A, Schwartz K. Population and Development — Shifting Paradigms, Setting Goals. New England Journal of Medicine. 2005;352(7):647-9.

91. Brown W, Druce N, Bunting J, Radloff S, Koroma D, Gupta S, et al. Developing the "120 by 20" goal for the Global FP2020 Initiative. Stud Fam Plann. 2014;45(1):73-84.

92. Chola L, McGee S, Tugendhaft A, Buchmann E, Hofman K. Scaling Up Family Planning to Reduce Maternal and Child Mortality: The Potential Costs and Benefits of Modern Contraceptive Use in South Africa. PLOS ONE. 2015;10(6):e0130077.

93. Prata N. Making family planning accessible in resource-poor settings. Philosophical transactions of the Royal Society of London Series B, Biological sciences. 2009;364(1532):3093-9.

94. Silumbwe A, Nkole T, Munakampe MN, Milford C, Cordero JP, Kriel Y, et al. Community and health systems barriers and enablers to family planning and contraceptive services provision and use in Kabwe District, Zambia. 2018;18(1):390.

95. Biddlecom AE, Singh S, Munthali A. Adolescents' views of and preferences for sexual and reproductive health services in Burkina Faso, Ghana, Malawi and Uganda. African journal of reproductive health. 2007;11(3):99-110.

96. Hasselback L, Dicko M, Viadro C, Ndour S, Ndao O, Wesson J. Understanding and addressing contraceptive stockouts to increase family planning access and uptake in Senegal. 2017;17(1):373.

97. Ndayizigiye M, Fawzi MCS, Lively CT, Ware NC. Understanding low uptake of contraceptives in resource-limited settings: a mixed-methods study in rural Burundi. 2017;17(1):209.

98. Health-Kenya Mo. A Kenya practical guide for continuity of reproductive, maternal, newborn and family planning care and services in the background of COVID-19 pandemic. 2020.

99. Performance Monitoring for Action (PMA) Agile and International Centre For Reproductive Health-Kenya (ICRHK). Gender and COVID-19: Access to Health and Contraception. Baltimore, MD: Bill & Melinda Gates Institute for Population and Reproductive Health, J ohns Hopkins University Bloomberg School of Public Health; 2020.

100. Corey J, Schwandt H, Boulware A, Herrera A, Hudler E, Imbabazi C, et al. Family planning demand generation in Rwanda: Government efforts at the national and community

level impact interpersonal communication and family norms. PLoS One. 2022;17(4):e0266520.

101. Kalyesubula R, Pardo JM, Yeh S, Munana R, Weswa I, Adducci J, et al. Youths' perceptions of community health workers' delivery of family planning services: a cross-sectional, mixed-methods study in Nakaseke District, Uganda. 2021;21(1):666.

102. Ngome E, Odimegwu C. The social context of adolescent women's use of modern contraceptives in Zimbabwe: a multilevel analysis. Reproductive health. 2014;11:64.

103. Zimbabwe National Statistics Agency, International. I. *Zimbabwe National Demographic and Health Survey 2015: Final Report*. Rockville, Maryland, USA: ZIMSTAT, ICF International; 2016.

104. Dookie S, Singh S. Primary health services at district level in South Africa: a critique of the primary health care approach. 2012;13(1):67.

105. Yao J, Murray AT, Agadjanian V. A geographical perspective on access to sexual and reproductive health care for women in rural Africa. Soc Sci Med. 2013;96:60-8.

106. Kachale FaM, I and Mhuriro, F and Mugambi, M and Murungu, J and Ncube, B and Ncube, G and Ndwiga, A and Nyirenda, R and Otindo, V and Carter, A and Dunbar, M and Fleischman, J and Rodrigues, J and Segal, K. Integration of HIV and sexual and reproductive health in the era of anti-retroviral-based prevention: findings from assessments in Kenya, Malawi and Zimbabwe [version 1; peer review: 3 approved with reservations]. Gates Open Research. 2021;5(145).

107. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: the unfinished agenda. Lancet (London, England). 2006;368(9549):1810-27.

108. WHO. Community-based Distribution of Contraceptives: A Guide to Programme Managers. Geneva: WHO; 1995.

109. Prata N, Vahidnia F, Potts M, Dries-Daffner I. Revisiting community-based distribution programs: are they still needed? Contraception. 2005;72(6):402-7.

110. Wurie HR, Samai M, Witter S. Retention of health workers in rural Sierra Leone: findings from life histories. Human resources for health. 2016;14:3.

111. Nyundo L, Whittaker M, Eagle L, Low DR. Adaptation of community-based distribution of family planning services to context-specific social networks: a case of marriage counsellors in Lusaka district, Zambia. 2021;21(1):437.

112. Tawye Y, Jotie F, Shigu T, Ngom P, Maggwa N. The Potential Impact of Community-Based Distribution Programmes on Contraceptive Uptake in Resource-Poor Settings:

Evidence from Ethiopia. African Journal of Reproductive Health / La Revue Africaine de la Santé Reproductive. 2005;9(3):15-26.

113. Endriyas M, Belachew T, Megerssa B. Missed opportunities in family planning: process evaluation of family planning program in Omo Nada district, Oromia region, Ethiopia. Contracept Reprod Med. 2018;3:14-.

114. Boohene E, Dow TECFpdM. Contraceptive Prevalence and Family Planning Program Effort in Zimbabwe. International family planning perspectives. 1987;13(1):1-7.

115. Maggwa BN, Askew I, Marangwanda C, Nyakauru R, Janowitz BS. An assessment of the Zimbabwe National Family Planning Council's community based distribution programme: FRONTIERS Final Report. Nairobi: Population Council; 2001.

116. Meherali S, Rehmani M, Ali S, Lassi ZS. Interventions and Strategies to Improve Sexual and Reproductive Health Outcomes among Adolescents Living in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. Adolescents. 2021;1(3).

117. Erulkar AS, Onoka CJ, Phiri A. What is youth-friendly? Adolescents' preferences for reproductive health services in Kenya and Zimbabwe. African journal of reproductive health. 2005:51-8.

118. Kirby D. Effective approaches to reducing adolescent unprotected sex, pregnancy, and childbearing. Journal of sex research. 2002;39(1):51-7.

119. Willan S, Gibbs A, Petersen I, Jewkes R. Exploring young women’s reproductive decision-making, agency and social norms in South African informal settlements. PLOS ONE. 2020;15(4):e0231181.

120. Mosha I, Ruben R, Kakoko D. Family planning decisions, perceptions and gender dynamics among couples in Mwanza, Tanzania: a qualitative study. 2013;13(1):523.

121. Sidze EM, Lardoux S, Speizer IS, Faye CM, Mutua MM, Badji F. Young women access and use of contraception: the role of providers’ restrictions in urban Senegal. International perspectives on sexual and reproductive health. 2014;40(4):176.

122. Appiah S, Badu E, Dapaah J, Harriet T, Abubakar M. Youth friendliness of sexual and reproductive health service delivery and reproductive health service utilization in Ghana. Int J Innov Appl Stud. 2015;10(2):716-25.

123. WHO. Evidence Brief: The importance of sexual and reproductive health and rights to prevent HIV in adolescent girls and young women in East and Southern Africa. Geneva, Switzerland: WHO, hrp; 2017. p. 24.

124. Zuma T, Seeley J, Mdluli S, Chimbindi N, McGrath N, Floyd S, et al. Young people's experiences of sexual and reproductive health interventions in rural KwaZulu-Natal, South Africa. International Journal of Adolescence and Youth. 2020;25(1):1058-75.

125. Gunawardena N, Fantaye AW, Yaya S. Predictors of pregnancy among young people in sub-Saharan Africa: a systematic review and narrative synthesis. BMJ Global Health. 2019;4(3):e001499.

126. Lince-Deroche N, Hargey A, Holt K, Shochet T. Accessing sexual and reproductive health information and services: A mixed methods study of young women's needs and experiences in Soweto, South Africa. African journal of reproductive health. 2015;19(1):73-81.

127. Kuyinu YA, Femi-Adebayo TT, Odugbemi BA, Ukatu EE. Causative factors for sexual and reproductive health status of pregnant adolescent girls in urban communities of Lagos, Nigeria. International journal of adolescent medicine and health. 2017.

128. Michaels-Igbokwe C, Terris-Prestholt F, Lagarde M, Chipeta E, Initiative I, Cairns J. Young people's preferences for family planning service providers in rural Malawi: a discrete choice experiment. PLoS One. 2015;10(12):e0143287.

129. Hoopes AJ, Benson SK, Howard HB, Morrison DM, Ko LK, Shafii T. Adolescent perspectives on patient-provider sexual health communication: a qualitative study. Journal of primary care & community health. 2017;8(4):332-7.

130. Moore AM, Awusabo-Asare K, Kumi-Kyereme A, Madise N, John-Langba J. Coerced first sex among adolescent girls in sub-Saharan Africa: prevalence and context. African journal of reproductive health. 2007;11(3):62-82.

131. Wamoyi J, Mshana G, Mongi A, Neke N, Kapiga S, Changalucha J. A review of interventions addressing structural drivers of adolescents' sexual and reproductive health vulnerability in sub-Saharan Africa: implications for sexual health programming. Reproductive health. 2014;11(1):1-15.

132. Agha S, Morgan B, Archer H, Paul S, Babigumira JB, Guthrie BL. Understanding how social norms affect modern contraceptive use. 2021;21(1):1061.

133. Engelbert Bain L, Amu H, Enowbeyang Tarkang E. Barriers and motivators of contraceptive use among young people in Sub-Saharan Africa: A systematic review of qualitative studies. PLOS ONE. 2021;16(6):e0252745.

134. Stephenson R, Baschieri A, Clements S, Hennink M, Madise N. Contextual influences on modern contraceptive use in sub-Saharan Africa. American journal of public health. 2007;97(7):1233-40.

135. Mutumba M, Wekesa E, Stephenson R. Community influences on modern contraceptive use among young women in low and middle-income countries: a cross-sectional multi-country analysis. 2018;18(1):430.

136. Velonjara J, Crouthamel B, O'Malley G, Wiggins M, Matemo D, John-Stewart G, et al. Motherhood increases support for family planning among Kenyan adolescents. Sex Reprod Healthc. 2018;16:124-31.

137. Kaphagawani NC, Kalipeni E. Sociocultural factors contributing to teenage pregnancy in Zomba district, Malawi. Global public health. 2017;12(6):694-710.

138. Starrs AM, Ezeh AC, Barker G, Basu A, Bertrand JT, Blum R, et al. Accelerate progress—sexual and reproductive health and rights for all: report of the Guttmacher–Lancet Commission. The Lancet. 2018;391(10140):2642-92.

139. Sidamo NB, Gidebo KD, Wado YD, Abebe A, Meskele M. Exploring Providers' Perception Towards Provision of Sexual and Reproductive Health Services for Unmarried Adolescents in Gamo Zone, Southern Ethiopia: A Phenomenological Study. Risk Manag Healthc Policy. 2021;14:4883-95.

140. Gillespie B, Balen J, Allen H, Soma-Pillay P, Anumba D. Shifting Social Norms and Adolescent Girls' Access to Sexual and Reproductive Health Services and Information in a South African Township. Qual Health Res. 2022;32(6):1014-26.

141. Yang C. The inequity of conscientious objection: refusal of emergency contraception. Nursing ethics. 2020;27(6):1408-17.

142. Pandey PL, Seale H, Razee H. Exploring the factors impacting on access and acceptance of sexual and reproductive health services provided by adolescent-friendly health services in Nepal. PloS one. 2019;14(8):e0220855.

143. Plesons M, Cole CB, Hainsworth G, Avila R, Va Eceéce Biaukula K, Husain S, et al. Forward, Together: A Collaborative Path to Comprehensive Adolescent Sexual and Reproductive Health and Rights in Our Time. Journal of Adolescent Health. 2019;65(6):S51-S62.

144. Duflo E, Dupas P, Kremer M. Education, HIV and early fertility: Experimental evidence from Western Kenya. Cambridge, MA: National Bureau of Economic Research; 2014.

145. Tombros A. Integrating efforts to prevent HIV other STIs and pregnancy among teens in developing countries: three case studies. 2005.

146. Dziva Chikwari CaD, E and Bandason, T and Tembo, M and Mavodza, C and Simms, V and Mackworth-Young, C and Apollo, T and Grundy, C and Weiss, H and Kranzer, K and Mavimba, T and Indravudh, P and Doyle, A and Mugurungi, O and Machiha, A and Bernays,

S and Busza, J and Madzima, B and Terris-Prestholt, F and McCarthy, O and Hayes, R and Francis, S and Ferrand, R. The impact of community-based integrated HIV and sexual and reproductive health services for youth on population-level HIV viral load and sexually transmitted infections in Zimbabwe: protocol for the CHIEDZA cluster-randomised trial [version 1; peer review: awaiting peer review]. Wellcome Open Research. 2022;7(54).

147. Maharaj P, Cleland J. Integration of sexual and reproductive health services in KwaZulu-Natal, South Africa. Health policy and planning. 2005;20(5):310-8.

148. Krishnaratne S, Hoyt J, Hamon JK, Ariko AB, Atayo C, Morukileng J, et al. Acceptability of family planning in a changing context in Uganda: a realist evaluation at two time points. BMJ Open. 2022;12(4):e054277.

149. WHO. Integration of HIV testing and Linkage in family plannig and contraceptive services: Implementation Brief. Geneva: World Health Organization; 2021.

150. Milford C, Beksinska M, Greener LR, Mabude Z, Smit J. Implementation of a sexual and reproductive health service integration model: South African providers' reports. Cogent Medicine. 2019;6(1):1592740.

151. International I. Adolescent and Youth Sexual and Reproductive Health- Integration and Expansion of Service Package. Washington DC: The Challenge Initiative (TCI); 2018.

152. PATA. Promising Practises: One-stop-adolescent shop. Delivering adolescent-friendly sexual and reproductive health, HIV and TB services. In: Soeters H, Hatane L, Gittings L, Mark D, editors. Kafue, Zambia: PATA Promising Practises; 2016.

153. Church K, Mayhew SH. Integration of STI and HIV prevention, care, and treatment into family planning services: a review of the literature. Stud Fam Plann. 2009;40(3):171-86.

154. Shapiro K, Ray S. Sexual Health for People Living with HIV. Reproductive health matters. 2007;15(sup29):67-92.

155. Ndlazi BE, Masango T. The sexual and reproductive health needs of young people living with HIV in Gauteng, South Africa. South Afr J HIV Med. 2022;23(1):1377.

156. Okawa S, Mwanza-Kabaghe S, Mwiya M, Kikuchi K, Jimba M, Kankasa C, et al. Sexual and reproductive health behavior and unmet needs among a sample of adolescents living with HIV in Zambia: a cross-sectional study. 2018;15(1):55.

157. Hope R, Kendall T, Langer A, Bärnighausen T. Health Systems Integration of Sexual and Reproductive Health and HIV Services in Sub-Saharan Africa. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2014;67:S259-S70.

158. Todd CS, Stibich MA, Laher F, Malta MS, Bastos FI, Imbuki K, et al. Influence of culture on contraceptive utilization among HIV-positive women in Brazil, Kenya, and South Africa. AIDS Behav. 2011;15(2):454-68.

159. Mbonye AK, Hansen KS, Wamono F, Magnussen P. Barriers to contraception among HIV-positive women in a periurban district of Uganda. International journal of STD & AIDS. 2012;23(9):661-6.

160. Feyissa TR, Harris ML, Loxton D. "They haven't asked me. I haven't told them either": fertility plan discussions between women living with HIV and healthcare providers in western Ethiopia. 2020;17(1):124.

161. Matthews LT, Crankshaw T, Giddy J, Kaida A, Psaros C, Ware NC, et al. Reproductive counseling by clinic healthcare workers in Durban, South Africa: perspectives from HIV-infected men and women reporting serodiscordant partners. Infectious diseases in obstetrics and gynecology. 2012;2012.

162. Mindry D, Crankshaw T, Maharaj P, Munthree C, Letsoalo T, Milford C, et al. "We have to try and have this child before it is too late": missed opportunities in client–provider communication on reproductive intentions of people living with HIV. AIDS care. 2015;27(1):25-30.

163. Warren CE, Mayhew SH, Hopkins J. The Current Status of Research on the Integration of Sexual and Reproductive Health and HIV Services. Studies in Family Planning. 2017;48(2):91-105.

164. Joshi K, Lessler J, Olawore O, Loevinsohn G, Bushey S, Tobian AAR, et al. Declining HIV incidence in sub-Saharan Africa: a systematic review and meta-analysis of empiric data. Journal of the International AIDS Society. 2021;24(10):e25818.

165. Spaulding AB, Brickley DB, Kennedy C, Almers L, Packel L, Mirjahangir J, et al. Linking family planning with HIV/AIDS interventions: a systematic review of the evidence. Aids. 2009;23:S79-S88.

166. Kosgei RJ, Lubano KM, Shen C, Wools-Kaloustian KK, Musick BS, Siika AM, et al. Impact of integrated family planning and HIV care services on contraceptive use and pregnancy outcomes: a retrospective cohort study. Journal of acquired immune deficiency syndromes (1999). 2011;58(5):e121-6.

167. Ministry of Health and Child Care. Zimbabwe National Health Strategy (2016-2020)-Equity and Quality in Health: Leaving noone behind. Harare, Zimbabwe: Ministry of Health and Child Care; 2016.

168. Ministry of Health and Child Care, Council NA. Zimbabwe National HIV and AIDS Strategic Plan (2021-2025). Harare, Zimbabwe: AIDS & TB Programme, Ministry of Health and Child Care; 2020.

169. Ministry of Health and Child Care, ZNFPC. Zimbabwe National Adolescent Sexual and Reproductive Health strategy II (2016-2020). 2016.

170. MoHCC. *Zimbabwe National Family Planning Strategy (ZNFPS) 2016-2020*. Zimbabwe; 2016.

171. Oberth G, Chinhengo T, Katsande T, Mhonde R, Hanisch D, Kasere P, et al. Effectiveness of the Sista2Sista programme in improving HIV and other sexual and reproductive health outcomes among vulnerable adolescent girls and young women in Zimbabwe. African Journal of AIDS Research. 2021;20(2):158-64.

172. Birdthistle I, Schaffnit SB, Kwaro D, Shahmanesh M, Ziraba A, Kabiru CW, et al. Evaluating the impact of the DREAMS partnership to reduce HIV incidence among adolescent girls and young women in four settings: a study protocol. BMC Public Health. 2018;18(1):912.

173. PEPFAR. Preventing HIV in Adolescent Girls and Young Women: Guidance for PEPFAR Country Teams on the DREAMS Partnership. 2015.

174. Chabata ST, Hensen B, Chiyaka T, Mushati P, Musemburi S, Dirawo J, et al. The impact of the DREAMS partnership on HIV incidence among young women who sell sex in two Zimbabwean cities: results of a non-randomised study. BMJ Global Health. 2021;6(4):e003892.

175. Chiyaka T, Mushati P, Hensen B, Chabata S, Hargreaves JR, Floyd S, et al. Reaching young women who sell sex: Methods and results of social mapping to describe and identify young women for DREAMS impact evaluation in Zimbabwe. PLoS One. 2018;13(3):e0194301.

176. Hensen B, Chabata ST, Floyd S, Chiyaka T, Mushati P, Busza J, et al. HIV risk among young women who sell sex by whether they identify as sex workers: analysis of respondent-driven sampling surveys, Zimbabwe, 2017. J Int AIDS Soc. 2019;22(12):e25410.

177. Chabata ST, Hensen B, Chiyaka T, Mushati P, Busza J, Floyd S, et al. Condom use among young women who sell sex in Zimbabwe: a prevention cascade analysis to identify gaps in HIV prevention programming. J Int AIDS Soc. 2020;23 Suppl 3(Suppl 3):e25512.

178. Mayhew SH, Hopkins J, Warren CE. Building integrated health systems: lessons from HIV, sexual and reproductive health integration. Health policy and planning. 2017;32(suppl_4):iv1-iv5.

179. PEPFAR. DREAMS FACT SHEET: Zimbabwe (FY2016-2021). Washington, DC: U.S. Department of State; 2020.

180. UNDP. IC End-Term Evaluation for the Global Fund Supported Adolescent Girls and Young Women (AGYW) Program 2018-2020 New York: UNDP; 2021 [Available from: https://jobs.undp.org/cj_view_job.cfm?cur_job_id=99742.

181. Care MoHaC. *Zimbabwe National Adolescent Fertility Study*. In: Dr. Naomi N. Wekwete PSRaMG, (Consultants) Z, editors. Technical Report. Harare: MoHCC2016.

182. Chimbindi N, Birdthistle I, Floyd S, Harling G, Mthiyane N, Zuma T, et al. Directed and target focused multi-sectoral adolescent HIV prevention: insights from implementation of the 'DREAMS Partnership'in rural South Africa. Journal of the International AIDS Society. 2020;23:e25575.

183. Lanyon C, Seeley J, Namukwaya S, Musiime V, Paparini S, Nakyambadde H, et al. "Because we all have to grow up": supporting adolescents in Uganda to develop core competencies to transition towards managing their HIV more independently. Journal of the International AIDS Society. 2020;23 Suppl 5(Suppl 5):e25552-e.

184. Archary M, Pettifor AE, Toska E. Adolescents and young people at the centre: global perspectives and approaches to transform HIV testing, treatment and care. J Int AIDS Soc. 2020;23 Suppl 5(Suppl 5):e25581.

185. Denno DM, Hoopes AJ, Chandra-Mouli V. Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. J Adolesc Health. 2015;56(1 Suppl):S22-41.

186. Chandra-Mouli V, McCarraher DR, Phillips SJ, Williamson NE, Hainsworth G. Contraception for adolescents in low and middle income countries: needs, barriers, and access. 2014;11(1):1.

187. Swartz A, Colvin C, Harrison A. The problem or the solution? Early fertility and parenthood in the transition to adulthood in Khayelitsha, South Africa. Reproductive health matters. 2018;26(54):145-54.

188. Upton RL. 'Infertility Makes You Invisible': Gender, Health and the Negotiation of Fertility in Northern Botswana. Journal of Southern African Studies. 2001;27(2):349-62.

189. Schuler SR, Rottach E, Mukiri P. Gender norms and family planning decision-making in Tanzania: a qualitative study. J Public Health Afr. 2011;2(2):e25.

190. Aubel J, Chibanda D. The neglect of culture in global health research and practice. BMJ Global Health. 2022;7(9):e009914.

191. Nsamenang AB. Culture and human development. International Journal of Psychology. 2008;43(2):73-7.

192. SenGupta S, Hopson R, Thompson-Robinson M. Cultural competence in evaluation: An overview. New directions for evaluation. 2004;2004(102):5-19.

193. Newcomer KE, Hatry HP, Wholey JS. Culturally responsive evaluation. Handbook of practical program evaluation. 2015:281.

194. Botcheva L, Shih J, Huffman LC. Emphasizing cultural competence in evaluation: A process-oriented approach. American Journal of Evaluation. 2009;30(2):176-88.

195. Thomas VG, Parsons BA. Culturally responsive evaluation meets systems-oriented evaluation. American Journal of Evaluation. 2017;38(1):7-28.

196. Moore G, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: UK Medical Research Council Guidance. United Kingdom,: UK Medical Research Council; 2015.

197. Moore G, Campbell M, Copeland L, Craig P, Movsisyan A, Hoddinott P, et al. Adapting interventions to new contexts-the ADAPT guidance. BMJ (Clinical research ed). 2021;374:n1679-n.

Chapter 3 : Methodology

Methodology is the pathway through which new information is gathered, and data analysed (1, 2). This is a thesis by publication. The details of the participant samples, research questions explored, data collection methods and processes are elaborated in individual manuscript chapters. This chapter aims to provide the underlying intellectual rationale of my methodological decisions and elaborate on components that were not described in detail in each manuscript due to word limit constraints.

A key objective of this chapter is to explain how my data were collected and analysed, and to reflect on my positionality doing this as both a PhD researcher, and a team member of the broader CHIEDZA process evaluation team. The CHIEDZA trial had a process evaluation component, and nested within this broader process evaluation, my PhD examined in detail the delivery of the family planning intervention within CHIEDZA.

In this chapter, I adopt a reflexive lens and consider what shaped my positioning in this research study, including within my analysis, and how this was influenced by the CHIEDZA research team and research context, including stakeholders less directly involved in the study itself. I seek to provide ‘reflexivity in action’ (3) by interweaving my methodological explanations with reflections on my positionality. I will reflect on the negotiations and complexities of the different positions I occupied doing this research in the sections across this chapter.

3.1 Study design and research approach

This PhD was a process evaluation of the family planning intervention for young women (16-24 years old), accessing CHIEDZA services in Harare, Bulawayo, and Mashonaland East. The process evaluation is an exploratory analyses of the interactions amongst trial processes and effects on primary and secondary outcomes, as outlined in Chapter 1, Section 1.5.1.

3.1.1 Process evaluations of complex interventions

Process evaluations have now been deemed an integral part in the design, delivery and evaluation of complex interventions, by researchers, programmers and policy makers alike (4). Process evaluations provide in depth understanding of intervention processes: what is working, when why and how? Outcome evaluations alone are unable to answer these nuanced questions (5, 6). This detailed understanding can better inform policy and practise to design and implement interventions and strategies that have a likelihood of succeeding.

However, the practical execution of process evaluations remains a challenge because methodological instruction on how to do this is sparse (7). There are some influential frameworks that have indicated areas of focus when conducting process evaluations of complex interventions (Table 3.1). In Chapter 1, section 1.3.1, brief descriptions of the frameworks presented in Table 3.1 were provided. The UK MRC guidance on process evaluations provides recommendations for designing and delivering process evaluations that assess implementation factors, illuminate mechanisms of change and identify contextual factors that influence

outcomes (8). For assessing implementation, the guidance suggests examining fidelity and quality, components that are also the focal points of 'implementation fidelity' as a framework utilised by Mohanan and colleagues (9). Steckler and Linnan's framework has domains that are more quantitatively assessed, and instead of implementation as the core domain, this framework examines 'fidelity' as the domain (10). On the other hand, the RE-AIM framework does not divide implementation into different domains, but rather defines implementation in a manner that includes both the fidelity and quality of the intervention. Other domains like access, adaptation, feasibility, scalability, and transferability are introduced as stand-alone domains, outside of traditional frameworks. This PhD uses the MRC guidance, reinforced by other domains, including those introduced in the literature as stand-alone process evaluation domains that are not part of a holistic framework.

While many of these frameworks use the same domains, how these are defined, implemented, and assessed often varies (11, 12). In addition, some domains in process evaluation frameworks are also defined and used within implementation science frameworks, creating overlap between trial and implementation science studies (13). The variation in the definitions of domains within these frameworks in part reflects the complexity of process evaluations, as well as the relative novelty of methodological guidance for conducting them (7). For this study, deciding on the most appropriate framework and domains (Chapter 1, section 1.5) was based on the type of intervention being examined, the components considered to be critical (see logic model Figure 1, Chapter 4), as well as the time and resources available to conduct the study.

Table 3-1: Process evaluation frameworks, their domains and definition of these domains

Framework	Components/ Domains	Definition
UK MRC Guidance (14)	Mechanisms of Impact	Examines how participants respond and engage with the intervention, and how this leads to observed changes
	Context	Examines health systems, communities, and individual level cultures, into which the intervention is introduced and embedded, and how these cultures may interact with or influence the function or delivery of an intervention
RE-AIM (15)	Implementation	Describes and examines how, why, when and what intervention is delivered
	Sustainability/ maintenance	The extent to which an intervention can be sustained over time
	Reach	Whether the intended audience encounters the intervention, how and to what extent
	Adoption	The absolute number, proportion, and representativeness of settings, and intervention implementors who are willing to initiate the intervention
	Efficacy/ effectiveness	The impact of the intervention. How, why, and for whom did the intervention work. The success rate if intervention is implemented per guidelines/protocol defined as positive outcomes or negative outcomes
Implementation fidelity (9)	Quality	Safe, effective, patient-centred, timely, efficient, and equitable way the provider delivers the service; also, the provider's achievement of agreed standards
Steckler & Linnan (10)	Fidelity/ adherence	The consistency of what is implemented with the planned/intended intervention
	Reach	The extent to which a target audience encounters the intervention
	Dose/exposure	Dose delivered: how much of the intervention was delivered

	Dose received: the extent to which the intended audience accepts or engages with the intervention components
Adaptation	Alterations to the intervention to achieve contextual fit
Feasibility	How doable an intervention is.
Transferability	The degree to which an intervention (or its components) can be replicated to other contexts or settings as well as generalisable knowledge on how to implement complex interventions
Scalability	Refers to the *potential* of an intervention to be effectively scaled up. This can mean the physical spread of activities, structures, or materials (quantitative) or the spread of practises, behaviours, and norms (qualitative)
Access (16)	Refers to the opportunity to identify health care needs, to seek healthcare services. To reach, obtain, or use health care services, and to have these health needs fulfilled. This includes availability of appropriate commodities, infrastructure, health systems and participant knowledge, attitudes, competence, acceptability, and affordability

Assessing implementation has been cross-cutting among some of the significant frameworks that have been established for process evaluations, even when the definitions have been separate. However, only the MRC guidance precisely considers context as a domain to assess during process evaluations, which I believe to be central to improving intervention design and delivery.

3.1.1.1 Implementation within Context

Section 3.1.1 of this chapter showed how diverse meaning can be given to implementation, depending on the frameworks being used, or the intervention being delivered. It also revealed how the significant frameworks for process

evaluations have not been explicit about assessing or centering context during process evaluations. In my research study, the interactions between context and implementation are pertinent focal points and Chapters 4 and 6 particularly will demonstrate this.

Context is often used to refer to the inner and outer settings in which implementation of an intervention takes place (17). In implementation science, context is often noted as the unique factors that surround implementation (11). While there are diverse lenses through which context is viewed, used, and defined, it can refer to both the broad circumstances surrounding an intervention, for example, a national policy or guideline on family planning for young people; as well as the specific setting in which an intervention is happening. An example of the latter is the set-up of a youth centre in the community where CHIEDZA was being implemented. The two are not mutually exclusive, as context spans across the range of levels of influence that shape the delivery of an intervention.

Historically, public health interventions (focusing on prevention, or health promotion and not necessarily disease treatment or illness) have viewed interventions as fixed entities (package of services) imposed onto a community, where both are considered static. Limited attention has been paid to the evolving properties of the context in which these components would be embedded (18). In the case of CHIEDZA, the communities in which the intervention was embedded are complex socio-ecological systems (context) consisting of the activities in the communities and the social networks among people in them. The

intervention, social networks and activities change over time, and are shaped by time and events (18). Process evaluations can assist in understanding these dynamics, so that, depending on the program theory, there is better clarity on how the intervention was delivered and received. My research study emphasises the need to consider and examine how the intervention and its context evolve and influence each other.

3.1.1.2 Process evaluations of SRH interventions

Of relevance to this PhD is the ways in which process evaluations have been used to assess SRH interventions for young people. Process evaluation studies of HIV and/or SRH interventions specifically for AYP have been conducted before (19-31). Some of these process evaluation studies showed how challenging it is to report on and conduct the process evaluation (19, 29). Many of the HIV or SRH interventions being evaluated were school-based programs (20, 25), radio/digital programmes (19, 29), community-based (21-25, 30, 31), and others were a combination of school, health facility and/or community (26-28). Of the studies presented here, surveys, independently or as part of a mixed methods design, were a common collection method (20-22, 24, 25, 29, 30), while others used quantitative process/routine data (23, 31). Many of these interventions being evaluated are not service delivery interventions, but either training or information provision with referrals for services as appropriate.

None of these interventions were similar to the one evaluated in this PhD, namely a youth-friendly community-based family planning delivery intervention integrated with a broader HIV/SRH intervention. Furthermore, there is growing

consensus that what youth-friendliness means for a heterogenous youth population is inadequately understood (32, 33). A process evaluation where context as a domain is salient to the study may assist in illuminating the things that work, and how, for the provision, delivery, and reception of family planning interventions for the diverse young people in Zimbabwe.

The process evaluation study I conducted was based on the MRC's guidance on process evaluations framework (4). As already established in this section, this framework operates as guidance to provide practical instructions on how to conduct process evaluations in real life settings (4). Similar to Moore et al. and colleagues, methodologically, my research study neither sought to assign a theoretical standing between the fields of process evaluations versus implementation science for example, nor provide the ultimate definitions for these concepts. Rather, I utilised the guiding principles from the MRC's process evaluation framework, customised their definitions for the family planning intervention in CHIEDZA, and then adopted these framework components as the overarching objectives for my research study (Chapter 1, section 1.5.1).

In this PhD, the family planning element in CHIEDZA is viewed as an intervention, that is a component of a larger complex intervention (CHIEDZA), were the intervention theory is illustrated by a logic model (see Chapter 4: Figure 1 for the logic model). To distinguish between intervention vs model vs component, these terms have been operationalised as follows:

- Family planning ***intervention*** refers to the set of family planning activities undertaken with the intention of improving access to, engagement with, uptake of and use of family planning services and methods within CHIEDZA
- ***Component***- refers to the notion that the family planning intervention is part of (a component) a larger complex (multi-component) HIV and SRH intervention known as CHIEDZA
- Family planning service delivery ***model***- refers to the strategy for the use of an intervention- it's the logic model that was created to show the flow as intended, from inputs, activities, outputs, outcomes, and possible impact. It underpins the program theory of the family planning intervention.

My research study was underpinned by a family planning intervention theory. In general, theory is "a set of logically related propositions that aim to explain and predict a fairly general set of phenomena" (34) pg. 565. Operating on a continuum, a theory is a step forward from conceptual frameworks that "identify a set of variables and the relations among them that are presumed to account for a set of phenomena (34). The rational set of relationships that constitute a theory involves specific assumptions to enable a researcher to define a phenomenon, give explanation for its processes and predict its outcomes. In this PhD, the family planning intervention's theory was that community-based family planning services, integrated with HIV and other SRH services, and provided by youth-friendly, family planning trained providers, would improve family planning access and uptake by young women.

There is a supposed lack of process evaluations that identify a theory for the intervention, which they can then empirically test. One systematic review by McIntyre et al, sought to identify process evaluations conducted alongside RCTs of implementation-type interventions' utilisation of theories (35). The review revealed that most process evaluations do not use enough theory. Of the 123 process evaluation articles (both primary research and protocol papers), 91 articles (73%) either only cited, or did not even cite theories used. When theory was used, it was usually applied theory (18 of the remaining 32 articles) and none of the process evaluations sought to create or build theory (35). On the other hand, Grant and colleagues conducted a literature review (6) whose conclusions were similar to Moore and colleagues' framing of process evaluations (8), namely that there is no gold standard for the design and conduct of process evaluations. Unlike the systematic review, which called for more quality use of explicit theories, the literature review, and others (8, 36) have noted that process evaluations do not always need to have explicit theories. Rather, there is utility in researchers' implicit and explicit program theories for how the intervention is expected to work (6).

My research study was similar to Grant & colleagues' approach to process evaluations where I developed a logic model (see Chapter 4: Figure 1) that underpinned the program theory of how the family planning intervention in CHIEDZA was anticipated to work. Specific research activities then sought to assess relationships in this model, including how the relationships and interactions would affect anticipated outcomes.

3.1.2 Qualitative Methods Approach

To enable this process evaluation to contribute to identifying explanations for what works and does not work for family planning interventions for young people, a qualitative this enabled me to provide a more comprehensive understanding of the family planning outcomes in CHIEDZA, and the pathways that resulted in them.

The quantitative data in this study were the routine services uptake monitoring data on family planning, that was being collected as part of the CHIEDZA intervention. It is presented in this PhD as parts of the background sections to understand the intervention, as well as introductions to some of the findings chapters (see Chapter 7).

My PhD was a qualitative mixed method design (37) process evaluation (Table 3.2). A qualitative mixed design is one where different kinds of qualitative methods are deployed to address different research questions or the same research questions with additional rigour through triangulation. The qualitative data, as presented in Table 3.2 were iteratively analysed, distinctly from each other but with triangulation across methods (observations and interviews for example) to inform interpretation and subsequent data collection phases.

Table 3-2: Phases of data collection, interview participants and areas of exploration

Phases	Purposive Sample	Interview Participants	Data collection method	Area of exploration

1.Apr ‘20	Each province and type of provider selected	16 health providers (10 females; 6males)	Phone interviews	Family planning issues that young people talk to/ask the providers about
2.May-Jun ‘20	All youth mobilisers working in CHIEDZA communities	23 CHIEDZA youth mobilisers (also clients) 3 youth clients (15 female; 11 males)	Phone and in person interviews	What youth think about family planning, their experiences with family planning, who can and should use family planning
3.Jul-Aug ‘20	Each province and type of provider selected	15 health providers (10 females; 5 males) 7 repeat interviews	Phone and in person interviews	Family planning issues that young people talk to/ask the providers about; any challenging family planning issues/ concerns that young people have raised when seeking family planning services
4.Mar-May ‘21	Variation by contraceptive type used; one cluster per province	15 female youth clients	Narrative-style interviews Topic guide interviews	Discussions about fertility, sex, pregnancy, and contraceptive (non) use. Experiences of family planning services at CHIEDZA
5.Mar-May ’21	Female and living with HIV	12 females living with HIV	Topic guide interviews	Family planning experiences (in and out of CHIEDZA) and how their HIV positive status affected these experiences
6.Oct-Nov ‘21	Each province and type of provider selected	15 health providers	In-person interviews	Acceptability of the family planning service delivery model: implementation experiences of CHIEDZA health providers
7. ‘20-21	18 non-participant observation events at CHIEDZA community centres			How is CHIEDZA implemented on the ground: fidelity, adaptation, quality, acceptability
8. ‘19-‘22	Meeting minutes from team meetings between providers and research team			

My qualitative data were collected over a space of 20 months, each method used concurrently but separate from each other. For example, interviews and observations could happen during the same data collection phase (concurrently) but separate from each other. The purpose of this approach was to:

1) Triangulate different methods as an avenue for validation (38)
2) Gain a fuller understanding of the findings and potentially clarify, refine, and explain the findings across different methods, and
3) where feasible, have the results of one method inform the other (39).

These purposes aligned with my research agenda. For example, the discussion chapter of this PhD (Chapter 8) synthesises findings from phases 1-8, to not only triangulate the different qualitative methods and interpretation, but to also provide plausible explanations for some of the family planning outcomes provided in the intervention descriptions (Chapter 1), based on understanding from the qualitative findings. While descriptive analysis of family planning outcomes is presented in sections of this PhD, as Table 3.2 shows, the qualitative methodology was the dominant/primary method of inquiry.

The qualitative research design component guided this process evaluation as the key areas of enquiry in this research study (see Chapter 1, section 1.5.1) were best explored through perceptions, experiences and beliefs of providers and clients of CHIEDZA. Qualitative analysis would then curate knowledge from these experiences, perceptions and beliefs through the summarization and interpretation of empirical data (2, 40). This is prevalent in the findings chapters four through seven where the dominant and preferred reporting affirms this prioritisation.

3.1.2 Theoretical Approaches and Epistemological Position

My epistemological position was broadly informed by critical realism. The *critical tradition* (2) approach best suited my position as a researcher, in relation to the parameters within which CHIEDZA functioned. Critical tradition interweaves epistemology and critique by disregarding positivism (the notion of 'pure knowledge') and locates social phenomena within its historical context and social structures. Then it seeks to analyse these structures and contexts, to unpack the status of what is known, and the processes by with that knowledge becomes accepted (2). I have been involved with the CHIEDZA intervention from the onset of protocol development and took on many roles and responsibilities within this project before conducting the process evaluation research full-time. One of the early roles that I had within CHIEDZA was being a member of the recruitment committee that hired and trained the health providers who implemented CHIEDZA. Initially these health providers viewed me as a part of CHIEDZA management/coordinator, and this had implications on my eventual transition to doing the process evaluation.

When I joined the CHIEDZA study, it was initially intended that I would be the Study Coordinator for Mashonaland East Province, while being also responsible for the process evaluation of the study. Due to the focus being on implementation activities in the lead up to commencing the trial, the providers viewed me as a coordinator and part of the study management team, and my process evaluation role was less visible and less pertinent for them. However, while still in the pilot phase of CHIEDZA (March 2019), it became clear that it was not feasible nor methodologically appropriate for me to have both a coordinator and process

evaluation role. For the providers (as mentioned in section 3.8 of this chapter), it took time and effort to establish my relationship with them as a process evaluator alone, without being a coordinator. While I could not adopt a neutral position due to these shifts, having as clearly a demarcated position as feasible within the implementing and operational team, was critical to the rigor and quality of the process evaluation.

Secondly, access to family planning for young women as a research issue is beyond an intellectual endeavour for me, it is a deep moral passion and need for which I am using my PhD research to advocate (discussed further in section 3.8).

These two examples are illustrative of the critical discourse which I needed to engage with during data collection, interpretation, analysis, and synthesis. In critical traditions, 'scientific research' is not 'value-free', and is instead also a social process, conducted by a human (me) within particular social contexts (1, 2). This research process was imbued with my self-acknowledged values, including commitment to advocacy for family planning; as well as social processes over which I had very limited control or awareness of, for example, the coordinator and process evaluation roles that I took on during CHIEDZA where others (providers in this case) projected their own meanings to these roles.

Consequently, I practised epistemological reflexivity, reflecting on diverse theoretical assumptions and perspectives as the research progressed (41, 42). The family planning intervention was within a pragmatic trial setting where natural environments were absorbed and not always controlled for in the trial

setting. Therefore, my research journey and analysis interrogated both how certain mechanisms (joint family planning service delivery model with another organization) offered in specific contexts, affected family planning service experiences and perceptions, while also maintaining an iterative, reflexive approach to emerging data and using critical theory to surface meaning from that data. With epistemological reflexivity, I was not aiming to align myself with just one position, as the intervention, and research questions being pursued could have been constrained by such an allegiance. Rather, combining the merits of critical theoretical approaches offered better understanding and explanation of the data and the findings being generated (43).

I also placed significant effort in navigating relationships within this research journey. On one hand, I was aware of the pre-existing relationships I had with Zimbabwe, family planning and the CHIEDZA intervention. I kept notes about my prior experiences, attitudes, and beliefs, including how that shaped the data collection and analysis process. On the other hand, I formed relationships with the CHIEDZA providers, and shared experiences and reflections with youth participants. The nature of these researcher-participant relationships also influenced collection and understanding of the data.

3.2 Study setting and context

Zimbabwe is a lower income country with a population of approximately 15 million people. The population's mean age is 18.7 years; a gross national income per capita of USD 1140 and a health budget that is 10% of the GDP; and a per

capita health expenditure of USD 21 as of 2020 (44-46). Like many low-income countries, Zimbabwe faces health system constraints that have been discussed in Chapters 1 and 2, which provided the background and literature based situational analysis of Zimbabwe's challenges. Significant amounts of doctors and nurses/midwives leave the country for other opportunities each year (47, 48). The maternal mortality rate (MMR), while it has improved from 614 deaths per 100,000 live births in 2014 to 462 in 2019 (46), still falls short of the SDGs. The government has also not been able to meet its financial commitment to increase the family planning budget from 1.7% to 3% of the national budget by 2020; and all family planning programs and commodities continue to be supported by development partners (49). This is not sustainable. These are some of the reasons that the CHIEDZA trial was conducted.

This study was conducted in the intervention communities in Harare, Bulawayo, and Mashonaland East. As already mentioned in Chapter 1 (section 1.5), Shona (Harare and Mashonaland East), and Ndebele (Bulawayo) cultures are different in ways that could affect health seeking decisions and behaviours. This diversity is critical to be able to inform transferability and/or scalability that is context-fluent if the family planning intervention was found to be effective.

3.2.1 External and Internal Events

In August 2019, a national shortage of family planning commodities occurred in Zimbabwe. This resulted in stock outs and diminished supply that lasted for almost a year. There was also a nation-wide doctor's strike in August- September

of the same year with some junior doctors only starting to go back to work in December 2019.

On March 28th, 2020, the government of Zimbabwe declared the COVID-19 pandemic a state of emergency and effected a national level 5 lock down (detailed information on this is in Chapter 6) which stopped all business and social activities and services in the country except for those deemed essential. At the time of writing this thesis, the COVID-19 pandemic is still on-going, but somewhat under control.

In January 2021, a sub-study investigating the implementation and acceptability of a digital intervention to enhance contraception and sexual health service integration among young people in Zimbabwe (50) began in CHIEDZA. The intervention was a set of SMS messages (90 messages for young men and 94 for young women) from a prior behavioural intervention. The content was adapted for the Zimbabwean context after interviews and focus groups with young people in Zimbabwe to ensure contextual fit (50). The SMS messages were sent to clients who after attending CHIEDZA had agreed to receive them over a three-month period. One to three messages were sent per day or every other day. The messages covered a broad range of topics including family planning and contraception, HIV prevention, treatment, and care, STIs, condom use, and navigating relationships and friendships with peers.

The primary outcome of this SMS intervention was to increase use of contraception, so it is possible that it influenced contraceptive uptake in

CHIEDZA. This intervention could possibly be contributing to the quantitative family planning outcomes, and it was not directly a part of investigation in this thesis' research body of work. The preliminary results are showing that the SMS intervention had no effect on behaviour changes like uptake of the contraceptive methods. However, it broadly encouraged engagement with the CHIEDZA intervention, triggered SRH conversations between partners and peers, and young men reported that they appreciated the information on correct use of condoms. The findings for this study will be published separately and are not a part of this PhD.

These events influenced the family planning intervention, and the depths of this influence will be discussed in Chapters 4 and 5 (national shortage and covid-19), as well as in the discussion Chapter 8.

3.3 Participation in the study

Two groups of participants participated in this study: CHIEDZA providers who were implementing the family planning intervention, and young people who were accessing CHIEDZA services (CHIEDZA clients) (Table 3.2). Both groups voluntarily agreed to be interviewed and/or observed for this study.

The CHIEDZA providers were staff who were recruited, hired, and trained to provide CHIEDZA services in the trial implementation. Each province had a team consisting of two nurses, four CHWs, two youth workers and one counsellor. Bulawayo and Mashonaland East had a very low turnover; only 1-2 providers in

each province left during the 2.5 years of implementing CHIEDZA. The Harare team, on the other hand, had a high turnover in the beginning of the trial. Four of the then eight-member team left CHIEDZA in the first six to eight months of service delivery; these team members had to be replaced with new hires. In all three provinces, all the team leaders (who were nurses), had worked on other child, adolescent, and/or youth health projects at BRTI before.

Providers were purposefully invited to participate in this study because they had unique insights of the family planning intervention both from the supply side of providing the services, and the demand side through interacting with CHIEDZA clients, public sector clinics and the community stakeholders where CHIEDZA was being implemented. Generally, the inclusion criteria for study participation were being a CHIEDZA provider, with knowledge and insights on the CHIEDZA intervention. For each provider data collection phase (Table 3.2, phases 1, 3 and 6), not all the providers participated. Rather, a purposive sample was selected and invited to participate representing each CHIEDZA province, and provider type. The details of the purposive samples are described in the methodology sections of the manuscripts in the upcoming chapters 4, 5, 6 and 7.

CHIEDZA clients were also purposefully invited to participate in the study as recipients of CHIEDZA and the family planning intervention. Their eligibility depended on the focus of each data collection phase (Table 3.2). In phase 2 for example, CHIEDZA youth mobilisers (both male and female mobilisers) were selected and invited to participate because of their unique position as both clients accessing CHIEDZA, and mobilisers interfacing with the community and their

peers. Youth mobilisers where young people from the CHIEDZA communities who were employed by CHIEDZA to generate demand through peer-to-peer mobilisation as well as community sensitisation. The details of the CHIEDZA clients' purposive samples are described in depth in the methodology sections of the manuscripts in the upcoming chapter 6.

For qualitative research, people and places must be available and accessible as sampling units. Who was invited to participate in any data collection phase was shaped by specific considerations: 1) their relevance to answering the particular research question; 2) their engagement in relevant events which were being explored within a specific research phase; and 3) their ability to speak to the specific community context that was being examined within the research phase (2). In phase 2 for example, all 23 youth mobilisers working in CHIEDZA were invited to participate and voluntarily agreed. However, their availability differed as some could participate in person, and others were only available to engage in interviews over the phone. They then all participated, but through slightly adjusted methods to accommodate their availability.

For the data collection phases (Table 3.2) involving providers (phase 1,3 and 6), time and resource constraints made it impossible to interview all 36 providers working across the three CHIEDZA provinces. Rather, the samples were selected to represent each provider type; sex, and in some cases repeat provider interviews. With purposive sampling, the researcher selects who to invite to participate, informed by what the researcher already knows about the either the

participants themselves or the research area being explored to be able to gather rich data (51).

The sample sizes across the different data collection stages ranged from 12-26 participants. Unlike quantitative research testing a hypothesis, qualitative research is about inquiries and discovery (52), such that the small sample size is adequate as size does not define the quality of the data (2, 51). Reflecting the three criteria outlined in the above paragraph, the size of the sample reflected both the inclusion of appropriate individuals and a feasible number of people required to answer the research question.

3.3.1 Participant demographics

The team of CHIEDZA providers in each province was small, with some provider types only having 1-2 individuals, such that if all their demographic information were presented, they could be easily identifiable. This would violate their privacy and confidentiality. To avoid this deductive disclosure the demographic information of all the providers who participated in this study is presented very sparsely below (Table 3.3).

Participant demographics for CHIEDZA clients in data collection phases four and five are detailed in the manuscript in chapter 7. Demographic information for the 23 CHIEDZA youth mobilisers is presented below (Table 3.4). Although they were also clients, they are described as mobilisers not clients in this thesis. For the most part, each community cluster had two mobilisers, one female and one male. Therefore, their demographic information is presented in a manner that

maintains their anonymity. At the time of data collection, one cluster in Bulawayo did not yet have a replacement male mobiliser as the prior one had left.

Table 3-3: Demographic information of all the providers who participated in this study

	Females (N=13)	Males (N=9)
Province		
Harare	4	3
Bulawayo	6	3
Mashonaland East	3	3
Age		
21-30	6	4
31-40	5	4
41-50	1	0
51-60	1	1
Marital Status		
Single	7	6
Married	5	3
Widowed	1	0

Table 3-4: Demographic information of phase two CHIEDZA mobilisers participants in this study

	Females (N=12)	Males (N=11)
Province		
Harare	4	4
Bulawayo	4	3
Mashonaland East	4	4
Age		
16-20	5	4
21-25	7	7
Marital Status		
Single	9	11
Married	2	0
Divorced	1	0
Residential Status		
With parents	9	0
With partner	2	8
On my own	1	3
Highest education level		

Secondary	10	9
University	2	2
Sexually Active?		
Yes	9	7
No	3	4

Only in phase 2 (youth mobilisers) where male participants included, as I sought to get a broader understanding of family planning experiences, and perceptions among young people. From findings in this phase, and the considerations made in the above paragraph, the decision to focus on female participants and their experiences, beliefs and perceptions of family planning was made.

3.4 Qualitative Data Collection

A qualitative methodology was chosen due to the exploratory focus of this PhD enquiry, which aims to examine the influences surrounding the implementation and beneficiary experiences of the family planning intervention and to help understand the broader context shaping their experiences of the intervention (53, 54). Process data were collected at multiple time points (55) (Table 3.2). The methods used within this PhD included individual interviews, participant and non-participant observations, field notes and meeting minutes (Table 3.2). Throughout the evaluation, the use of methods remained flexible and dynamic, responding, and adapting to emerging trial and process findings.

I began this study with exploratory key research questions of inquiry. These have been laid out in the Background Chapter 1 section 1.5.1 However, as Creswell (2007: page 120) has noted, qualitative questions evolve (56). I was conducting a process evaluation that due to the adaptative lens of the family planning

intervention would also need to evolve. Such that the entry questions in this PhD were exploratory and broad. As the trial and qualitative data collection progressed, research questions sharpened and became both more focused and responsive to the changing intervention and to pursue emerging lines of analysis.

3.4.1 Semi-structured interviews

Interviews were my primary data collection method (57). Initially, my PhD intended to involve mystery clients (58) to assess quality of family planning service delivery. The plan for the mystery clients had been to recruit young women who were already accessing oral contraceptives or depo injectables from CHIEDZA. The idea was to have a participatory training workshop about what these recruits consider to be quality family planning care, and how that intersected or not with national guidelines on quality care. This workshop would have occurred before their next family planning refill visits (~three months for oral contraceptives and Depo), where this next visit would be utilised as a mystery client visit. I'd defined the mystery client visit as one where the young woman goes to access their routine family planning care at CHIEDZA but pays particular attention to quality factors as we'd have agreed in the participatory workshop. They would write, in a provided diary, about their experiences relating to these factors on the same day as they received services; and then have an interview with me or a research assistant about the mystery client visit within 72 hours of the visit. The diary notes, participatory workshop, and interview transcripts would have been the data sources from the mystery client visits.

The intention to use mystery clients did not eventuate as it did not receive ethical approval. When I submitted an ethics amendment for the CHIEDZA trial, to include COVID-19 related amendments, research ethics bodies also then requested the removal of mystery clients from my methodology. The rationale for the removal was that the mystery clients process required constant movement to and from CHIEDZA, which would encourage mobility and group gathering during a time when COVID-19 related lockdown measures did not allow for such. Given these unforeseen restrictions, my choice of methods shifted to focus on interviews that could be conducted over the telephone during restrictive lockdown conditions, and in person when these emergency measures eased (Table 3.2).

I had also intended to incorporate focus group discussions (FGD) into my portfolio of data collection methods to gain a broader understanding and experiences of family planning from clients. The FGD plans had to change given that the COVID-19 pandemic occurred immediately after my upgrading when I was about to commence data collection. Group gatherings, including for research purposes were not allowed as part of COVID-19 preventative measures. Therefore, I did not conduct FGDs, and conducted only individual interviews.

As described earlier in this chapter, my relationship with the CHIEDZA providers, particularly those from Harare, shifted during my PhD journey. I was part of the team that hired and trained these providers, such that when they commenced their jobs, they associated me with being on the project coordination/management team. When I informed them that I was doing the

process evaluation for CHIEDZA and family planning, it took some time for them to warm up to the idea of sharing information and evidence with me as part of the process data versus as their 'manager'. I put in some effort in shifting this relationship dynamic through visiting the field to engage with them outside of the office setting; and returning with feedback after team meetings. This built rapport, and possibly trust, in the relationship I had with these providers, which contributed to the depth and quality of interviews I would go on to have with them.

I interviewed over 80% of the providers at all data collection phases, except phase 6 (Table 3.2). The rapport we had was evidenced by the ease with which they shared information both during the interviews and beyond, going as far as nicknaming me 'the Process master'. The details of the setting and context of these provider interviews is described in the manuscript chapters 4,6,7 in this thesis. The topic guides are provided as appendices in this thesis. The interview data was collected and collated as the study progressed and contributed to the interpretative process and the next data collection phase.

The approach, and experiences with CHIEDZA clients differed from the one with the CHIEDZA providers. For my interactions with young women, although we were similar in regard to being young, black African women, these similarities did not dilute or reduce often cited (2) concerns about potential hierarchies or the lack of parity in the research-participant relationship. I attended my undergraduate studies in USA and I happen, according to one of the youth participants, to now have an 'accent' that reveals that I am not similar to them.

They could deduce that I had been ‘abroad’ before, which was translated as my having more influence or power than they did. I brought this identified awareness of how I was perceived to be different I actually was into the interviews that I had with young people. Sometimes I could see it in the attentive nature they listened to my questions, which was in contrast to the conversational and interactive nature I wanted the conversations to flow. To mitigate the influence of this perceived ‘distance’ between myself and some of the participants, I had a youthful research assistant support me with interviewing the young people (it was also cost and time effective). The research assistant ended up conducting most of the interviews with the young people (roughly 75% of these interviews). The topic guides used in these interviews are presented as appendices in this document. Additionally, when I did conduct these interviews I would share my own experiences and reflections during the interview as shown in the excerpt below from phase 4 data collection with young women using contraceptives. In this excerpt we were discussing about whether or not the three sexual partners she had knew she had an implant in her upper arm and what they thought about it.

> **I: Hoo, okay. Some men will do that [touch the upper arm looking for implant insertion]** ***…(laughs)*** **And how did you feel about it?**
> R: I just laughed, and he also laughed about it
> **I: Based on what you said earlier, do you think it has anything to do with wanting you to have his children?**
> R: Yes, that’s what he wants and says that I should remove it
> **I: Aah, why does he want you to remove it?**

> R: Don't you know that it's men's routine to always want women to continue giving birth and have their child and maybe move on to the next woman they see passing by
> **I: Oh, yes, I heard that happens in Hopley a lot. I also had a partner once, who was not happy I was on the pill.**
> R: Yes, the moment you get it removed and fall pregnant they will leave you for someone else

Sharing some of my experiences during the interviews, as appropriate, worked to build rapport and in becoming comfortable with each other. These young women could see that despite the high position they saw me being in, there were some contraception issues that we all experienced.

The details of the interview setting and processes with CHIEDZA clients are also detailed in the forthcoming manuscript chapters 5, 6, and 7. Most of the client interviews occurred in person, with only a few interviews with CHIEDZA mobilisers occurring over the phone. Phone interviews were presented as an option because the mobilisers were employees of CHIEDZA who needed to be at work, during the times that we often conducted in-person interviews. Therefore, these mobilisers agreed to be interviewed telephonically, outside of work hours, at a time convenient for them.

As noted earlier, my data collection period was during the COVID-19 pandemic. Therefore, recruitment and interview procedures had to be adapted. For example, clients were recruited on the same day that they were interviewed with help from providers who identified the purposive sample characteristics that I was looking for. This was to minimise the number of times that individuals had

to move around the community, in line with the COVID-19 restrictions in place at the time. This strategy had some disadvantages because even though the clients agreed to participate, they were interviewed after receiving CHIEDZA services which unexpectedly increased their time at the centre. I paid attention to the fact that some clients would be tired, even though they were participating in the interview, and this shaped the approach that I would take in a particular interview.

Adding to that, CHIEDZA was youth and participant-centred in its approach, including the data collection processes. For me, this included allowing the interviews to be led and guided by the youth participant instead of researcher priorities. For example, when tired clients participated, the interview would end when they wanted or needed it to, which sometimes resulted in shorter interviews. As I had already reassured them that the interview would be led by their needs and what they wanted to share, despite the curtailed timing, this often led to high quality interviews as the participants concentrated on contributing what they wanted to in the conversation within the time that they were able to provide.

Another example is the approach that I adopted in some of the Phase 4 interviews (Table 3.2), in which I was keen to use a participant-centred approach to collecting the narratives (59) of young people and took an unstructured approach to conducting the interviews. This served as a form of experimentation, to see which approach was more enabling for young people to share their own priorities and concerns within interviews. In this approach, I went to the

interview with the topic guide as a backup in case the conversation didn't flow. Rather, I had a general idea of the sensitive topics around contraceptive use, fertility, sex, and pregnancy that I wanted to converse with the young people about and I let them tell me as much or as little as they wanted around these issues. To encourage engagement, I would often share my experiences, or what I had heard or seen and have them respond to that information (see excerpt above as an example). Even though the responses provided with both approaches were similar, I found that the narrative style produced more nuanced and self-reflective responses compared to using the topic guide. The narrative style provided shorter interviews, but the responses were detailed self-experiences. With the topic guide, the narratives were longer and young people tended to talk about the experiences of others and less details about their own.

3.4.2 Observations

As part of my research journey, I was interested in the intervention experience from both the implementation and beneficiary side because this experience can be shaped by what occurs when providers and clients engage. Social realities are complex in their range and variability. Many things can be happening at the same time to create diverse layers of meaning, and shift perceptions (18, 60). Therefore, while providers and clients may provide descriptions of the intervention experience during interviews, these descriptions may be according to how they assign meaning to central events and occurrences and miss certain details that they are not paying attention to. Observations can then be used to collect data (61), and are key to understanding the experience of the intervention- both as a data source itself and to inform more nuanced data

collection tools. For example, informing interview guides to prompt more insightful questions and participant reflection. Being able to spend most of my research time deeply involved in the natural setting of the intervention was critical to be able to capture these shifts and possibly meanings.

Non-participant observations involve the researcher watching the intervention scene without engaging or being part of the team. In my study it occurred at CHIEDZA community centres where the intervention was offered from. At a non-participant observation event, I would arrive at the community centre within an hour of service delivery starting and stay all day until about an hour before service delivery ended. With these events, the providers were informed the week prior that I would be doing non-participant observations of how they were delivering the intervention and it was their role to inform clients that there would be a CHIEDZA research member observing implementation events. All observations happened outside of the health booths where the services were offered, such that the health booths remained private and confidential spaces. No written consent was obtained for these observation events. With time, as I enhanced my relationship with the providers, they became more relaxed often sharing their work lives and experiences with me during these observations.

I often stationed myself at various points at the community centres during a non-participant observation event. It was important to me, as much as possible, to maintain an invisible presence and look like I was just a girl typing away at her computer. I wore my CHIEDZA t-shirt, which identified me as part of the CHIEDZA team to ease clients. This did not always support my desire for

invisibility; and challenged the notion that observations as a data collection method can be non-participatory. Almost every time that I stationed myself close to the entrance, I would have potential clients come and ask information about CHIEDZA, and often they were asking whether CHIEDZA was providing certain family planning methods, HIV testing or STI testing. In some moments during my responses to them, conversations with these young people would commence that often gave insight into their daily lives, and contraceptive use. Changing stations from the entrance usually enhanced my invisibility and I was able to observe intently and sometimes close my eyes and listen attentively to events and conversations going on around me.

I had an observation diary where I free-wrote everything on my laptop I was observing and seeing during the event and then I used an observation template to compile the observation data and identify aspects worthy of significance and relevance. My observations diary also served as field notes where I recorded how I felt and reacted to the observations and experiences of being in the field.

In addition to the non-participant observations that I conducted, I was also in a continuous informal observation and interview role. This was due to my position on the process evaluation team based in Zimbabwe, and my PhD in family planning. Specifically, CHIEDZA providers at any given moment would walk into my office to inform me about events that would have happened at CHIEDZA, either about CHIEDZA or about family planning more specifically. The CHIEDZA operations and research offices were in a Harare suburb and the CHIEDZA providers would meet at these offices at the beginning of every workday to

collect their supplies before going to the intervention communities. They would also come to these offices at the end of their workday to drop off supplies, as well as once a week on Fridays. Fridays was the day for meetings and restocking supplies, and providers did not provide services on this day. I worked primarily from the offices, and then went to the intervention communities when collecting data. It was during these moments that we intersected at the office, that the CHIEDZA providers would come in to tell these occurrences and experiences to me and/or the CHIEDZA project manager who I shared an office with. These occurrences provided micro-context details and data that I may never otherwise have been aware of, was I not in this position. For example, at the height of the national shortage of contraceptives period, one of the providers came to inform me at the office that, as CHIEDZA was running low on COC, and PoP, women were willing to get whatever method was available/still in stock. These were commonly recorded in fieldnotes, described in Section 3.4.4.

3.4.3 Meeting minutes

Since the trial's inception, the CHIEDZA providers and the research/management teams convened once every month to discuss the trial. These meetings usually consisted of presentations on routine uptake data of CHIEDZA services, working through any challenges with service delivery, including any data errors that might need to be addressed; as well as discussing any interesting or unexpected client cases that the providers would have come across. The latter allowed the providers to discuss how they could address and support such cases in the future, to be able to provide more client-responsive services. One key objective of these meetings was to have them be a co-creative and collaborative space for the

providers and research/management teams to work through research and/or implementation problems to find solutions, and/or opportunities for adapting the intervention so that they could continuously improve the CHIEDZA intervention. This objective was not always achieved. There were perceived and real professional hierarchies and power dynamics between the implementation team and the research/management teams of CHIEDZA. This sometimes resulted in the providers participating with limited engagement.

I attended most of these meetings. I had both a participant and non-participant observation role. For participant observation (62), I contributed to the meeting mostly by asking for clarification, making process related inquiries or providing process interpretations from data already collected for some of the issues that would come up. For example, there was often concern that the service uptake data presented in these meetings showed that family planning uptake was low, and I would provide qualitative interpretations including the belief in only post-partum contraceptive use and the need to prove and protect fertility (see Chapter 7 findings).

My non-participant role usually consisted of me taking the meeting minutes in detail as they were a data collection tool for real time experiences of not only what was being implemented, but also the work culture and environment in which CHIEDZA was being implemented. An abbreviated version of these meetings was shared with the broader team using the meeting template for the trial. The dual observation role and the outputs from it, were an example of my process evaluation findings contributing to ongoing adaptations of the

interventions. For example, after sharing the prevailing beliefs around fertility and post-partum contraceptive use, youth workers were encouraged to speak about these during the health education sessions; and providers to anticipate addressing this during family planning conversations with clients.

3.4.4 Field notes

Field notes are essential for documenting immediate context, and conversations during the data collection process (63). As a researcher on the process evaluation team, primarily based in Harare Zimbabwe during the 2.5 years of the CHIEDZA intervention, I was able to immerse myself in the data collection through interviews, observations, meeting minutes and field notes. Due to my continued presence, and clearly established role as a member of the process evaluation tool, CHIEDZA providers would often randomly and unprompted inform me in real time, about events or experiences happening in the CHIEDZA communities. This formed their consent for me to incorporate them into my data analysis. They perceived or thought this data/knowledge was relevant for the CHIEDZA process evaluation more broadly, as well as for my understanding of family planning. In this aspect my role as researcher became a unstructured data collection tool (63), and the data became detailed field notes that I would draw on to inform qualitative interview research questions and/or points of inquiry.

Contextual information also became part of my field notes for my PhD. This ranged from notes about broader CHIEDZA intervention conversations that could influence the family planning component; national events associated with family planning; notes from broader stakeholder meetings that may assist in

contextualised interpretation of my study findings, as well as notes and ideas arising from conversations with my supervisors and colleagues.

3.4.5 Qualitative Data Analysis

All interviews were audio recorded conducted in Shona, Ndebele or English according to participant preferences. They were then transcribed in English. Due to time and resource constraints interviews were neither transcribed in their original language or translated from one to the other (except into English). This decision was mitigated by the fact that the transcribers were fluent in both English and the languages of the interviews. I had the support of two research assistants who helped with both data collection and transcribing the interviews. I transcribed some provider interviews in phase 1 of data collection; and the research assistant did the rest. To ensure rigor, I would select a sample of transcripts by the research assistant and listen to the audio files to check for quality and accuracy in the transcripts. This quality-check process would also trigger my analysis, as data summarisation and interpretation would occur during these listening and checking sessions.

As described when outlining my epistemological position in section 3.1.2, critical theory aims to critique the organization of the social world and the space that science occupies in trying to understand the social world, (34, 64) and the generation of knowledge in that world. In this study's case, the interchanges between myself and the family planning intervention, its beneficiaries, providers and management within a social world, shaped more informed knowledge as this knowledge was mediated and therefore dependent on the values of researchers,

participants, stakeholders, communities (34, 65). In my analytical processes, critical realism was complemented by post-positivism which assumes that an imperfect reality exists that can be shifted and objectivity is not ultimate (34, 65). The two reinforced each other due to their focus on how context influences and shapes knowledge, which is assigned meaning by participants in a social world.

My analytical processes were guided by a thematic analysis approach to make sense of the qualitative data in this study (66, 67). This study's research questions were largely explorative in nature- seeking to examine, investigate and understand occurrences and experiences. Therefore thematic analysis was the appropriate approach to support this exploration (68). The detailed analytical processes are described in each of the manuscript chapters presented in this study.

More specifically, I utilised a reflexive thematic analysis approach (69) to engage with the data that I was collecting. I chose this approach because it was conceptually sound, pragmatic and aligned to the data collection and analysis strategy I was employing for the study. Reflective thematic analysis, like qualitative content analysis, has been known to work for research situations that are atheoretical or theoretically flexible (38, 69). I was collecting my data and analysing it in real time, through an iterative, emergent, and reflective process. As described through the data collection processes and experiences in section 3.4, context was pertinent in my reflexive thematic approach, including the relationships within context, between myself, the intervention, participants, stakeholders, and the community. Context and relationships are non-static and

can shift or change. I transferred the pertinence of context and relationships that I had in the data collection process, to my analytical approach as well. Therefore, I needed an analytical approach that was theoretically flexible as I had several implicit and explicit theories at play in my research design, procedures, questions, and my epistemological assumptions.

The reflexive thematic approach was also familiar to the way I work. It also supported the research strategy that I had co-founded with my supervisors, which was that I would analyse, summarise, and interpret data as it was being collected, (and not at the end). This strategy is similar to a reflexive thematic approach which involves considerable analytical and interpretive work from the researcher during theme development. Coding is recognised as being subjective, occurring in organic and unstructured ways as I gain deeper and more understanding of the data that is being analysed. With this approach, the researcher is not separate from the themes but rather, the themes generated are mediated by the researcher's engagement with the data including the researcher's (me) values, skills, experience and training that they bring to the theme development process (70). The approach involves six key stages: familiarisation; coding; generating initial themes; reviewing and developing themes; refining, defining and naming themes; and writing up (70, 71). These stages complement the way that I approached making sense of the qualitative data.

To familiarise myself with the data, I analysed it manually first. After manual reading and coding, I then in cooperated word processing for data summaries

and analytical memos and excel spreadsheets to organise themes, subthemes, and associated quotes (72). Data summaries assisted me in describing the data that I was collecting, and beginning to code and interpret this data (73). For the inductive part of the coding analysis, the constant comparison method was used to explore the data as well as different data sets and develop the initial coding into categories (67, 74). Analytical memos enabled me to extend my interpretations and analysis further, often triangulating data sources to begin understanding the findings and the research questions that were being explored until thematic saturation was reached (75, 76). These analytical memos were often developed in parallel with the excel spreadsheets of emerging themes and associated quotes.

I utilised Nvivo software (77, 78), in the first phase of data collection, and recognised that it did not suit my researcher style. While the software helps in organising my data and ensuring easy access to it, I thrive better with the hands on approach afforded by manual coding (72). The manual nature of the approach I used assisted me with analysing often large amounts of qualitative data, and writing things down, which helped me remember, identify, interpret, understand and make linkages across the data set.

3.5 Quantitative data collection and analysis

This thesis was a qualitative one. The quantitative data that is presented in this PhD is descriptive routine family planning services uptake data from the CHIEDZA trial. This data was collected as part of service provision during

implementation; and analysed, upon request by the Data team in CHIEDZA. These descriptive analyses are shared in the background chapter (chapter 1); as well as the linking sections (background sections for a manuscript) in the Findings chapters; and in some parts of the discussion section. These data are provided to give background and contextual understanding of the family planning intervention that was then qualitatively evaluated as my PhD.

3.6 Triangulation of data

Data triangulation occurred from the multiple qualitative sources: field notes, interviews, and observations (79, 80). Combining interviews and observations is a common form of triangulation (79) that permits fuller participation in the research endeavour. For example, CHIEDZA providers or clients would mention in the interview that wanting to provide integrated, youth-friendly mixed methods family planning services for the young people in CHIEDZA resulted respectively in them feeling overworked, and for younger people long wait times. I would then go and observe in the field and find that a young woman had to wait 4-5 hours for her LARC consultation, and still was not able to receive the services that she needed. I was able to more fully appreciate the circumstances surrounding particular experiences and demonstrate how the interest in, and focus on context informs insights about what interventions need to respond to.

3.7 Reflexively doing field work

Reflexivity is a necessary feature of qualitative research (81). I, as the researcher, was a key figure in the collection, analysis and interpretation of the data (82).

Moreover, as already described, this PhD work was beyond intellectual and a moral passion on my end. Prior to beginning my PhD journey, I worked at the intersection of SRH research, policy, and advocacy for AGYW. This has shaped my academic and professional career. These parts of me came along for my PhD and formed the foundational aspects for why I chose this research topic as my PhD I knew that the reasons I chose to do a process evaluation of family planning was beyond getting methodology or process evaluation skillsets, but rather it spanned my interest, exploring literature gaps, as well as being driven by personal experiences (83).

With this research position that I occupied, it is often encouraged that one nurtures distance from the participants and data to acquire deeper insights and understanding while also experiencing personal and professional growth in the process (84). By which I meant I felt that there was a risk that I was 'too close to my data' and sometimes feeling like I couldn't move beyond that 'closeness'. This indicated a tension I faced in managing my position as a family planning researcher, while maintaining some distance from the participants (providers and clients) that I saw and interacted with quite frequently. I managed this tension in a few ways. Firstly, while the providers could see and access me often at the office, I was not always at the CHIEDZA centres where they provided services to the clients- which meant that I only saw the clients on the times I went to the field. Additionally, after going through and analysing transcripts once, I would leave that analysis often for at least a few days and sometimes more, and go through the analysis again at another time, to see if my interpretations of the data remained the same or had evolved.

However, the conscious presence of this continuous tension was beneficial to my data interpretation as I navigated participants' perspectives about family planning, together with my own. I consistently shared or discussed my data with both my supervisors, who by virtue of not being in Zimbabwe, could maintain distance and critically engage with my interpretations of the data, in ways that could ease the tension, and dilute the 'closeness'.

There have been diverging viewpoints about the appropriateness of having personal interests and experience on a topic as the starting point of research endeavours, but other scholars have noted this as an acceptable and unavoidable place to begin in (83, 85, 86). While some scholars have iterated that it is necessary for health research to be steeped in social justice and driven by desire to redress inequity and injustice (2) (page 54). This can sometimes imply that a researcher must take a position within a binary of 'justice' or 'injustice'. Rather than pick an arbitrary side, I have used where I started my research journey from and acknowledging my personal interest and experience in family planning, to continuously ask myself what this research can contribute to understanding family planning interventions for young people.

During the research process, I was aware that the interview processes for example, that I took part in would be more than just gathering information but where a construction of reality co-created by the participants and the researcher (me). As I described in section 3.4.1, I often shared my own experiences, and in other instances like the narrative style interviews I was a sounding board

listening to young women's perspectives. The result of such experiences was often reflections on my part, of how the interview shifted my thoughts, viewpoints, and theories, leading to the construction of next phases of research/inquiry. For example, as mentioned in the discussion section of Chapter 7, talking to young women about their contraceptive decision-making processes made me reflect that as a public health interventionist, providing accessible, high quality family planning interventions will only work for young women who show up to engage with the intervention. There is much more work that needs to be done to motivate engagement.

While I may have been a researcher with a specific skillset to conduct this work, I am also a person with certain beliefs and values that contributed to the knowledge creation in this body of work. Hence because of the research approaches, activities, and decisions I made that have been described in this chapter, the critical and post positivism theories were implicit approaches used throughout this research journey and experiences.

3.8 Ethical considerations

The study's ethical approvals were embedded in the broader trial's ethics application packages. Ethical approvals were obtained from Medical Research Council of Zimbabwe (MRC/A/2266), London School of Hygiene and Tropical Medicine (14652), and Biomedical Research and Training Institute (AP144/2018). All participants provided written consent and voluntarily agreed to participate in the study, before any interviews were conducted. CHIEDZA

received a waiver from the ethics bodies to be able to offer health services to young people aged 16-18 years without parental consent (87). It is on this same mandate that this age group when participating in interviews could also provide written consent without parental assent.

Before a data collection event could occur, the process evaluation study was explained to the participants as being separate from but complementing the CHIEDZA intervention; and that it allowed the researchers to understand how participants were experiencing the intervention, and whether or not they considered it appropriate so that if possible, improvements could be made to CHIEDZA. This explanation would also include why that particular data collection phase was happening and an overview of the questions that would be asked. The participant was then provided with a consent form in a language of their choosing and given time to read through the study information sheet and consent form before signing. After both the participant and researcher signed the consent form, and with permission to record, the interview would begin and again the participant was asked to confirm on audio that they agreed to participate in the interview. The rest of the interview would then occur.

Qualitative research, in common with much research, is an ethical exercise, but specifically so because it fundamentally inquires into people's lives such that ethics in practise considerations are experienced. Several ethical considerations have already been alluded to in this chapter, including negotiating my relationships/positions with youth clients by sharing my own experiences during an interview; and not reporting on demographic information of the

providers as they were a very small group and there was a need to maintain confidentiality. In addition, some ethical considerations also occurred due to the influence of transitioning my role to being full time process evaluation, after having been part of the management team, as already described in sections 3.4 and 3.5.

At the beginning of the CHIEDZA trial, as I transitioned from being both a coordinator and process evaluator to only doing the process evaluation, I had to conduct a focus group discussion (pre-COVID-19) for the broader CHIEDZA trial, during a time when the providers felt under pressure to successfully implement the complex CHIEDZA intervention. In the FGD, few providers spoke, and I could sense that there was more they needed to say, but were not saying. I decided to stop recording the FGD, and have a narrative conversation, taking detailed notes instead. Only after stopping the recording did the providers inform me that they still felt I was part of the management and would report any criticisms of the intervention, if they informed me. I had to explain again the goal of the process evaluation study, and my role in it- which in part was to understand any criticism of the intervention as provider acceptability of it is important for intervention delivery. The detailed explanation, and not being audio-recorded, seemed to work. We had a detailed, quality FGD for which I could only write detailed notes. Some of the findings from this FGD were a critique of the intervention, and the trial management. To maintain their anonymity, I presented these critiques as findings from the FGD with no identifying information, to the research/management team. I returned with feedback for the providers, based

on our FGD, and this helped in delineating, and making my role in process evaluation more explicit.

My research study was inquiring into sensitive topics in young women's lives: contraceptive use, fertility, and access to family planning services among other topics. In revealing their stories and lives during the interviews, some participants did allude to issues of domestic disturbances for example *"my partner and I were always fighting and shouting".* However, in all the situations where potential harm was revealed, the clients also informed us when describing CHIEDZA and its effects on them, that they come to CHIEDZA to see the counsellor about that same issue, and things were improving. Due to the privacy and confidentiality ethical mandates of both the process evaluator and the counsellors who had to protect their clients, I could not ask/confirm with the counsellor if such clients had been counselled or referred elsewhere for additional support. In these instances, their self-reported support structures were taken as is.

My very visible role as a process evaluator also came with some ethical considerations. I had to put a lot of effort in ensuring that participants always knew and remembered that I was doing the process evaluation for the study, since I was easily accessible to them, and them to me. This was important for the informal observations and interview role that I continued to have throughout the trial as all parties involved were aware that usually when I am asking questions about the intervention (which I tried to always precede with '*this is for the*

process evaluation'), or they are telling me information about the intervention it would be data/information for the process evaluation study.

3.9 Summary

This chapter followed from the end of chapter 2, that established the relevance of process evaluations in illuminating what may work (or not) for young people's SRH interventions. This chapter began by explaining process evaluations, including some of the significant frameworks that have been used to guide the implementation of process evaluations. A brief overview of some of the process evaluations on SRH interventions specifically for young people, that have been conducted was also provided. The chapter then proceeded to describe the process evaluation methodology deployed for this study. In this process I explained the academic, professional and or personal rationales, and processes that guided the data collection and analytical decisions that were made over the almost three years of data collection and analyses that produced the four chapters of findings/results that are about to be presented.

3.10 References

1. Harvey L. Critical social research: Routledge; 1990.
2. Green J, Thorogood N. Qualitative Methods for Health Research. London: Sage Publications; 2004.
3. Trainor LR, Bundon A. Developing the craft: reflexive accounts of doing reflexive thematic analysis. Qualitative Research in Sport, Exercise and Health. 2021;13(5):705-26.
4. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. BMJ. 2015;350(mar19 6):h1258-h.

5. Brainard J, Hunter PR. Do complexity-informed health interventions work? A scoping review. Implement Sci. 2016;11(1):127.

6. Grant A, Treweek S, Dreischulte T, Foy R, Guthrie B. Process evaluations for cluster-randomised trials of complex interventions: a proposed framework for design and reporting. Trials. 2013;14(1):15.

7. Quasdorf T, Clack L, Laporte Uribe F, Holle D, Berwig M, Purwins D, et al. Theoretical approaches to process evaluations of complex interventions in health care: a systematic scoping review protocol. 2021;10(1):268.

8. Moore G, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: UK Medical Research Council Guidance. United Kingdom,: UK Medical Research Council; 2015.

9. Mohanan M, Vera-Hernández M, Das V, Giardili S, Goldhaber-Fiebert JD, Rabin TL, et al. The Know-Do Gap in Quality of Health Care for Childhood Diarrhea and Pneumonia in Rural India. JAMA Pediatrics. 2015;169(4):349-57.

10. Linnan L, Steckler A. Process evaluation for public health interventions and research: An overview. San Francisco: Jossey-Bass; 2002.

11. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. 2009;4(1):50.

12. Leontjevas R, Gerritsen DL, Koopmans RT, Smalbrugge M, Vernooij-Dassen MJ. Process evaluation to explore internal and external validity of the "Act in Case of Depression" care program in nursing homes. Journal of the American Medical Directors Association. 2012;13(5):488. e1-. e8.

13. Carroll C, Patterson M, Wood S, Booth A, Rick J, Balain S. A conceptual framework for implementation fidelity. Implementation Science. 2007;2(1):40.

14. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. bmj. 2015;350:h1258.

15. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. American journal of public health. 1999;89(9):1322-7.

16. Brown L, Tyane M, Bertrand J, Lauro D, Abou-ouakil M, deMaria L. Quality of Care in Family Planning Services in Morocco. Studies in Family Planning. 1995;26(3):154-68.

17. Dopson S, Fitzgerald L, Ferlie E. Understanding change and innovation in healthcare settings: reconceptualizing the active role of context. Journal of change management. 2008;8(3-4):213-31.

18. Hawe P, Shiell A, Riley T. Theorising Interventions as Events in Systems. American Journal of Community Psychology. 2009;43(3-4):267-76.

19. Nyawasha TS, Chipunza C. Community-based Responses to HIV/AIDS in South Africa: An Evaluation of a Children's Radio Programme. Journal of Sociology and Social Anthropology. 2013;4(3):207-17.

20. Njue C, Voeten HACM, Ohuma E, Looman C, Habbema DF, Askew I. Findings of an evaluation of community and school-based reproductive health and HIV prevention programs in Kenya. African Population Studies. 2015;29(2, Suppl.):1934-53.

21. Chenneville T, Gabbidon K, Drake H. The HIV SEERs Project: A Qualitative Analysis of Program Facilitators' Experience. J Int Assoc Provid AIDS Care. 2019;18:2325958218822308.

22. Brieger WR, Delano GE, Lane CG, Oladepo O, Oyediran KA. West African Youth Initiative: outcome of a reproductive health education program. J Adolesc Health. 2001;29(6):436-46.

23. Kinsman J, Kamali A, Kanyesigye E, Kamulegeya I, Basajja V, Nakiyingi J, et al. Quantitative process evaluation of a community-based HIV/AIDS behavioural intervention in rural Uganda. Health Educ Res. 2002;17(2):253-65.

24. Van Rossem R, Meekers D. An evaluation of the effectiveness of targeted social marketing to promote adolescent and young adult reproductive health in Cameroon. AIDS education and prevention : official publication of the International Society for AIDS Education. 2000;12(5):383-404.

25. Arnold R, Maticka-Tyndale E, Tenkorang E, Holland D, Gaspard A, Luginaah I. Evaluation of school- and community-based HIV prevention interventions with junior secondary school students in Edo State, Nigeria. Afr J Reprod Health. 2012;16(2):103-25.

26. Wight D, Plummer M, Ross D. The need to promote behaviour change at the cultural level: one factor explaining the limited impact of the MEMA kwa Vijana adolescent sexual health intervention in rural Tanzania. A process evaluation. BMC Public Health. 2012;12:788.

27. Renju J, Andrew B, Nyalali K, Kishamawe C, Kato C, Changalucha J, et al. A process evaluation of the scale up of a youth-friendly health services initiative in northern Tanzania. Journal of the International AIDS Society. 2010;13:32-.

28. Banda E, Svanemyr J, Sandøy IF, Goicolea I, Zulu JM. Acceptability of an economic support component to reduce early pregnancy and school dropout in Zambia: a qualitative case study. Glob Health Action. 2019;12(1):1685808.

29. Gonsalves L, Njeri WW, Schroeder M, Mwaisaka J, Gichangi P. Research and Implementation Lessons Learned From a Youth-Targeted Digital Health Randomized Controlled Trial (the ARMADILLO Study). JMIR Mhealth Uhealth. 2019;7(8):e13005.

30. Hallfors DD, Cho H, Mbai I, Milimo B, Itindi J. Process and outcome evaluation of a community intervention for orphan adolescents in western Kenya. Journal of community health. 2012;37(5):1101-9.

31. Middelkoop K, Myer L, Smit J, Wood R, Bekker LG. Design and evaluation of a drama-based intervention to promote voluntary counseling and HIV testing in a South African community. Sex Transm Dis. 2006;33(8):524-6.

32. Ambresin A-E, Bennett K, Patton GC, Sanci LA, Sawyer SM. Assessment of Youth-Friendly Health Care: A Systematic Review of Indicators Drawn From Young People's Perspectives. Journal of Adolescent Health. 2013;52(6):670-81.

33. Mazur A, Brindis CD, Decker MJ. Assessing youth-friendly sexual and reproductive health services: a systematic review. BMC Health Services Research. 2018;18(1).

34. Carpiano RM, Daley DM. A guide and glossary on postpositivist theory building for population health. Journal of epidemiology and community health. 2006;60(7):564-70.

35. McIntyre SA, Francis JJ, Gould NJ, Lorencatto F. The use of theory in process evaluations conducted alongside randomized trials of implementation interventions: A systematic review. Translational Behavioral Medicine. 2018;10(1):168-78.

36. Popay J. Whose theory is it anyway? Journal of epidemiology and community health. 2006;60(7):571-2.

37. O'Reilly M, Kiyimba N, Drewett A. Mixing qualitative methods versus methodologies: A critical reflection on communication and power in inpatient care. Counselling and Psychotherapy Research. 2021;21(1):66-76.

38. Levitt HM, Motulsky SL, Wertz FJ, Morrow SL, Ponterotto JG. Recommendations for designing and reviewing qualitative research in psychology: Promoting methodological integrity. Qualitative Psychology. 2017;4(1):2-22.

39. Greene JC, Caracelli VJ, Graham WF. Toward a conceptual framework for mixed-method evaluation designs. Educational evaluation and policy analysis. 1989;11(3):255-74.

40. Malterud K. Qualitative research: standards, challenges, and guidelines. Lancet (London, England). 2001;358(9280):483-8.

41. Palaganas E, Sanchez M, Molintas MVP, Caricativo R. Reflexivity in Qualitative Research: A Journey of Learning. 2017;22:426-38.

42. Dowling M. Approaches to reflexivity in qualitative research. Nurse researcher. 2006;13(3):7-21.

43. Nilsen P. Making sense of implementation theories, models and frameworks. Implement Sci. 2015;10:53.

44. Worldometer 2022 [Available from: https://www.worldometers.info/world-population/zimbabwe-population/.

45. World Bank. The World Bank Data Washington DC: World Bank; 2020 [Available from: https://data.worldbank.org/indicator/.

46. UNICEF. Zimbabwe: 2020 Health Budget Brief. Zimbabwe: UNICEF; 2020.

47. Chikanda 1 A. Medical migration from Zimbabwe: magnitude, causes and impact on the poor. Development Southern Africa. 2007;24(1):47-60.

48. Meldrum A. Zimbabwe's health-care system struggles on. The Lancet. 2008;371(9618):1059-60.

49. UNFPA. Policy Brief: Investing in Sexual and Reproductive Health and Rights. Harare, Zimbabwe: UNICEF; 2018.

50. McCarthy OL, Mavodza C, Chikwari CD, Dauya E, Tembo M, Hlabangana P, et al. Adapting an evidence-based contraceptive behavioural intervention delivered by mobile phone for young people in Zimbabwe. 2022;22(1):106.

51. Patton MQ. Qualitative research & evaluation methods: sage; 2002.

52. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Adm Policy Ment Health. 2015;42(5):533-44.

53. Marston C, Arjyal A, Maskey S, Regmi S, Baral S. Using qualitative evaluation components to help understand context: case study of a family planning intervention with female community health volunteers (FCHVs) in Nepal. 2020;20(1):685.

54. Lewin S, Glenton C, Oxman AD. Use of qualitative methods alongside randomised controlled trials of complex healthcare interventions: methodological study. Bmj. 2009;339:b3496.

55. Creswell JW, VL. PC. Designing and conducting mixed methods research. 2nd ed. Thousand Oaks, CA: SAGE; 2011.

56. Creswell JW P-CV. Designing and conducting mixed methods research. Thousand Oaks, California: Sage Publications; 2007.

57. Seidman I. Interviewing as qualitative research: A guide for researchers in education and the social sciences: Teachers college press; 2006.

58. Boyce C, P. N. USING MYSTERY CLIENTS: A Guide to Using Mystery Clients for Evaluation Input. Watertown, MA: Pathfinder International; 2006.

59. Czarniawska B. Narratives in Social Science Research. Introducing Qualitative Methods. London: Sage Publications; 2004.

60. Shiell A, Hawe P, Gold L. Complex interventions or complex systems? Implications for health economic evaluation. BMJ. 2008;336(7656):1281-3.

61. Kawulich B. Collecting data through observation. 2012) Doing social research: A global context. 2012:150-60.

62. Kawulich BB, editor Participant observation as a data collection method. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research; 2005.

63. Phillippi J, Lauderdale J. A guide to field notes for qualitative research: Context and conversation. Qualitative health research. 2018;28(3):381-8.

64. Ritzer G. The rise of micro-sociological theory. Sociological Theory. 1985;3(1):88-98.

65. Guba EG, Lincoln YS. Competing paradigms in qualitative research. Handbook of qualitative research. 1994;2(163-194):105.

66. Vlin RT. Qualitative Data Analysis. In: Bass J, editor. Qualitative Research Methods in Public Health: A field guide for Applied Research2005. p. 139-74.

67. Nowell LS, Norris JM, White DE, Moules NJ. Thematic Analysis: Striving to Meet the Trustworthiness Criteria. International Journal of Qualitative Methods. 2017;16(1):1609406917733847.

68. Sandelowski M, Barroso J. Classifying the Findings in Qualitative Studies. Qualitative Health Research. 2003;13(7):905-23.

69. Braun V, Clarke V. Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. Counselling and Psychotherapy Research. 2021;21(1):37-47.

70. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77-101.

71. Hayes N. Doing psychological research: Gathering and analysing data. Maidenhead, BRK, England: Open University Press; 2000. xviii, 400-xviii, p.

72. Basit T. Manual or electronic? The role of coding in qualitative data analysis. Educational Research. 2003;45(2):143-54.

73. Hennink M, Hutter I, Bailey A. Data Preparation and Developing Codes. Qualitative Research Methods. London: SAGE Publications; 2010. p. 204-29.

74. Ryan GW, Bernard HR. Techniques to identify themes. Field methods. 2003;15(1):85-109.

75. Saunders B, Sim J, Kingstone T, Baker S, Waterfield J, Bartlam B, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. Quality & quantity. 2018;52(4):1893-907.

76. Birks M, Chapman Y, Francis K. Memoing in qualitative research:Probing data and processes. Journal of Research in Nursing. 2008;13(1):68-75.

77. Welsh E, editor Dealing with data: Using NVivo in the qualitative data analysis process. Forum qualitative sozialforschung/Forum: qualitative social research; 2002.

78. Leech NL, Onwuegbuzie AJ. Beyond constant compasrison qualitative data analysis: Using Nvivo. School Psychology Quarterly. 2011;26(1):70-84.

79. Flick U. Triangulation in qualitative research. A companion to qualitative research. 2004;3:178-83.

80. Triangulation DS, editor The use of triangulation in qualitative research. Oncology nursing forum; 2014.

81. Mauthner NS, Doucet A. Reflexive Accounts and Accounts of Reflexivity in Qualitative Data Analysis. Sociology. 2003;37(3):413-31.

82. Maso I, Finlay L, Gough B. Necessary subjectivity: exploiting researchers motives, passions and prejudices in pursuit of answering true questions. Reflexivity: A practical guide for researchers in health and social sciences. 2003.

83. Roberts B. Getting the most out of the research experience : what every researcher needs to know. London and Thousand Oaks, CA: SAGE Publications; 2007.

84. Coffey S. Educating international nurses: curricular innovation through a bachelor of science in nursing bridging program. Nurse educator. 2006;31(6):244-8.

85. Etherington K. Becoming a reflexive researcher: Using our selves in research: Jessica Kingsley Publishers; 2004.

86. Janesick V. The Choreography of qualitative research design. Handbook of qualitative research. Thousand Oaks, Sage. 2000.

87. Dziva Chikwari CaD, E and Bandason, T and Tembo, M and Mavodza, C and Simms, V and Mackworth-Young, C and Apollo, T and Grundy, C and Weiss, H and Kranzer, K and Mavimba, T and Indravudh, P and Doyle, A and Mugurungi, O and Machiha, A and Bernays, S and Busza, J and Madzima, B and Terris-Prestholt, F and McCarthy, O and Hayes, R and

Francis, S and Ferrand, R. The impact of community-based integrated HIV and sexual and reproductive health services for youth on population-level HIV viral load and sexually transmitted infections in Zimbabwe: protocol for the CHIEDZA cluster-randomised trial [version 1; peer review: awaiting peer review]. Wellcome Open Research. 2022;7(54).

Chapter 4 : Fidelity, Feasibility and Adaptation of a Quality Family Planning Intervention for Young Women in Zimbabwe: Provider Perspectives and Experiences

Overview

This study describes how the family planning intervention in CHIEDZA was implemented, including describing the adaptations that were made along the way and the contextual influences which prompted these adaptations.

The data used for the analysis in this chapter were collected throughout the trial. This study focused on the experiences of the health care providers who delivered family planning services in CHIEDZA. Often times when designing and implementing youth interventions, the focus has been dominantly about what the young people want and the providers who have to deliver on this 'want' are side lined. I wanted to make sure my PhD, as much as possible, also included the voices of the implementors who determine how accessible an intervention can be through their control of service provision factors (1, 2).

It is the last manuscript that I put together for this PhD as I waited until the trial had almost come to an end, to be able to examine the complete implementation narrative. I have placed this manuscript as the first chapter of the findings in this PhD because it sets the foundation for this research by providing a description and explanation of what, why, when, and how the family planning intervention was implemented, including a description of the intervention's logic. This is

important to talk about first, because the rest of the chapters (findings) are situated within this intervention.

The upcoming manuscript has been submitted to the Global Implementation and Research Application Journal and is under peer review. The referencing style in the upcoming manuscript has been reformatted for the purposes of this document

References

1. Amoakoh HB, Klipstein-Grobusch K, Ansah EK, Grobbee DE, Yveoo L, Agyepong I. How and why front-line health workers (did not) use a multifaceted mHealth intervention to support maternal and neonatal healthcare decision-making in Ghana. BMJ Global Health. 2019;4(2):e001153.
2. Sekhon M, Cartwright M, Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. 2017;17(1):88.

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Student ID Number	1806373	**Title**	Ms.
First Name(s)	Constancia Vimbayi		
Surname/Family Name	Mavodza		
Thesis Title	Process evaluation of the family planning intervention for young women aged 16- 24 years, accessing CHIEDZA services in Zimbabwe		
Primary Supervisor	Joanna Busza		

If the Research Paper has previously been published please complete Section B, if not please move to Section C.

SECTION B – Paper already published

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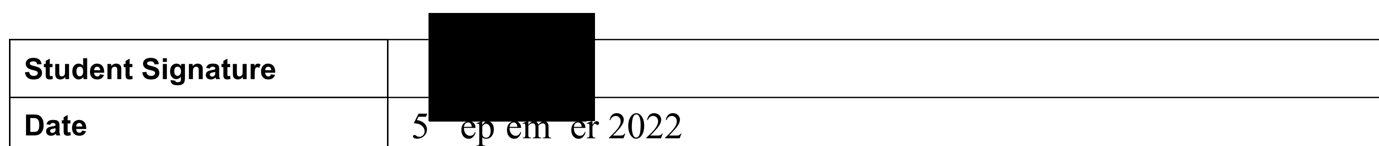
SECTION D – Multi-authored work

For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper. (Attach a further sheet if necessary)	I was the first author for this paper. I conducted data collection, and led on the analysis (with support from JB and SB), and interpretation of the data. I wrote the first draft of the manuscript, responded to feedback from all co-authors and then led on the submission of the manuscript to the journal. I am also responsible for responding to all reviewer comments and resubmission as needed. The manuscript was submitted to GIRA in June 2022, and is currently under peer-review

SECTION E



Student Signature	
Date	5 ep em er 2022

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Date	

Abstract

The CHIEDZA trial evaluated an integrated package of HIV and sexual and reproductive health services for young people aged 16 – 24 years in Zimbabwe. The family planning component aimed to improve access to information, services and contraceptives delivered by trained youth-friendly providers within a community-based setting for young women. Responsive adaptations were part of the intervention design rationale (Barratt H et al., 2016; Greenhalgh et al., 2004). We investigated the factors influencing implementation fidelity, quality, and feasibility using provider experiences and perspectives. We conducted provider interviews (N=42), non-participant (N=18) and participant observation (N=30) of intervention activities. The data was analyzed thematically. CHIEDZA providers were receptive to providing the family planning intervention, but 'outer setting' contexts (Damschroder et al., 2009) caused challenges to the intervention's fidelity. Strategic adaptations were required to ensure service quality of contraceptive methods choice in a youth-friendly context. These adaptations strengthened service delivery but also resulted in longer wait times, more frequent visits, and variability of LARC provision which depended on target-driven programming by partner organization. This study was a practical case of how process evaluation as a method in implementation science makes tracking responsive adaptations vital. Anticipating that changes will occur is a necessary pre-condition of strong intellectual evaluation and tracking adaptations ensures that lessons on feasibility of design, contextual factors and health system factors are responded to during implementation and can improve quality. Contextual factors are

unpredictable, and implementation should be viewed as a dynamic process where responsive adaptations are necessary, and fidelity is not static.

Keywords: implementation, fidelity, adaptation, feasibility, quality, family planning services, young people, Zimbabwe.

Fidelity, Feasibility and Adaptation of a Quality Family Planning Intervention for Young Women in Zimbabwe: Provider Perspectives and Experiences

Barriers to young people's access to sexual and reproductive health (SRH) services in sub-Saharan Africa have been well documented and remain a challenge (Denno et al., 2015; Kennedy et al., 2010; Phillips & Mbizvo, 2016). Despite numerous interventions to address family planning for young women, utilization remains persistently low (MacQuarrie, 2014; Mutumba et al., 2018).

In Zimbabwe, the unmet need for family planning among young unmarried sexually active women is 37% (15-19 years) and 17% (20-24 years), compared to the national unmet need of 12.6% (Zimbabwe National Statistics Agency & International., 2016). Negative attitudes and judgmental health providers dissuade young people from seeking SRH care (Amnesty International, 2018). Despite the Ministry of Health and Child Care (MoHCC) prioritization of adolescent SRH in key planning documents, youth-friendly integrated SRH services remain largely inaccessible for young people (Ministry of Health and Child Care, 2016a, 2016b), and are offered vertically with limited integration (Church & Mayhew, 2009; Warren et al., 2017).

CHIEDZA is a pragmatic cluster-randomized trial investigating the impact of community-based integrated HIV and SRH services for young people aged 16-24 years on population-level HIV outcomes. The trial was conducted in three provinces in Zimbabwe: Harare, Bulawayo, and Mashonaland East (Dziva Chikwari, 2022) with each province having four intervention and four control clusters. Harare and Mashonaland East are primarily Shona-speaking provinces, whereas Bulawayo is predominantly Ndebele-speaking. The intervention was

implemented for 30 months in community centers in each cluster by a team that included nurses, community health workers (CHWs), counsellors and youth workers. CHIEDZA was conceived based on the rationale that offering youth-friendly, integrated (one-stop-shop) HIV and SRH services outside of facility settings (community-setting), would increase engagement with, and uptake of services by youth (Dziva Chikwari, 2022). Family planning is one component of the CHIEDZA trial intervention. It was anticipated from the outset that adaptations would be required during the trial to respond to contextual issues across settings (Barratt H et al., 2016). As part of the trial, a process evaluation was conducted alongside delivery of the intervention as a recognized method to understand realities of implementation, including whether, how and why the intervention operates as anticipated (Moore et al., 2015).

Process evaluations have become an integral element of evaluating complex interventions that are multi-component and context-dependent (Moore et al., 2015). They seek to understand what is working, for whom, when and how (Oakley et al., 2006). Process evaluation concepts have existed since the 1960s and have developed and diversified over time and some of the key concepts like implementation, fidelity, are also implementation research concepts more broadly (Quasdorf et al., 2021; Rabin et al., 2008). One of process evaluations and implementation research's intended aims can be to anticipate and enable adaptations (Greenhalgh et al., 2004; Moore et al., 2021).

During interventions, frontline providers play a critical role in determining the intervention's feasibility due to their willingness to deliver planned activities (Amoakoh et al., 2019; Sekhon et al., 2017). Providers' readiness to accept the intervention is a determinant of feasibility where their

skill and motivation are key to devising and ensuring that an intervention is acceptable to its recipients (Sekhon et al., 2017). Therefore, providers are critical informants for capturing the implementation processes of an intervention (Damschroder et al., 2009). This paper examines the perceptions, experiences, and opinions of the frontline providers in CHIEDZA, and represents a component of the broader process evaluation.

The aim of this study was to address the complexities of implementing family planning and the adaptive processes adopted in response. To do this, we sought to: (1) assess whether the family planning intervention within CHIEDZA was implemented as intended (fidelity); (2) understand the feasibility of implementing the intervention; (3) assess quality of the intervention and identify unintended consequences; and (4) examine the contextual underpinnings of fidelity, feasibility, and quality.

Family Planning in CHIEDZA

The family planning service delivery model (Figure 1) in CHIEDZA aimed to contribute to the MoHCC's goal of providing accessible family planning services to young people, with a focus on provision of long-acting reversible contraceptives (LARCs) to increase access to and use of family planning by young people (Ministry of Health and Child Care, 2016a). The delivery model aligned with the MoHCC's systems through procuring commodities through the government's supply chain and reporting family planning uptake to MoHCC registers. In Zimbabwe, Secure is the brand name of the progesterone-only contraceptive pill (POP), Control is the brand name for combined oral contraceptive pills (COC), Jadelle is a brand name for an implant and Depo refers to the Depo Provera injectable. To become a family planning nurse,

qualified nurses must undergo government-run family planning-specific training. While most nurses can offer oral contraceptives, LARCs (implants and IUCDs) can be provided only by nurses trained in family planning through a government program.

Young women attending CHIEDZA could hear about available family planning services from youth community mobilisers, the youth workers at CHIEDZA or the service providers (CHWs or nurses) at the CHIEDZA sites. Every young person who entered the health booth was offered HIV testing and treatment if applicable and risk reduction counselling as well as condoms, management of sexually transmitted infections, referral for voluntary male medical circumcision (for males), and health counselling services and menstrual health education and products (for females). Female clients were offered family planning services including information, education, and counselling, as well as oral contraceptives (COC and POP), Depo, emergency contraceptives (EC) and pregnancy testing. First time users of oral contraceptives were initially given a one-month supply to enable monitoring of side effects. Thereafter, three monthly supplies were given. The LARCS were provided by a non-governmental organization, Population Services Zimbabwe (PSZ), which employed government-trained nurses.

When PSZ was located at CHIEDZA centers, they also offered services to older women (over 24 years), and therefore they had to operate in a separate booth to avoid diluting the focus on youth. The nurse provided the first consultation, counselling and information on all family planning products and services offered at CHIEDZA and PSZ. Clients then selected and were provided with their contraceptive or service of choice. At subsequent visits, they could

receive contraceptive pill refills from CHWs. Those who used injectables and experienced any complications/side effects were always served by nurses. Outside of the CHIEDZA community centers, information on the available family planning services were also offered via community mobilization efforts by youth champions, which included flyer distribution and peer-to-peer interactions.

The family planning intervention's logic model as initially envisioned, specifies the pathways to change below (Figure 1).

Methods

Study Design: Process evaluation

We used the Medical Research Council's process evaluations framework that looks at implementation, mechanisms of change and context of complex interventions (Moore et al., 2015). This component of the process evaluation study investigated implementation. To describe and understand implementation and adaptation processes we focused on three evaluation components: 1) fidelity 2) feasibility and 3) quality of the service being delivered. Fidelity refers to the extent to which an intervention is delivered as intended (Moore et al., 2015). While we examined fidelity within a process evaluation, it is closely linked to the broader field of implementation research (Rabin et al., 2008). In the case of CHIEDZA, adaptation was included as an ongoing part of the intervention design (Figure 1), and regular team meetings were in place for both decision-making and documentation of agreed changes. Thus, in our process evaluation, fidelity refers to the adapted implementation model as re-designed over time. Feasibility is often examined as part of pilot studies, to determine to what extent a departure from fidelity is due to supply-

side challenges or gaps (McLeod, 2021). While "feasibility studies" sometimes refer to pilot interventions, the viability of provision remains relevant throughout delivery of any intervention, necessitating feasibility as a key component of a process evaluation. Quality refers to whether providers were able to provide youth-friendly, non-judgmental, time efficient, integrated, family planning services with adequate choice of contraceptives. These components may directly or indirectly affect each other and subsequent outcomes.

Eligibility and Participant Recruitment

Health providers from the three provinces were eligible to participate in the study. Purposive sampling ensured that there was representation of each cadre of health provider (CHW, nurse, counsellor, youth worker). All invited providers agreed to participate. At each phase of data collection all cadres of providers were interviewed and repeat interviews with at least one nurse, CHW, youth worker and counsellor were conducted to gauge changing perspectives over time.

Data Collection

Interview topic guides and observation guides were the main data collection tools. The main qualitative researcher (CM) was located with the CHIEDZA trial since its inception, and the CHIEDZA providers interacted with her frequently, leading to an established rapport.

Provider Interviews

Between April 2020-November 2021, 42 interviews with 27 CHIEDZA providers were conducted. Data was collected at three time points (Table 1). These time points ensured that the process of adaptation and related adjustments, implementation, and feasibility over time, as well as dramatic

contextual shifts (COVID-19) in intervention delivery, could be captured. Each data collection phase built upon the previous one through an iterative process (Table 1). Topic guides had open-ended questions. The phase one interviews (n=16) sought to understand, very broadly, the family planning issues or concerns that young people raised with providers at CHIEDZA. The phase one (n=15) interviews explored providers' perceptions of the service delivery model and its implementation. The phase three interviews (n=11) were conducted at months 25/30, when the CHIEDZA intervention was ending and focused on providers' reflection on family planning services over time (Table 1). All interviews were audio-recorded.

All phase one interviews occurred during the first week of COVID-19 lockdown and were telephonic. For these, written consent was obtained during the last in-person team meeting two days before interviews began. The lead researcher (CM) contacted those who had consented to arrange telephonic interviews. Twenty providers consented and 16 were interviewed: two did not respond to contact attempts, one was an oversampled cadre (CHW), and one was excluded based on their temporary position on the team. Phase two interviews were conducted during a less severe lockdown that still restricted intercity travel, so interviews were either in-person or telephonic. With the intercity telephone interviews, a local research assistant obtained in-person, written consent from the providers in the province to which we could not travel. CM then conducted the interviews telephonically as in Phase one. The in-person interviews were conducted by CM and RN after written consent had been obtained. Phase three interviews were conducted in person by RN and PN, during moderate lockdown measures, with providers who gave written consent.

All in-person interviews took place in private rooms at the research offices on days that the providers did not have to be at the community centers providing services.

All interviews were conducted in either English, Shona, or Ndebele, depending on participants' preference, and transcribed into English. Each interview took between 30-100 minutes. All transcripts were anonymized to maintain confidentiality.

Non-participant Observations at CHIEDZA Community Centers

The purpose of visits to CHIEDZA centers was to observe how providers implemented family planning services, including interactions with provision of other SRH services. The researchers did not participate in service provision. Observations enable the examination of contextual influences (Tashakkori & Teddlie, 2010) and we assessed interactions between providers, community members, youth clients, and the family planning service. Field notes, guided by an observation guide, were written immediately in real-time. They were then reviewed and written up into a more detailed description 24-48 hours later (Walford, 2009; Wolfinger, 2002).

Participant Observations and Meeting Minutes

Participant observations and minutes of meetings between the research and implementation (CHIEDZA providers and coordinators) teams (n=30) occurred between April 2019- December 2021. CM or RN attended meetings as both a participant contributing to the team discussions (participant role) and a researcher observing and taking notes and minutes. The observations and meeting minutes captured real time experiences and perspectives of providing

family planning services, including any decisions made by the broader team to adapt/change the implementation model for improvement.

Data analysis

CM familiarized herself with 42 transcripts, 30 meeting documents and 18 observation summaries. Thematic analysis was employed, and initially descriptive codes were arranged into emerging inductive themes, compiled in data summary notes. Summaries were further developed into analytical memos exploring connections between phases, highlighting significant themes and distilling ideas that materialized (Birks et al., 2008). Themes included perceptions of the family planning service delivery model, barriers, facilitators, and recommendations for implementation; client flow for family planning; service provider roles and responsibilities; commodity availability; and fidelity to the implementation strategy and intervention. The analytical processes were iterative and occurred as data was being collected with phase-to-phase comparison of emerging themes. The collaborative analytical process involved discussions amongst CM, SB, and JB.

Results

Implementing the family planning service delivery model

According to the providers, the CHIEDZA family planning service delivery model was based on the hypothesis that if provided with adequate information, young women could make an informed decision on their contraceptive method of choice. Information on family planning methods was provided to clients at various points of the CHIEDZA client flow, from the youth workers at first point of contact who gave health education talks, then the CHW in the health booth, and then the nurse who prescribed the method. Across the

different points, this information varied in depth based on the expertise of the provider. The providers considered the intervention to be broadly appropriate, and they clarified that they spent time and effort informing clients about each contraceptive on offer, and the side effects so that clients could make informed contraceptive decisions

> "When a client came, they would see the youth worker and we would talk about what we offer at the social area first then when they got into the booth that's when they would tell the CHW which family planning method they wanted personally. The CHW will also tell the client the methods available that very day if PSZ wasn't there. So, the methods we usually offered when PSZ wasn't there were the Control, Secure, and Depo and then the client would choose what method they wanted…the CHW would properly explain that if they want more detail on the methods, they will get it in the nurses' booth...When they come to my tent, I would ask them what they know about the method they have chosen... When you explained the side effects [Depo for example] that's when they would switch to another method..." (Harare, IDI02, Phase3)

Providers noted that they also invited clients to ask questions about family planning or contraceptives. In some instances, providers were asked to verify or deny information about contraceptives that clients heard. Sometimes, providers felt that they did not have adequate responses or answers to these questions, which for them, compromised their ability to provide quality information to young women. However, over time, experiential learning improved their knowledge of family planning and contraceptives.

"It [knowledge of family planning] has improved so much! It has! Now I am partly responsible in helping clients choose their family planning service that they may think is suitable for them" (Bulawayo, IDI04, Phase 2)

Factors Affecting Implementation

Implementing the family planning intervention was affected by significant factors and events that influenced where, when, and how young women received, and providers delivered the intervention (Table 2). Affected intervention components included contextual events in Zimbabwe, and partnerships within the intervention.

Events in Zimbabwe

This refers to contextual events that occurred in the country during the implementation period and influenced how the intervention was implemented and experienced by CHIEDZA providers.

National Contraceptive Shortage. In September 2019, a national-level shortage of all contraceptive commodities was announced. At this point, CHIEDZA was procuring contraceptives from private suppliers (Table 2), and the availability of family planning commodities at CHIEDZA was affected. In the lead up to the announcement, CHIEDZA providers experienced occasional stockouts of some contraceptives (COC) which increased demand as there was now limited supply.

"If you come to our site and see the numbers of people who are not eligible who would have come to get family planning services you will be shocked...I remember a policewoman came in her uniform and said I have come because I need family planning… She was pleading with me saying 'she is a civil servant if you refuse to give me the family planning

pills where do you expect me to get them from?' But we couldn't her because she is above 24 years" (Bulawayo, IDI06, Phase 2)

To minimize the chances of stockout, CHIEDZA providers started supplying one month of oral contraceptives instead of the recommended three months' supply.

"Giving someone only a month's supply was a challenge but we knew that a lot of people wanted the pills so we would offer a month's supply instead of offering three months" (Bulawayo, IDI05, Phase 3)

Many young women now had to inconveniently return to CHIEDZA every month instead of every three months for oral contraceptive refills.

Covid-19 Affected Access to Family Planning. At the start of the COVID-19 pandemic, service delivery stopped for six weeks (Table 2). According to the providers, young women who were due for their monthly contraceptive refills during this closure period, could not access CHIEDZA services.

"I am thinking about those women who have their review dates drawing near in April and they would want to come but we are not there then what will happen? Because they are reliant on us to provide that service to them." (Bulawayo, IDI1, Phase 1)

When CHIEDZA reopened, providers reported that they experienced increased requests for pregnancy tests, and many of the women seeking services in that month were coming for family planning services, as they were not easily affordable in other places.

COVID-19 Affected Implementation Quality. Immediately after the intervention reopened, the workload increased for many of the CHIEDZA providers, due to increased volume of clients. While CHIEDZA staff strategized so that they

could continue to provide health services for young people, they felt overworked, and exhausted.

"On workload you would find that these days you go, and you might spend the whole day… and even to find food you would feel that you cannot go and eat leaving the booth just like that and the clients complaining that you are delaying us. There are some people who get annoyed with the waiting period but there is nothing we can do because there would be too many people." (Mashonaland East, IDI11 Phase 2)

The providers felt that the increases in workload jeopardized the service quality they could offer to young people:

" So, the pressure on numbers I wouldn't lie it was now making us divert from being a youth-friendly service because we were now chasing numbers. Because at the end we would even ask the youth workers at what number we are at and for real at the end of the day that became the main question." (Bulawayo, IDI02, Phase 2)

Partnerships Within the Intervention

This describes the barriers and facilitators of working with another partner (PSZ) to provide short-term and long-acting family planning methods for young people in CHIEDZA.

Working with a Program Partner to Provide Commodities. The trial's pilot phase had established a need for LARCs and securing government supply of family planning methods was a challenge. Therefore, when the implementation period began (April 2019), CHIEDZA partnered with PSZ to offer both short-acting and long-acting family planning commodities during service hours (Table 2).

> "We had a good working relationship [with PSZ]. They really assisted us because at first, before we were in partnership with the PSZ guys, we had clients who wanted long term but were disappointed because we could not offer it." (Bulawayo, IDI05, Phase 3)

However, PSZ was not able to consistently come to every CHIEDZA site during service delivery hours; and this left young women without ready access to implants and IUCDs, and services like implant removals.

> "Removals were the worst because there wasn't any alternative unlike when someone says they want jadelle but later switch to another family planning that's available at the site. For removals clients simply wanted it removed but still others did not have bus fare [to go to a non-CHIEDZA clinic] and we could not provide them with the funds." (Bulawayo, IDI03, Phase 3)

Implant removals were a challenge even when PSZ was present at CHIEDZA. CHIEDZA providers perceived that PSZ considered removals alone a misuse of already limited resources, especially when the target outcomes are implant insertion (uptake) and not necessarily removals. This constrained some CHIEDZA clients who only wanted implant removals.

> "The PSZ staff didn't have kits and the packs to use so they would want someone who wanted to remove an implant and reinsert it because to them it wasn't a target number or something like that…We had clients who wanted to get implants removed but they [PSZ] would tell them that they are not removing the implants on that day and the client should come back tomorrow." (Harare, IDI02, Phase 3)

Additionally, if clients wanted implant removals but did not get their implant inserted by PSZ, they were asked by PSZ nurses to return with proof of when and by whom their implant was inserted, before getting the help they needed.

Family Planning Training-to-Practice. To mitigate against some the challenges being faced with the partnership model for providing LARCs, CHIEDZA nurses were registered to receive government-run training to be able to offer all methods, within CHIEDZA. This was a two-part training with a theory-based and a supervised practical component. The nurses attended theory sessions run by a parastatal government partner and found the training to be beneficial in capacitating them to provide quality family planning services. However, completing the practical component of the training was not feasible. For the practical, a theory-trained nurse is required to insert ten implants and ten IUCDs under the supervision of designated personnel. CHIEDZA nurses, could have done this practical with the supervision of qualified nurses. However, this was not possible as partners could not spare commodities to train colleagues during a national shortage.

> "I did not do all the procedures [IUCD] for me to qualify… for one to do these procedures they should at least have done ten procedures. With IUCD I need supervision and about six procedures then I am good. I can do implants though." (Bulawayo, IDI05, Phase 3)

Although there was consensus that providing a range of family planning modalities within CHIEDZA was optimum, this was not possible because of the incomplete training.

Adapting the Partnership with PSZ to Ensure Provision of LARCs. As CHIEDZA providers could not complete LARC training, and PSZ could not always

be present on all CHIEDZA days, the service delivery model for family planning was constantly adapted to ensure that as often as possible, young women had access to the full range of family planning methods (Table 2). Instead of PSZ committing to come to all CHIEDZA sites, the young women at CHIEDZA would instead be referred to a PSZ site or clinic, that was not at CHIEDZA, for implants and IUCDs.

> "So now PSZ would come and if PSZ is not there we would refer them to a PSZ clinic so that they would get checked first if it's hormonal imbalance or not and resort to using the loop" (Harare, IDI02, Phase 3)

According to the providers, establishing, and effectively implementing and maintaining this adapted referral-based system was challenging. They perceived that this system diverged from CHIEDZA's free, youth-friendly one-stop-shop integrated model, as young women would have to go to a non-CHIEDZA provider to access their contraceptive of choice. At non-CHIEDZA facilities young women were not prioritised over existing/other clients and sometimes these facilities did not have enough commodities and passed that cost onto young women.

> " So sometimes clients will need to bring their own sterile blades and at times the client won't even have a dollar to buy the blade. it's now the same as saying that the service is no longer free as compared to when they come on site to us. Now they have to incur transport costs and go to the PSZ centers in the city or a specific place that they are referred to." (Bulawayo, IDI02, Phase 2)

Between July-September 2020, due to organization-level changes and targets, PSZ was able to commit to bringing its services to the CHIEDZA sites

again, so that young women wouldn’t have to go to another place for implants or IUCDs (Table 2).

> "The lady [from PSZ] comes to every site we have... We first oriented her about CHIEDZA services and our client flow. PSZ services are also for free here, and there is no age limit for their services. So, a youth coming through even for PSZ services only, first passes through the youth and then they go through to the [health] booth. We talk to them and register them in our tablets. If they want an implant, we direct them to PSZ. If we are not busy one of us goes with them to PSZ so that we can also have the hands-on experience of doing implants." (Bulawayo, IDI03, Phase 2)

As before, it was not always feasible for PSZ to be present at the CHIEDZA community centers even when clients had been mobilized for LARC services. The CHIEDZA providers perceived that this was due to differences in ethos between CHIEDZA and PSZ. For them, PSZ was target driven (uptake of contraceptives), whereas CHIEDZA was focused on youth-friendliness, such that the small numbers of young women at CHIEDZA who requested LARCs would be at the expense of PSZ’s targets.

> “When we got to our sites I remember in [Cluster 1] and [Cluster 3], we would get their clients already waiting for PSZ but then they would not show up…. we would ask them why they failed to come, and they would tell us that they went somewhere where a lot of clients turned up. We told them that you are losing trust of people who are in our clusters and want to access the service.... Their target were numbers and as CHIEDZA we didn’t give them the numbers at all” (Harare, IDI02, Phase 3)

Therefore, the availability of implants or IUCDs ranged from site to site depending on if PSZ was present or not.

Maintaining Function but Shifting Implementation Strategies to Improve Access. In some instances, when the PSZ team was not able to come and offer LARCS, the CHIEDZA providers noted that they would pre-book CHIEDZA clients so that they could come and be served with LARCs on a day that PSZ would come for services

> "Sometimes we would prebook clients and tell them to come on such a date that would have been set by the PSZ people. Pre bookings were for [CHIEDZA cluster 1], [CHIEDZA cluster 2] and [CHIEDZA cluster 3]" (Bulawayo, IDI05, Phase 3)

In other instances, the CHIEDZA providers would offer such clients the methods that were available at CHIEDZA. These were not always the client's preferred choice, but clients took them up.

> "Not all our clients preferred short term methods, and PSZ would disappoint us a lot of times. A lot of clients would ask for the long-term methods and say 'if you give me the pills I will forget. I need a method that can stay for a very long time without remembering or forgetting'" (Harare, IDI10, Phase 3)

Feasibility of Offering Long-Acting Reversible Contraceptives in an Integrated Model of Care. Some of the providers considered the service delivery model with PSZ to be a more suitable option for offering LARCs at CHIEDZA, compared to being fully trained and having to provider the LARCs within the CHIEDZA integrated care model. The CHIEDZA nurses felt that if they had to insert

implants and IUCDs, it would compromise the quality of other HIV and SRH services as they would not have adequate time to do it all.

> "It would have been more work to insert long-term methods because you have to practice the inserting technique and setting up with packs involved. So, it was going to be added work for the nurse. That is why PSZ focuses specifically on inserting and removing LARCs only because you must watch out for infection and after every client you make sure that the place is clean to make sure that the place doesn't get infections" (Harare, IDI02, Phase3)

Unintended Consequences of Intervention Adaptations

Responsive adaptations to the family planning intervention resulted in unanticipated effects that are presented in this section.

Increased Duration of Consultation and Wait Times

When PSZ was at the sites, clients eligible for CHIEDZA but only needing PSZ services still had to follow the CHIEDZA client flow before engaging with PSZ services. In some instances, the researchers observed that young people spent all morning at the centre waiting in line or in a long consultation alternating between the CHIEDZA and PSZ booths. In one instance, a client who wanted her implant removed waited all morning (~ 5 hours), only to be asked to go home and return with proof of when and by whom her implant had been inserted.

Discussion

Our study provides a case study on the complexities of delivering a family planning intervention, and the adaptations made in response to these complexities. We conducted an exploratory qualitative process evaluation study

that sought to assess fidelity, feasibility, and quality of implementing an integrated family planning service delivery model. Specifically, we looked at CHIEDZA provider experiences, and the response to contextual factors in the delivery of family planning services within CHIEDZA. Our study examined the contextual elements like the national shortage of family planning and COVID-19 pandemic, that disrupted fidelity and catalyzed adaptation. Quality family planning service delivery in CHIEDZA was envisioned as one that was free, offering both short and long-acting reversible methods, and delivered by youth-friendly, adequately trained providers. Our study describes adaptations made to maintain this quality and the respective feasibility. Incomplete training for CHIEDZA providers led to a change in the delivery model where another organization had to be brought in to provide the full contraceptive method mix for young women. This had unintended consequences around youth-friendliness, wait times and provision of LARCS.

Our study investigated the concepts fidelity, quality, feasibility, and adaptations. Some of these concepts straddle both process evaluations and implementation research frameworks (Quasdorf et al., 2021). Assigning theoretical allocations to these concepts was not central to this study's goal. Rather we sought to provide a case experience that was produced within a process evaluation setting and illustrates how implementation fidelity can be tracked, the viability of adaptations, and the impacts on feasibility and quality.

Our study demonstrated the implementation of a complex intervention (Figure 1) within a complex set of partnerships/networks and a dynamic and complicated context (Table 2). CHIEDZA's family planning intervention was designed to respond to emerging challenges (Moore et al., 2021). Designing the

intervention this way shifted the focus from fidelity as implementing the original intervention, to having effective adaptations subsumed into measures of fidelity that ensure integrity (Cannata et al., 2021; Ghate, 2016; Lanham et al., 2013). Intervention integrity was the delivery of quality family planning services for young women.

There have been opposing arguments about fidelity and adaptation, and in trial instances, there is often an assumption that the components of an intervention would be standardized, and fidelity to the standard is maintained across all intervention sites (Moore et al., 2015). In our case, unexpected disruptions like the commodity shortage and COVID-19 led to program adaptations. In the former case, the supply of oral contraceptives given to clients was reduced, and in the latter, CHIEDZA was classified as an essential service so it would not be closed during severe lockdowns. Implementation research has begun to move away from qualifying fidelity/adaptation to examining the impacts of intervention adaptations (Kirk et al., 2020). For our intervention, adaptations were necessary, but feasibility remained a genuine challenge throughout implementation.

Our study supports that fidelity and adaptation are not in opposition. Implementation is itself a social process entangled in its context (Davidoff et al., 2008) such that the meaning of '*interventions as intended*' (fidelity) may differ for the various stakeholders who have to adopt it within the same context (Greenhalgh et al., 2004). Skilled implementers' active attempts to make an intervention more suited to its population or setting, should not be considered poor fidelity (Bumbarger & Perkins, 2008), and can have an influence on users' acceptability of the intervention. Our providers' deviations from the original

intervention design to responsively adapt, while remaining consistent to the theoretical and functional underpinnings of the intervention (Brand et al., 2019; Hill et al., 2020) may contribute to understanding interventions that are context-resilient in the long run. Therefore, there is a need to support and execute methods and evaluation designs that reflect the fluidity and often unpredictability of social contexts.

Attempts to examine how different adaptations may enhance (or not) the likelihood of interventions being transferable or scalable have remained ambiguous due to a dearth in clarity when conducting and reporting adaptations (Miller et al., 2020; Sundell et al., 2016). Implementing the adapted service delivery model in partnership with PSZ affected quality. Without PSZ, the CHIEDZA nurse would have had to dedicate significant time only inserting implants/ IUCDs, at the expense of other nurse tasks like sexually transmitted infections and antiretroviral therapy care. Having a partner organization available for insertions prevented the family planning intervention from potentially obstructing the CHIEDZA integration model overall. When PSZ was present, they were able to merge into the CHIEDZA model well enough and offer LARCs to CHIEDZA clients. On the other hand, their inability to provide commodities on every CHIEDZA service day and the target-driven nature of their work, diluted the intended quality components of CHIEDZA like short wait times, ready availability of full range of family planning methods, and youth-only spaces.

Process evaluations often take a retrospective approach (Webster et al., 2018). Our study's strengths include conducting data collection and analysis of the process evaluation study during implementation of the intervention. This

allowed us to capture real time evolutions and dynamic processes of implementation, as well as notice opportunities to improve the intervention as it was being delivered. Qualitative research is an essential component of systematic approaches to adapting interventions to examine feasibility, acceptability and likely impact on outcomes (Duggleby et al., 2020). Our study utilized a qualitative approach involving key stakeholders- the providers implementing the intervention (Moore et al., 2021) to guide and inform adaptations in the family intervention in CHIEDZA. Historically, process evaluation reports have not adequately elucidated context and its interplay with interventions (Greenhalgh et al., 2004; Hawe et al., 2004; Wells et al., 2012). As part of a process evaluation, our study demonstrates that what might be considered a failing of the intervention (challenges with LARC provision) highlights lessons for partnership approaches and adopting learning to actively respond to rather than ignore specific contextual conditions which shape implementation.

The limitations of the study are that we did not interview the providers from PSZ about their experiences implementing family planning within CHIEDZA. This would provide us with additional nuance about what works or doesn't work for an intervention model like ours. Future studies could investigate implementation from the perspective of other stakeholders. Additionally, the main qualitative researcher (CM) was well known to the CHIEDZA providers. While physical cues could not be noted during telephonic interviews, the existing and on-going relationship and rapport between CM and the providers allowed for in-depth narratives. This established conducive rapport, may have increased the likelihood of courtesy bias as the providers

became more familiar with her expectation regarding the process evaluation and implementation. This was mitigated by triangulation of different data sources and the presence of another researcher (RN) in the study.

Conclusions

Context can be unpredictable such that implementation should be viewed as an emergent and dynamic process where responsive adaptations are necessary, and fidelity is not static. Anticipating that changes will occur is a necessary pre-condition of strong intellectual evaluation. This study was practical example of how process evaluation as a method of implementation science makes tracking responsive change vital. Tracking adaptations during a comprehensive process evaluation ensures lessons on feasibility of design, contextual factors and health system factors are responded to during implementation. Adaptations do not necessarily threaten implementation fidelity if the intended intervention is aligned to the function and not the form of the intervention. Rather, these adaptations should be tracked and considered as an integral process of delivering high quality services.

List of Abbreviations

CHIEDZA	Community-based Interventions to improve HIV outcomes in youth: a cluster randomised trial in Zimbabwe
CHW	Community Health Worker
COC	Combined oral contraceptives
LARC	Long-acting reversible contraceptives
MoHCC	Ministry of Health and Child Care
POP	Progesterone only Contraceptives
PSZ	Population Services Zimbabwe
SRH	Sexual and Reproductive Health
IUCD	Intra-uterine contraceptive device

Declarations

Ethical Approvals and Consent to Participate

Research and ethical clearance were obtained from the Medical Research Council of Zimbabwe (MRC/A/2266), London School of Hygiene and Tropical Medicine (14652), and Biomedical Research and Training Institute (AP144/2018). All participants provided written consent to participate in the study.

Consent for Publication

Not applicable

Availability of Data and Materials

The datasets generated and/or analysed during the current study are not publicly available due the possible identification of participants, even after anonymization, but are available from the corresponding author on reasonable request.

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Authors' Contributions

CM, JB, and SB conceptualised the study. CM, RN, and PN collected the data. CM led the analysis with support from JB, SB and CMY. CM wrote the first draft. ED, CDC, MT, and RAF who implement the CHIEDZA trial. TA, OM, and BM are Leads of the HIV/TB Unit, at the Ministry of Health of Child Care, and National AIDS

Council and provided guidance and support in the design and implementation of the CHIEDZA trial. DN is with PSZ. PSZ is the family planning implementation partner that worked with CHIEDZA. RAF is the PI of the CHIEDZA trial. All authors provided input to the draft manuscript and read and approved the final manuscript.

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References

Amnesty International. (2018). Barriers to Sexual and Reproductive Health Information in Zimbabwe.

Amoakoh, H. B., Klipstein-Grobusch, K., Ansah, E. K., Grobbee, D. E., Yveoo, L., & Agyepong, I. (2019). How and why front-line health workers (did not) use a multifaceted mHealth intervention to support maternal and neonatal healthcare decision-making in Ghana. *BMJ Global Health*, *4*(2), e001153. https://doi.org/10.1136/bmjgh-2018-001153

Barratt H, Campbell M, & Moore L. (2016). Randomised controlled trials of complex interventions and large-scale transformation of services. In Raine R, Fitzpatrick R, & B. H (Eds.), *Challenges, solutions and future directions in the evaluation of service innovations in health care and public health.* . NIHR Journals Library. https://www.ncbi.nlm.nih.gov/books/NBK361251/ doi: 10.3310/hsdr04160-19

Birks, M., Chapman, Y., & Francis, K. (2008). Memoing in qualitative research:Probing data and processes. *Journal of Research in Nursing*, *13*(1), 68-75. https://doi.org/10.1177/1744987107081254

Brand, S. L., Quinn, C., Pearson, M., Lennox, C., Owens, C., Kirkpatrick, T., Callaghan, L., Stirzaker, A., Michie, S., & Maguire, M. (2019). Building programme theory to develop more adaptable and scalable complex interventions: realist formative process evaluation prior to full trial. *Evaluation*, *25*(2), 149-170.

Bumbarger, B., & Perkins, D. (2008). After randomised trials: issues related to dissemination of evidence-based interventions. *Journal of Children's Services*.

Cannata, M., Rubin, M., & Neel, M. (2021). From Fidelity to Integrity: Navigating Flexibility in Scaling Up a Statewide Initiative. *American Journal of Education*, *127*(2), 233-263. https://doi.org/10.1086/712085

Church, K., & Mayhew, S. H. (2009). Integration of STI and HIV Prevention, Care, and Treatment into Family Planning Services: A Review of the Literature. *Studies in Family Planning*, *40*(3), 171-186. https://doi.org/10.1111/j.1728-4465.2009.00201.x

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *4*(1), 50. https://doi.org/10.1186/1748-5908-4-50

Davidoff, F., Batalden, P., Stevens, D., Ogrinc, G., Mooney, S., & Group*, S. D. (2008). Publication guidelines for improvement studies in health care: evolution of the SQUIRE Project. *Annals of Internal Medicine*, *149*(9), 670-676.

Denno, D. M., Hoopes, A. J., & Chandra-Mouli, V. (2015). Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. *J Adolesc Health*, *56*(1 Suppl), S22-41. https://doi.org/10.1016/j.jadohealth.2014.09.012

Duggleby, W., Peacock, S., Ploeg, J., Swindle, J., Kaewwilai, L., & Lee, H. (2020). Qualitative Research and Its Importance in Adapting Interventions. *Qual Health Res*, *30*(10), 1605-1613. https://doi.org/10.1177/1049732320920229

Dziva Chikwari, C. a. D., E and Bandason, T and Tembo, M and Mavodza, C and Simms, V and Mackworth-Young, C and Apollo, T and Grundy, C and Weiss, H and Kranzer, K and Mavimba, T and Indravudh, P and Doyle, A and Mugurungi, O and Machiha, A and Bernays, S and Busza, J and Madzima, B and Terris-Prestholt, F and McCarthy, O and Hayes, R and Francis, S and Ferrand, R. (2022). The impact of community-based integrated HIV and sexual and reproductive health services for youth on population-level HIV viral load and sexually transmitted infections in Zimbabwe: protocol for the CHIEDZA cluster-randomised trial [version 1; peer review: awaiting peer review]. *Wellcome Open Research*, *7*(54). https://doi.org/10.12688/wellcomeopenres.17530.1

Ghate, D. (2016). From Programs to Systems: Deploying Implementation Science and Practice for Sustained Real World Effectiveness in Services for Children and Families. *Journal of Clinical Child & Adolescent Psychology*, *45*(6), 812-826. https://doi.org/10.1080/15374416.2015.1077449

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Q*, *82*(4), 581-629.

Hawe, P., Shiell, A., Riley, T., & Gold, L. (2004). Methods for exploring implementation variation and local context within a cluster randomised community intervention trial. *J Epidemiol Community Health*, *58*(9), 788-793. https://doi.org/10.1136/jech.2003.014415

Hill, J., Cuthel, A. M., Lin, P., & Grudzen, C. R. (2020). Primary Palliative Care for Emergency Medicine (PRIM-ER): applying form and function to a theory-based complex intervention. *Contemporary Clinical Trials Communications*, *18*, 100570.

Kennedy, C. E., Spaulding, A. B., Brickley, D. B., Almers, L., Mirjahangir, J., Packel, L., Kennedy, G. E., Mbizvo, M., Collins, L., & Osborne, K. (2010). Linking sexual and reproductive health and HIV interventions: a systematic review. *Journal of the International AIDS Society*, *13*(1), 1-10.

Kirk, M. A., Moore, J. E., Wiltsey Stirman, S., & Birken, S. A. (2020). Towards a comprehensive model for understanding adaptations' impact: the model for adaptation design and impact (MADI). *Implementation Science*, *15*(1), 1-15.

Lanham, H. J., Leykum, L. K., Taylor, B. S., McCannon, C. J., Lindberg, C., & Lester, R. T. (2013). How complexity science can inform scale-up and spread in health care: Understanding the role of self-organization in variation across local contexts. *93*, 194-202. https://www.sciencedirect.com/science/article/pii/S0277953612004911

MacQuarrie, K. (2014). Unmet Need for Family Planning among Young Women: Levels and Trends.

McLeod, S. (2021). Feasibility studies for novel and complex projects: Principles synthesised through an integrative review. *2*, 100022. https://www.sciencedirect.com/science/article/pii/S2666721521000168

Miller, C. J., Wiltsey-Stirman, S., & Baumann, A. A. (2020). Iterative Decision-making for Evaluation of Adaptations (IDEA): A decision tree for balancing adaptation, fidelity, and intervention impact. *J Community Psychol*, *48*(4), 1163-1177. https://doi.org/10.1002/jcop.22279

Ministry of Health and Child Care. (2016a). *Zimbabwe National Family Planning Costed Implementation Plan 2016-2020*. https://www.familyplanning2020.org/sites/default/files/Zimbabwe-National-FP-Costed-Implementation-Plan-CIP-2016-2020_9.12.16.pdf

Ministry of Health and Child Care. (2016b). Zimbabwe National Family Planning Strategy (ZNFPS) 2016-2020.

Moore, G., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O'Cathain, A., Tinati, T., Wight, D., & Baird, J. (2015). Process evaluation of complex interventions: UK Medical Research Council Guidance. In (pp. 134). United Kingdom,: UK Medical Research Council.

Moore, G., Campbell, M., Copeland, L., Craig, P., Movsisyan, A., Hoddinott, P., Littlecott, H., O'Cathain, A., Pfadenhauer, L., Rehfuess, E., Segrott, J., Hawe, P., Kee, F., Couturiaux, D., Hallingberg, B., & Evans, R. (2021). Adapting interventions to new contexts-the ADAPT guidance. *BMJ (Clinical research ed.)*, *374*, n1679-n1679. https://pubmed.ncbi.nlm.nih.gov/34344699
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8329746/

Mutumba, M., Wekesa, E., & Stephenson, R. (2018). Community influences on modern contraceptive use among young women in low and middle-income countries: a cross-sectional multi-country analysis. *18*(1), 430. https://doi.org/10.1186/s12889-018-5331-y

Oakley, A., Strange, V., Bonell, C., Allen, E., & Stephenson, J. (2006). Process evaluation in randomised controlled trials of complex interventions. *BMJ*, *332*(7538), 413-416. https://doi.org/10.1136/bmj.332.7538.413

Phillips, S. J., & Mbizvo, M. T. (2016). Empowering adolescent girls in Sub-Saharan Africa to prevent unintended pregnancy and HIV: A critical research gap. In *Int J Gynaecol Obstet* (Vol. 132, pp. 1-3). © 2015 International Federation of Gynecology and Obstetrics. Published by Elsevier Ireland Ltd. https://doi.org/10.1016/j.ijgo.2015.10.005

Quasdorf, T., Clack, L., Laporte Uribe, F., Holle, D., Berwig, M., Purwins, D., Schultes, M.-T., & Roes, M. (2021). Theoretical approaches to process evaluations of complex interventions in health care: a systematic scoping review protocol. *10*(1), 268. https://doi.org/10.1186/s13643-021-01825-z

Rabin, B. A., Brownson, R. C., Haire-Joshu, D., Kreuter, M. W., & Weaver, N. L. (2008). A Glossary for Dissemination and Implementation Research in Health. *Journal of Public Health Management and Practice*, *14*(2), 117-123. https://doi.org/10.1097/01.PHH.0000311888.06252.bb

Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *17*(1), 88. https://doi.org/10.1186/s12913-017-2031-8

Sundell, K., Beelmann, A., Hasson, H., & von Thiele Schwarz, U. (2016). Novel Programs, International Adoptions, or Contextual Adaptations? Meta-Analytical Results From German and Swedish Intervention Research. *J Clin Child Adolesc Psychol*, *45*(6), 784-796. https://doi.org/10.1080/15374416.2015.1020540

Tashakkori, A., & Teddlie, C. (2010). Sage handbook of mixed methods in social and behavioral research. SAGE publications.

Walford, G. (2009). The practice of writing ethnographic fieldnotes. *Ethnography and Education*, *4*(2), 117-130. https://doi.org/10.1080/17457820902972713

Warren, C. E., Mayhew, S. H., & Hopkins, J. (2017). The Current Status of Research on the Integration of Sexual and Reproductive Health and HIV Services. *Studies in Family Planning*, *48*(2), 91-105. https://doi.org/10.1111/sifp.12024

Webster, J., Exley, J., Copestake, J., Davies, R., & Hargreaves, J. (2018). Timely evaluation in international development. *10*, 482-508.

Wells, M., Williams, B., Treweek, S., Coyle, J., & Taylor, J. (2012). Intervention description is not enough: evidence from an in-depth multiple case study on the untold role and impact of context in randomised controlled trials of seven complex interventions. *13*(1), 95. https://doi.org/10.1186/1745-6215-13-95

Wolfinger, N. H. (2002). On writing fieldnotes: collection strategies and background expectancies. *Qualitative Research*, *2*(1), 85-93.

Zimbabwe National Statistics Agency, & International., I. (2016). *Zimbabwe National Demographic and Health Survey 2015: Final Report*.

Table 4-1: Qualitative data collection timelines, participants, methods, and areas of exploration

Phase	Sampling Strategy	Type of Interview Participants	Data collection method	Area of exploration
1. Apr 2020	Purposive sample: each province and type of health provider represented	16 health providers (10 females; 6 males)	Phone interviews	Experiences of implementing Family planning, including early COVID-19 effects; perceptions of training received, and service delivery model employed
2. Jul-Aug 2020	Purposive sample: each province and type of health provider represented; repeat interviews for change over time	15 health providers (10 females; 5 males) 7 repeats; 8 new interviews)	5 Phone interviews 10 In-person interviews	Experiences of implementing family planning & perceptions of service delivery model employed; challenging family planning issues/ concerns that young people raise and how providers meet these challenges
3. Oct-Nov 2021	Purposive sample: each province and type of healthcare provider represented; repeat interviews for change over time	11 health providers (6 females; 5 males) 6 repeats; 5 new interviews)	in-person interviews	The implementation of the trial is tapering to an end at this point. Experiences of implementing family planning services at CHIEDZA over time, what worked or didn't work overtime?
Apr 2019-Dec 2021	All	Debrief meetings Participant Observations	Meeting minutes and field notes	Real time family planning service provision experiences of health providers. Adaptation decisions made during or as part of these meetings
June 2020-July 2021	Purposive sample: each province; clusters where PSZ was present	18 non-participant observation events	Observation forms and field notes	Contextual understanding of implementing family planning services at the community centres.

Table 4-2: Timeline of contextual factors and events interacting with family planning service implementation in CHIEDZA

Time point	Events	Context	Adaptation
Apr. 2019	CHIEDZA began. Family planning commodities were meant to be provided by the government with CHIEDZA nurses offering oral contraceptives and injectables.	Reports of national shortage of contraceptive commodities at NatPharm (National Pharmacy) level. CHIEDZA was not a registered health facility, therefore could not get contraceptive supplies through the MoHCC system.	The PSZ partnership was established. PSZ staff would come to CHIEDZA sites and offer mixed- methods family planning products.
May 2019	PSZ attended CHIEDZA sporadically, to offer mainly implants and IUDs, and sometimes did not have enough commodities. If they had stock, they also offered oral contraceptives and Depo		CHIEDZA decided to procure COC, POP and Depo and offer them inhouse.
June 2019	CHIEDZA nurses now offered oral contraceptives and Depo injectable, and uptake of family planning commodities increased. PSZ continued to attend CHIEDZA sporadically to offer LARCS.		CHIEDZA clients who requested for LARCS in the absence of PSZ onsite, now got referral slips to go to a PSZ centre or clinic.
July 2019	PSZ stopped coming to CHIEDZA sites during July.	PSZ experienced challenges procuring enough family planning commodities and could not adequately support CHIEDZA	LARCs are now completely provided through offsite referrals. CHIEDZA nurses attend family planning training for implants to be able to offer LARCs inhouse at CHIEDZA
Aug. 2019	Young women were coming to CHIEDZA to access family planning commodities for their ineligible siblings, friends, and mothers.	In mid-August, CHIEDZA's oral contraceptive supplier noted that there was no COC in the country.	CHIEDZA clients now get a health book recording when & type of contraceptives

			taken. They would need to bring this book with them for their next refill. CHIEDZA would now offer 1 month supply of COC instead of 3 months per national guidelines, to mitigate against shortage
Sept. 2019	CHIEDZA providers face challenges completing the practical training to be able to offer implants due to scarcity of family planning commodities. Commodities cannot be spared for training procedures.	Official announcement of national shortage in contraceptives.	
Feb. 2020	Ongoing national shortage of family planning commodities.	Implants are reported to be out of stock- nationally	
Mar. 2020	CHIEDZA nurses attend theory training for IUCD	COVID-19 is declared a pandemic	CHIEDZA shut down on March 31st
May 2020	Coordinators reported receiving calls and text messages on the CHIEDZA cell-lines from clients asking when CHIEDZA would reopen to access STI treatments, family planning and condoms. CHIEDZA reopened on May 14th as an essential service, observing all COVID-19 infection and prevention control measures.		In addition to complying to national lockdown measures, CHIEDZA covid-19 adaptations *(published elsewhere)* included removal of social activities, installing handwashing, and sanitising stations, mandating social-distancing and 'no mask no services', moving the health booths outside for better ventilation
June 2020	High volume of clients after CHIEDZA reopened increased workload for providers. Providers noted decrease in the quality of service provision as they tried to serve many clients within a short period of time.	Lockdown measures included curfews that reduced the work hours for CHIEDZA providers.	

		June 19th, doctors, and nurses in Zimbabwe went on strike.	
July 2020	Requests for emergency contraceptive and pregnancy test increased. Young women noted having unprotected sex and running out of their contraceptive supply in the lockdown. Young people were access family planning to resale. In CHIEDZA communities, the clinics were referring youth to CHIEDZA for family planning and HIV testing, instead of serving them at the clinic	The national shortage and resultant exorbitant price of contraceptive commodities deepened, and community members are complaining about it (Bulawayo)	In mid-July2020, Bulawayo re-established partnership with PSZ. PSZ would come offer family planning at the CHIEDZA centres it was able to. For those centres where PSZ could not come, referrals to PSZ clinics/centres for LARCS would continue
Aug. 2020		Mid-August, lockdown measures were eased, and work hours increased for the CHIEDZA teams	
Sep. 2020- Mar. 2022 **(Final Adaptation)**	**Harare and Mashonaland East** re-established relationship with PSZ. The initially consensus was that PSZ would come offer family planning at all the CHIEDZA centres, except for a few exceptions, where the PSZ teams already had prior commitments to other communities. In the latter case, PSZ would proactively inform CHIEDZA of their availability so that at the centres where PSZ does not come, the clients who want LARCS continue to be referred to PSZ clinics/ centres. In practice, PSZ came to offer family planning (mostly implants and IUCDs) at the CHIEDZA centres it was able to.		
Oct. 2020	PSZ nurse in Bulawayo has not been coming to CHIEDZA all month	PSZ faces resource challenges in trying to support CHIEDZA. Oral contraceptives in short supply in Bulawayo.	

Dec. 2020	Giving clients 1 month supply of oral contraceptives is driving client traffic as clients are coming back every month just for a refill. CHIEDZA closes on December 18th for the holidays.	Clients continuing to come to CHIEDZA every month only for contraceptive refills is considered high risk behaviour for COVID-19	
Jan. 2021	CHIEDZA reopens as an established essential service. Family planning refills account for most of the client flow since CHIEDZA has closed for the holidays.	A level 4 lockdown is announced due to increase in COVID-19 cases.	CHIEDZA returns to providing clients with 3 months' supply of oral contraceptives on 18 January 2021.
June 2021	Reports that several clients who come to CHIEDZA to have their implants removed by PSZ have been turned away. A recognized need to have CHIEDZA providers trained and able to offer LARCS independent of PSZ.	PSZ functions in a specific manner for implant removals. If the client's implant was not inserted by PSZ, the client often faced challenges the implant removed by PSZ.	

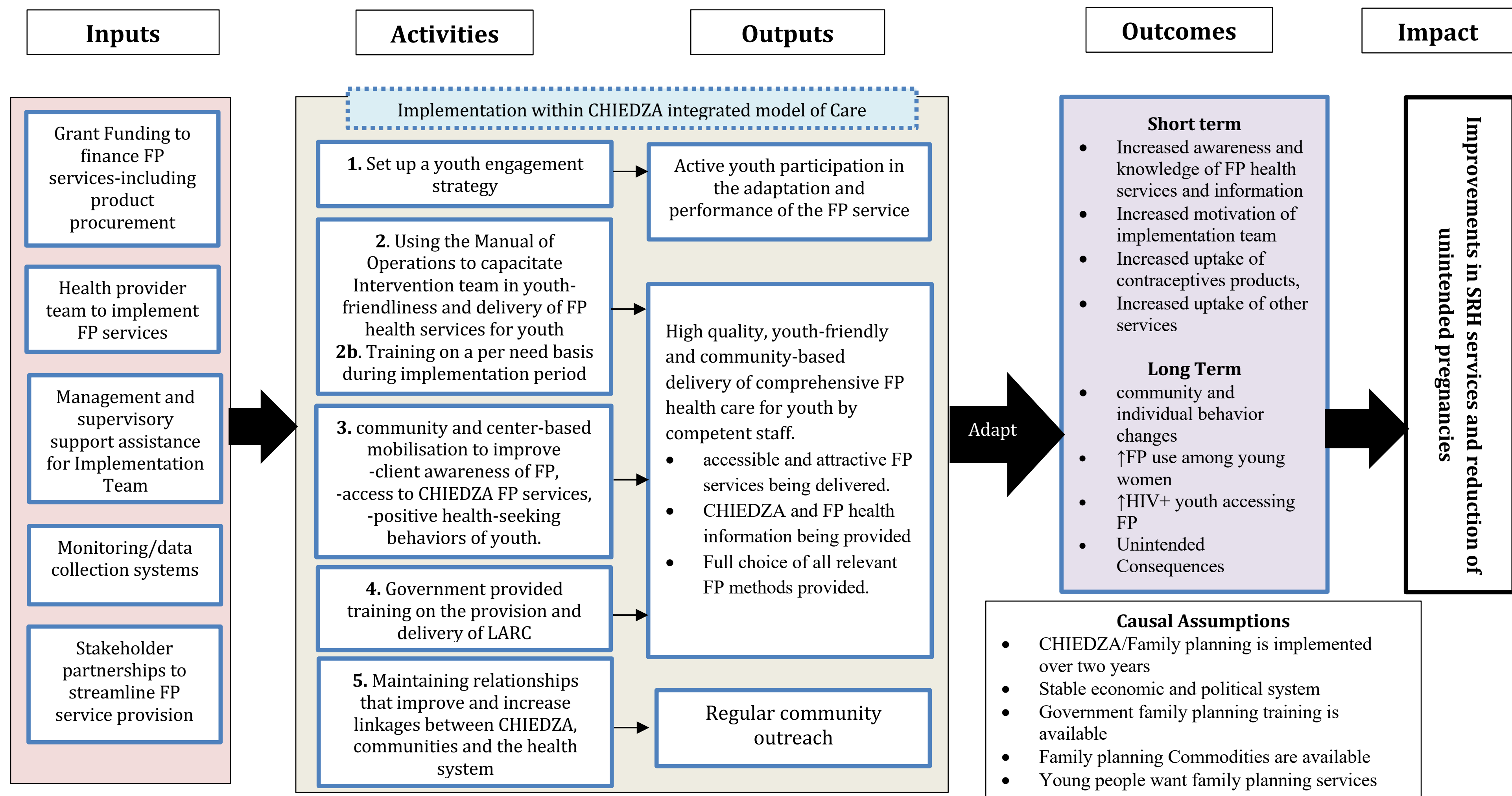

Figure 4-1: Model describing the implementation of the family planning Intervention as intended, as well as the anticipated outcomes and Impact

Chapter 5 : Interrupted Access to and Use of Family Planning Among Youth in a Community-Based Service in Zimbabwe During the First Year of the COVID-19 Pandemic

Overview

This paper explores the effects on use and access to CHIEDZA family planning services and methods, before, during and after the covid-19 pandemic and its mitigation measures. This paper was published in Frontiers for Global Health journal.

The CHIEDZA trial began in April 2019. I completed my PhD upgrading in February of 2020, and roughly a month later the COVID-19 pandemic began just as I was beginning to think about data collection for my PhD. While the family planning intervention was being implemented as illustrated in Chapters 4, the COVID-19 pandemic, a macro-contextual event was occurring, and my PhD journey was continuing. The pandemic shifted the chronology of research questions I wanted to explore, and I immediately responded to explore the effects of COVID-19 on family planning within CHIEDZA.

In crises like natural disasters, health worker strikes or economic downfalls, that have occurred before the COVID-19 pandemic, SRH services have often been side-lined during the responses to crises (1). As the world and Zimbabwe sought to contain, and mitigate for the COVID-19 pandemic, we sought to describe and understand how the COVID-19 pandemic was interacting with family planning

delivery, access, and reception within CHIEDZA, as well as how CHIEDZA was responding to this.

Implementing an intervention is a social process immersed in the context in which it takes place (2). There is a growing need and interest for methods that embody and successfully capture the potent interactions between context and the implementation of complex interventions, and case study research and analysis have the potential to do this well (3). COVID-19 was an active, interactive contextual variable that surrounded the implementation efforts of the family planning intervention. The analysis presented in this chapter was packaged as a case study, illustrative of how macro-level context in the form of a crisis (COVID-19) could impact the implementation and reception of the family planning intervention in CHIEDZA.

While the analysis presented in this Chapter was about the effects of COVID-19 on family planning, I wanted to use the learnings from the findings to inform a larger narrative about health systems' pandemic readiness when it comes to sexual and reproductive health services. The study took on a case study approach as an in-depth exploration of how the family planning intervention played out during the first year of the covid-19 pandemic using a multi-method qualitative approach to illustrate its impact and to generate valuable insights to inform future preparedness.

Data collection began at a time when many activities had been paused and some services had to cease operating. At that time there was limited empirical evidence

on how a crisis like COVID-19 could impact SRH services like family planning. It was an opportunity to add to this body of knowledge. To be able to conduct research within such circumstances, data collection methods had to be adapted to include remote data collection (telephonic interviews) as part of COVID-19 mitigation measures and responsible research conduct.

This chapter is focused on understanding the influence of the broader context, at a significant historical moment, on the intervention. Concentrating on the effect of the pandemic restrictions on the family planning intervention in CHIEDZA is a dramatic but illuminating example of how the context in which an intervention is implemented in is not neutral or independent from what the intervention becomes. Rather, context can change the shape, practice, and nature of the intervention, and it should not be side-lined or separated from the intervention. Therefore, there is a need for critical engagement with the influence of context if we are to evaluate and understand why the intervention had the impact that it did and what the intervention 'becomes' through the process of implementation.

By examining COVID-19's effects on the access to, and use family planning, this chapter connects the first findings' chapter about implementation with the last two findings chapters about mechanisms of effect/experiences. This is illustrative of how, across the process evaluation domains- context is cross-cutting and influences the others (4).

Citation

Mavodza, C.V., Bernays, S., Mackworth-Young, C.R., Nyamwanza, R., Nzombe, P., Dauya, E., Dziva Chikwari, C., Tembo, M., Apollo, T., Mugurungi, O., Madzima, B., Kranzer, K., Abbas Ferrand, R. and Busza, J. (2022), Interrupted Access to and Use of Family Planning Among Youth in a Community-Based Service in Zimbabwe During the First Year of the COVID-19 Pandemic. Studies in Family Planning. https://doi.org/10.1111/sifp.12203

References

1. Church K, Gassner J, Elliott M. Reproductive health under COVID-19 - challenges of responding in a global crisis. Sex Reprod Health Matters. 2020;28(1):1-3.

2. Davidoff F, Batalden P, Stevens D, Ogrinc G, Mooney S, Group* SD. Publication guidelines for improvement studies in health care: evolution of the SQUIRE Project. Annals of Internal Medicine. 2008;149(9):670-6.

3. Paparini S, Papoutsi C, Murdoch J, Green J, Petticrew M, Greenhalgh T, et al. Evaluating complex interventions in context: systematic, meta-narrative review of case study approaches. 2021;21(1):225.

4. Moore G, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: UK Medical Research Council Guidance. United Kingdom,: UK Medical Research Council; 2015.

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Student ID Number	1806373	**Title**	Ms.
First Name(s)	Constancia Vimbayi		
Surname/Family Name	Mavodza		
Thesis Title	Process evaluation of the family planning intervention for young women aged 16- 24 years, accessing CHIEDZA services in Zimbabwe		
Primary Supervisor	Joanna Busza		

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SECTION B – Paper already published

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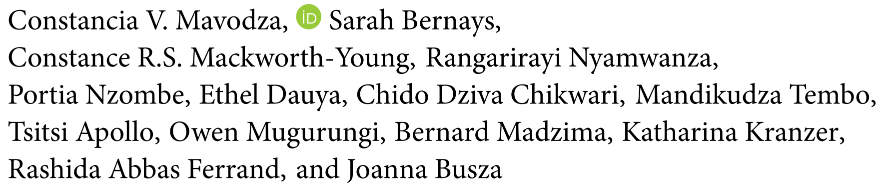
Interrupted Access to and Use of Family Planning Among Youth in a Community-Based Service in Zimbabwe During the First Year of the COVID-19 Pandemic



Constancia V. Mavodza, Sarah Bernays,
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Portia Nzombe, Ethel Dauya, Chido Dziva Chikwari, Mandikudza Tembo,
Tsitsi Apollo, Owen Mugurungi, Bernard Madzima, Katharina Kranzer,
Rashida Abbas Ferrand, and Joanna Busza

The COVID-19 pandemic has had serious impacts on economic, social, and health systems, and fragile public health systems have become overburdened in many countries, exacerbating existing service delivery challenges. This study describes the impact of the COVID-19 pandemic on family planning services within a community-based integrated HIV and sexual and reproductive health intervention for youth aged 16–24 years being trialled in Zimbabwe (CHIEDZA). It examines the experiences of health providers and clients in relation to how the first year of the pandemic affected access to and use of contraceptives.

Constancia V. Mavodza, Constance R.S. Mackworth-Young, Rangarirayi Nyamwanza, Portia Nzombe, Ethel Dauya, Chido Dziva Chikwari, Mandikudza Tembo, Katharina Kranzer, Rashida Abbas Ferrand, Biomedical Research and Training Institute, Harare, Zimbabwe. Constancia V. Mavodza, Joanna Busza, Department of Public Health, Environments and Society, Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, UK. E-mail: Constancia-Vimbayi.Mavodza@lshtm.ac.uk. Sarah Bernays, Constance R.S. Mackworth-Young, Department of Global Health and Development, Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. Sarah Bernays, School of Public Health, University of Sydney, Sydney, Australia. Chido Dziva Chikwari, Katharina Kranzer, Rashida Abbas Ferrand, Clinical Research Department, Faculty of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, UK. Mandikudza Tembo, MRC London School of Hygiene and Tropical Medicine, London, UK. Tsitsi Apollo, Owen Mugurungi, Ministry of Health and Child Care, HIV and TB Department, Harare, Zimbabwe. Bernard Madzima, National AIDS Council, Harare, Zimbabwe. Katharina Kranzer, Division of Infectious and Tropical Medicine, Medical Centre of the University of Munich, Munich, Germany. ClinicalTrials.gov Identifier: NCT03719521

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A total of 72 interviews were conducted at four time points between April 2020 and May 2021 with CHIEDZA providers and clients. Nonparticipant observations of the CHIEDZA centers (n = 18) and participant observations of provider and research team meetings (n = 14) during this time were also documented. All interviews, field notes, and meeting minutes were thematically analyzed using NVivo, word processing and analytical memos.

We illustrate how the CHIEDZA intervention functioned before COVID-19 and then chronologically track the effects of the pandemic on access to and use of family planning methods during the temporary closure, subsequent reopening, and adaptation of the intervention in response to the pandemic. We show how existing barriers to family planning access were exacerbated by the pandemic and how youths navigated and responded to these barriers. Fear of contracting COVID-19 and the consequences of breaking national lockdown restrictions hindered youths' access to services, leading some to discontinue using contraceptives. This study highlights the critical need for quality youth-friendly services, which was heightened by the conditions of a pandemic. The study demonstrates that the uneven protection and prioritization of some sexual and reproductive health services (e.g., HIV treatment) over others (e.g., family planning) reflects an investment in only narrow components of the health system, which undermines broader systemic resilience. Additionally, we explore learning about health system vulnerabilities more broadly and the strong need for investment in sustainable and resilient health systems and comprehensive sexual and reproductive health services for youth. We highlight the role, gaps, and opportunities for an intervention such as CHIEDZA operating in community settings but distinct from the health system during the pandemic.

INTRODUCTION

Youth aged 15–24 years are at high risk of poor sexual and reproductive health (SRH) outcomes (WHO 2011, 2017). Sub-Saharan Africa (SSA) has the world's highest rates of adolescent pregnancies (10–19 years), with 28 percent and 25 percent of girls in West and Central Africa and in East and Southern Africa, respectively, having given birth by age 18 (Loaiza and Liang 2013). Additionally, approximately 35 percent of pregnancies among 15- to 19-year olds are unintended, underscoring an unmet need for family planning among young women (Chae et al. 2017).

In Zimbabwe, there is a high unmet need for family planning among young women aged 15–24 years. The most recent demographic health survey (DHS) data in 2015 showed that the unmet need for family planning among women of reproductive age (15–45 years) was 12.6 percent and was particularly high for unmarried young women: 37 percent (15–19 years) and 17 percent (20–24 years) compared to married young women in the same age groups, 12.6 percent and 10 percent, respectively (Zimbabwe National Statistics Agency and ICF International 2016). According to the 2019 Multiple Indicator Cluster Surveys Report, 17.6 percent of 15- to 19-year olds and 24.1 percent of 20- to 24-year olds gave birth and teenage fertility rates are 108 (15–19 years) and 193 (20–24 years) births per 1,000 girls, respectively (Zimbabwe National Statistics Agency (ZIMSTAT) and UNICEF 2019).

Despite the country's high modern contraceptive prevalence rate (65 percent), challenges in ensuring youth-friendly, voluntary, informed choice and access to a range of contraceptive methods for youth remain in the Zimbabwean health care system (Ministry of Health

and Child Care 2016; Zimbabwe National Statistics Agency and ICF International 2016). Most people (73 percent) access family planning services from the public sector, which has facility-based services and community-based distribution (CBD) programs. According to the *Zimbabwe National Family Planning Costed Implementation Plan 2016–2020*, facility services should offer the full method mix, but they are inadequately equipped, the services are not free, and there are not enough skilled personnel to provide long-acting reversible contraceptives (LARCs). The CBD program offers information on all contraceptive methods but only provides pills and condoms in the community, and coverage has been declining over the years (Ministry of Health and Child Care 2016). Access to family planning information for young people has also been limited, with only 13 percent of 15- to 19-year olds having media access to family planning information, compared to 24 percent of the rest of the population, and only 3 percent of them reported receiving family planning information at either outreach or static clinics (Ministry of Health and Child Care 2016). The government of Zimbabwe pledged to invest in and address the unmet need for family planning among married adolescents aged 15–19 years and to reduce it from 12.6 percent to 8.5 percent by 2020 (Govt. of Zimbabwe 2017).

Before the COVID-19 pandemic, Zimbabwe's health system was fragile, with degraded infrastructure and shortages of basic health supplies and staff (Kidia 2018; Green 2018; Meldrum 2008), largely due to the economic crisis that began in the early 2000s. Since then, user fees have increased sharply (Makoni 2020; Green 2018), and national shortages of contraceptive commodities and devices are frequent (Manyonga 2019; Moyo 2019). Since the onset of the COVID-19 pandemic in March 2020, programmers and researchers have highlighted and/or predicted that the pandemic would impede youth's access to SRH globally, leading to negative health and social outcomes (Mmeje, Coleman, and Chang 2020; Wilkinson, Kottke, and Berlan 2020; Lindberg, Bell, and Kantor 2020; Lewis et al. 2021b; Compact for Young People in Humanitarian Action 2020; UNFPA 2020, 2021; Hussein 2020; Both, Castle, and Hensen 2021). Real-world data confirming these predictions have started to emerge. As elsewhere, the onset of the COVID-19 pandemic resulted in disruptions to contraceptive supply chains in Zimbabwe (Aly et al. 2020; Kumar, Malviya, and Sharma 2020). As part of COVID-19 mitigation measures, the government, private sector, and NGOs were forced to close health facilities, mobile clinics, and community-based interventions (Riley et al. 2020; Pratt and Frost 2020), reducing access to health services.

This study aims to explore the role of the COVID-19 epidemic and associated mitigation measures in shaping access to and use of contraceptives over time by young women within a cluster randomized trial evaluating a community-based integrated HIV and SRH intervention in Zimbabwe.

METHODOLOGY

Study Design

This study was part of the nested process evaluation for the CHIEDZA trial, which uses the Medical Research Council's guidance framework to explore and understand the implementation, mechanisms of change, and context of this multicomponent trial (Moore et al. 2015). A

qualitative, exploratory and descriptive design was used for this study to explore the perceptions and experiences of CHIEDZA health providers in providing family planning services and youth clients in accessing and using contraceptives during the first year of the COVID-19 pandemic. A qualitative approach was chosen because it permits information sharing between researchers and participants, allowing for in-depth exploration of experiences (Khan and Chovanec 2010).

Study Setting

Zimbabwe has a population of approximately 15.2 million people, with a median age of 18.7 years, and 38 percent reside in urban areas ("Worldometer" 2022). Young people aged 15–24 years make up 20 percent of the population, with 42 percent of women of reproductive age and 34 percent of maternal deaths also being within this age group. Contraceptive use among adolescents, both married and unmarried, is 46 percent compared to the national average of 67 percent (Zimbabwe National Statistics Agency and ICF International 2016). According to the 2015 DHS, among women aged 15–19 years, 10 percent (Harare), 12 percent (Bulawayo), and 25 percent (Mashonaland East) had begun childbearing. The unmet need for family planning among women of reproductive age (15–49 years) was 10 percent in Harare and 9 percent in both Bulawayo and Mashonaland East (Zimbabwe National Statistics Agency and ICF International 2016).

Family Planning in the CHIEDZA Intervention

CHIEDZA is a cluster randomized trial testing a comprehensive and integrated intervention of HIV and SRH services for youth (16–24 years) delivered in community-based settings in three provinces in Zimbabwe: Harare, Mashonaland East, and Bulawayo. The services are delivered by a team consisting of nurses, community health workers, youth workers and a counsellor. Each province has four intervention clusters and four control clusters (Dziva Chikwari et al. 2022). A key component of CHIEDZA is the use of some clients as community mobilizers, tasked with reaching out to youths and sensitising communities to the intervention to increase engagement.

As part of the package of CHIEDZA services, youth-friendly trained providers offer family planning information and a choice of methods, including condoms. Nurses dispense oral contraceptives and Depo-Provera (Depo) injectibles for young women, and community health workers distribute condoms at the community centers located in the intervention clusters. All commodities are provided free of charge. At the trial's inception, implants and intrauterine devices (IUDs), LARCs, were offered via referral to a nongovernmental organization, Population Services Zimbabwe (PSZ), at either public sector clinics or specific PSZ centers. This changed in October 2020 when CHIEDZA partnered with PSZ to offer these methods at the CHIEDZA centers alongside the other methods. CHIEDZA was implemented in the absence of affordable alternatives, and access centered on making contraceptives easily available both physically and economically.

TABLE 1 Summary description of the two lockdown levels that Zimbabwe underwent during the first year of the COVID-19 pandemic sourced from Public Health (COVID-19 Prevention, Containment and Treatment) (National Lockdown) Orders in Zimbabwe

Lockdown levels	Description
Level 5	The entire country is in national lockdown. All businesses closed, except essential services (as defined by the statutory instrument). Those working in essential services were able to leave home for work but required to carry documentation to prove employment. Public and private clinics had restricted operating hours. Mobility restrictions—stay-at-home orders in place for all nonessential workers. Travel for necessities (groceries) limited to 5 km radius, except if seeking medical attention.
Level 2	Formal businesses are allowed to reopen with COVID-19 prevention measures (mask-wearing, sanitising, testing of employees) in place. Movement was allowed beyond the 5 km radius, provided one had a valid letter to show the reason/rationale for this movement. Mandatory wearing of masks in public. Police presence is used to monitor movement and ensure everyone is wearing masks.

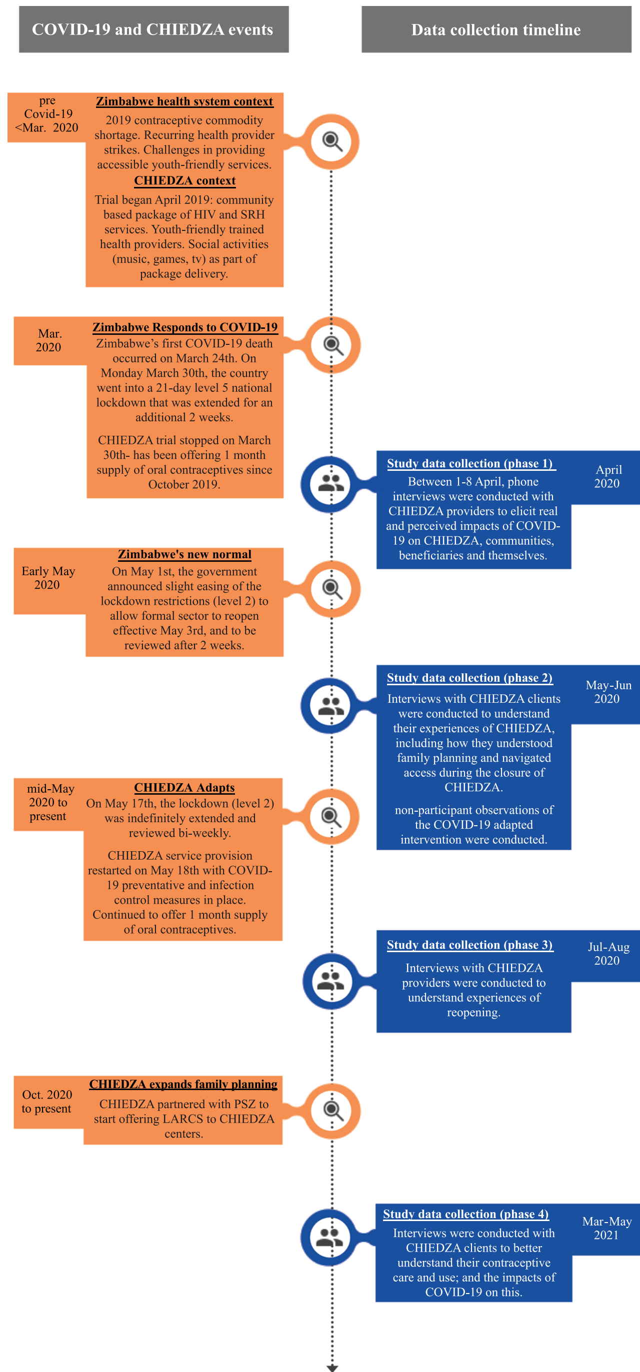
Study Context

In September 2019, Zimbabwe experienced a national shortage of contraceptive commodities (Moyo 2019; Manyonga 2019), which lasted approximately one year, thus preceding and then overlapping with the first wave of the COVID-19 pandemic. During this period, in October 2019, CHIEDZA went from offering three months of supply of oral contraceptives (per national guidelines) to one month of supply to avoid stockouts. This study focuses on the COVID-19 impact during the first year of the pandemic: March 2020 to May 2021.

When a national state of emergency was declared on March 28, 2020, in response to the COVID-19 pandemic and a level 5 restrictive national lockdown began on March 31, 2020, there were already depleted supplies of family planning commodities across Zimbabwe. During this lockdown, HIV care and treatment services were considered essential services and could be accessed at selected public and private facilities that remained open. HIV testing and other SRH services, such as family planning, were not considered essential services and could not be readily accessed during this time. This lockdown lasted six weeks until May 14, 2020 and impeded the provision of a wide range of non-COVID-19 health services. In May 2020, the lockdown was reduced to level 2, during which businesses and other essential services were allowed to reopen COVID-19 protective measures in place (Table 1). The beginning of the level 5 lockdown coincided with school closures for the holidays at the end of March 2020. The Ministries of Education determined whether schools would open, and the school schedule remained disrupted in the first year of the pandemic. In the instances when schools reopened, attendance was prioritized for classes that had to sit for national exams in October–December 2020 (Dziva, Zhou, and Zvobgo 2021).

At the onset of COVID-19, the CHIEDZA trial closed for the six weeks of the level 5 lockdown. The trial reopened on May 18, 2020 as it was granted an essential service exception under level 2 lockdown. COVID-19 infection prevention control (IPC) measures were implemented to ensure safe service provision. Some of these measures changed the structure of service delivery. The structural adaptations included moving service delivery from inside community centers to an outdoor space within the centers' compounds, reducing service delivery hours to accommodate COVID-19 curfew restrictions, removing social activities, and halting mobilization activities in the community (Figure 1).

FIGURE 1 COVID-19 in Zimbabwe, CHIEDZA implementation and data collection timelines for this study



Data Collection

This study draws on 72 interviews conducted over four phases with CHIEDZA health providers and youth clients from all twelve intervention clusters in the three provinces (Figure 1; Table 2).

Provider Interviews

We interviewed 16 providers (Phase 1) at the beginning of lockdown and 15 providers (Phase 3) after CHIEDZA had reopened as an essential service (Table 2; Figure 1). Telephonic interviews were conducted in Phase 1 due to lockdown mobility restrictions. Health providers were invited to participate in phone interviews during the last team meeting before the lockdown went into effect. Twenty providers signed written consent forms, and 16 were interviewed. Of the remaining four, two did not respond when contacted for a phone interview, one represented a health provider cadre (Community Health Worker) that had been well-represented already, and one was working on an intermittent volunteer basis and therefore excluded from these interviews.

Eight weeks after CHIEDZA reopened, an additional 15 provider interviews were conducted in Phase 3. Seven of these were repeat interviews, following up the same providers interviewed in Phase 1 to examine whether and how provider perceptions of COVID-19 and CHIEDZA had changed over the two data collection time points. The Phase 3 interviews were conducted either in person or by phone, depending on the national social distancing and intercity travel restrictions at the time of each interview. A research assistant in the provinces we could not travel to obtained written consent before the telephonic interviews were conducted by CM. The semistructured interviews were conducted using a topic guide (see the Supporting Information) to explore the objectives under investigation (Table 2).

Client Interviews

Interviews were conducted with 26 CHIEDZA clients (Phase 2) immediately after CHIEDZA had reopened in May 2020, with an additional 15 clients (Phase 4) interviewed about a year after the start of the pandemic in March 2021 (Table 2). In Phase 2, all 23 of the CHIEDZA youth community mobilizers were invited to participate in the study because of their combined experience of being young people, clients of CHIEDZA, and a link to communities where CHIEDZA services occur. All (n = 23) agreed to participate and provided written consent, and interviews occurred either in person or telephonically. For those who chose telephone interviews, written consent was obtained by a research assistant, and interviews were conducted at a time convenient for the mobilizers. Additional interviews (n = 3) were conducted with CHIEDZA clients, who were not mobilizers, to explore any differences/similarities between mobilizers and nonmobilizers in CHIEDZA experiences: no major differences were seen. Topic guides (see the Supporting Information) were used for the semistructured interviews.

In March 2021, 12 months after COVID-19 was declared a pandemic, Phase 4 interviews (Figure 1) were conducted with female CHIEDZA clients using contraceptive methods (n = 15). Unstructured interviews were used with some of the clients (n = 8) to elicit their narratives about their SRH, including pregnancy prevention, perceptions of fertility, contraceptive use/uptake and the impacts of COVID-19 on these issues (Table 2). The unstructured

TABLE 2 Qualitative data collection timelines, participants, and methods

Phase	Sampling strategy	Type of participants	Data collection method	Objective
1. April 2020	Purposive sample: each province and each type of healthcare provider represented	16 health providers (10 females; 6 males)	Phone interviews	To understand how the advent of COVID-19 and lockdown conditions affected the provision of health services for young people who depended on CHIEDZA services
2. May–June 2020	Purposive sample: all the youth mobilizers to get representation by sex and cluster. Nonmobilizers for representation of ordinary clients	26 youth clients (15 females; 13 males) (23 youth community mobilizers: 3 clients)	3 phone interviews 23 in-person interviews	To understand clients' experience of the adapted CHIEDZA intervention, how these adaptations influenced client interactions with the intervention, and, how clients navigated SRH health care during the COVID-19 pandemic
3. July–August 2020	Purposive sample: each province and each type of healthcare provider represented; 7 repeat interviews to examine change in perception over time	15 health providers (10 females; 5 males)	5 phone interviews 10 in-person interviews	Explore providers' experiences of providing COVID-19-adapted CHIEDZA health services and their perceptions of health impacts of the lockdown on young people coming to CHIEDZA
4. March–May 2021	Purposive sample: for maximum variation by contraceptive type they use (short-acting and long-acting)	15 female youth clients All in-person interviews	8 narrative-style interviews 7 interviews with topic guide	To understand clients' experience of the adapted CHIEDZA intervention, how these adaptations influenced client interactions with the intervention, and, how clients navigated SRH health care during the COVID-19 pandemic-a year into the pandemic examine clients' narratives and experiences of contraceptive access and use as well as the impacts of COVID-19 on these
May–July 2020 Mar-Apr 2021	Convenience and purposive: all provinces included. Easy to travel to and from.	18 nonparticipant observations events	10 observations CHIEDZA reopened 8 observations a year into pandemic	To witness how CHIEDZA was now being implemented and received after the level 5 lockdown Examine the impact of the pandemic on the intervention, a year into the pandemic
March 2020–May 2021	All debrief meetings during this period	14 participant observations	Meeting minutes	To describe and understand the study team and provider experiences and perceptions of providing family planning services within an adapted intervention.

style enabled us to collect data that were specifically oriented toward exploring the concerns and issues selected by young people. Although there was flexibility in the topics discussed in the prior rounds of data collection, an unstructured interview approach was adopted to reflect young people's priorities rather than those deemed relevant by the researchers. In the remaining interviews with seven clients, a topic guide was used to elicit their experiences of contraceptive access and use.

Observations

Nonparticipant observations (n = 18) were conducted at 10 of the 12 CHIEDZA centers over two time periods (Table 2) using observation guides (see the Supporting Information).

Participant observations of meetings between the research and implementation (CHIEDZA providers and coordinators) teams' meetings (n = 14) that occurred monthly between March 2020 and May 2021 were also conducted. An experienced qualitative researcher (CM) was part of these meetings as both a contributor to the team discussions (participant role) and a data collector observing and taking notes during proceedings.

Data Analysis

All interviews were audio-recorded and conducted in English, Shona, or Ndebele depending on participant preference and subsequently transcribed in English. The interviews ranged in length between 15 and 90 minutes, lasting approximately 45 minutes on average. Observation and meeting notes were written up using guiding templates. All 72 transcripts were read, and emerging inductive themes were compiled in data summary notes using Microsoft Word. Following the data summaries, the drafting of analytical memos, which explored connections between codes and developed emerging ideas (Birks, Chapman, and Francis 2008), and NVivo were employed to advance the analysis. Coded excerpts were extracted from the transcripts and data summaries and grouped under the identified themes. The analytical processes were iterative and occurred during each data collection phase with phase–phase comparison of emerging themes. The process involved collaborative discussions of codes and emerging themes among CM, SB, and JB.

The group of health care providers who participated was small, and some professional roles were represented in this study by only one person. To protect anonymity, quotes from providers are labeled by interview number, sex, province, and time point of data collection. Quotes from CHIEDZA clients are labeled by interview number, province, sex, age, and time point of data collection. PSZ offers free LARCS at the CHIEDZA centers (through partnership) and offers family planning methods at their own centers and public facilities. To delineate between the two in participant quotes, "non-CHIEDZA" will be used to refer to the latter scenario, and "CHIEDZA" will be used to refer to the former.

Ethical Approval

Ethical approval was granted by the Medical Research Council of Zimbabwe (MRC/A/2266), London School of Hygiene and Tropical Medicine (14652), and Biomedical Research and Training Institute (AP144/2018). All participants provided written informed consent.

Findings

This section first presents findings to illustrate how the CHIEDZA intervention functioned before COVID-19 and then describes the effects of the pandemic on access to and use of family planning methods during the intervention's temporary closure, subsequent reopening, and adaptation of the intervention in response to the pandemic.

It Was Already Hard: Difficult Access to SRH Services Preceded COVID-19

A significant portion of the family planning access challenges that youth in Zimbabwe faced before COVID-19 were due to the already fragile health system and worsening socioeconomic situation in the country. For example, CHIEDZA providers explained how accessing LARCs at other health programs and clinics came at a financial cost for youths.

> The clinic will charge money for LARCS. PSI charges but it is a smaller amount. And PSZ [non-CHIEDZA] offers for free when commodities are available… (CHIEDZA provider-IDI11, female, Mashonaland East, Phase 3).

In the months before the pandemic, at times some public sector facilities did not have enough commodities to provide youths with the free family planning method of their choice. To try to circumvent commodity shortages, these facilities referred young women to an NGO partner, which also presented access challenges.

> So sometimes clients will need to bring their own blades [to the clinic] yes those sterile razor blades and at times the client won't even have a dollar to buy the sterile razor blade you understand. It's now the same as saying that the service is no longer free… Now they [clients] have to go an extra mile of being referred. They now have to incur transport costs or even go to the PSZ centres [non-CHIEDZA] in the city or a specific place that they are referred to. (CHIEDZA provider-IDI11, Female, Bulawayo, Phase 3)

According to CHIEDZA providers, outside CHIEDZA, youths experienced rationed, difficult, and expensive access to contraceptives. This preceded the national contraceptive shortage and COVID-19. For many of these young women, these existing constraints were then made more acute by the pandemic.

Pre-COVID 19: CHIEDZA Perceived as a Source of Reliable, Acceptable, and Free Contraception

When the national contraceptive shortage occurred in October 2019, young women came to CHIEDZA in part because at pharmacies and clinics, these commodities, if available, were expensive.

> What made me come to CHIEDZA to seek family planning services was the issue of the pills themselves being sold at exorbitant prices these days whether at the pharmacy or clinic. So at times, you won't afford to buy the pills on a monthly basis… I came to CHIEDZA to access family planning services because they are given for free. (Youth-IDI1, Harare, female, 24 years, Phase 2)

CHIEDZA was viewed differently from other health care services because contraceptives were free and services integrated. Furthermore, youth did not have to navigate negative attitudes, seek financial support for commodities, or admit their sexual activities or need for SRH services. These features encouraged engagement with CHIEDZA and the uptake of family planning services.

> There isn't any other place where they [young women] can get those services for free, and it is sort of taboo anyway in our tradition for a young girl to ask from her mother money to buy family planning pills. It is like taboo but because CHIEDZA came with these free services, it has become easier to access them for free. (Youth-IDI17, Mashonaland East, male, 24 years, Phase 2)

Unlike at local clinics, at CHIEDZA, youth felt they could freely, safely, and openly take contraceptives and condoms. They felt comfortable talking to providers about their SRH needs and lives without fear of being criticized for being sexually active. One client described experience at the local clinic where nurses would say:

> 'yeeeee at your age what do you need family planning for?!' in a judgmental tone, while there was also no privacy: one 'might bump into their neighbors'. This young woman came to CHIEDZA instead of the clinic for family planning because, 'CHIEDZA makes one feel comfortable as there are only youths present and privacy is maintained. The clinic is not youth-friendly.' (Youth-IDI7, Bulawayo, female, 24 years, Phase 2)

COVID-19 and Its Mitigation Measures' Effects on CHIEDZA

Due to COVID-19, three key factors coincided with reducing youths' access to family planning services at CHIEDZA.

Deprioritization of Sexual and Reproductive Health Care

In the few weeks leading up to the level 5 lockdown, CHIEDZA providers attempted to prepare clients by encouraging them to come for supplies before the closure, including through the youth mobilizers. This was to avoid interruptions in contraception and other commodity supplies in the hope that the supplies would see them through the lockdown period. However, in those last days, other immediate economic concerns provoked by the prospect of lockdown meant that attending CHIEDZA was not perceived as a priority by many youths. For clients who ordinarily engaged with CHIEDZA, as economic stress increased, the concerns about their SRH were subsumed by more pressing needs, such as having enough food to prepare for and survive the lockdown.

> One of them [CHIEDZA youth mobiliser] was almost assaulted by people in the communities with them saying that we know that there is CHIEDZA at the hall; can you please just leave us in peace in our homes because right now we are focusing on mealie-meal [food] such that when we go on lockdown we will have something to eat. (CHIEDZA provider-IDI1, Bulawayo, female, Phase 1)

The health providers noted that the shifting priorities reduced the number of clients accessing CHIEDZA services in the weeks prior to lockdown.

> By the time we got to Cluster-X as the last centre we visit on [a specific week day], the numbers were even much less. Those who were coming were usually ladies who were coming for their family planning, and they were saying that they need their supplies because when the lockdown starts they don't know what will happen. (CHIEDZA provider-IDI5, Harare, Phase 1)

Growing Fear of Contracting COVID-19 Kept Youth Away from Care Settings

According to CHIEDZA providers, youth also started to fear coming to CHIEDZA because they associated all health care settings with high infection risks.

> Our regular clients they would boldly tell us that they will come after this COVID thing has passed. And then the other time it happened that I sneezed in the booth and the client I was with actually said, "aah sister do you want to give me COVID? What's happening here, please refrain from coming near me." (CHIEDZA provider-IDI1, Bulawayo, Phase 1)

Similar to the youth, the CHIEDZA providers also became anxious and afraid of contracting COVID-19, as they had to travel to and from work using public transport and provide health services to the youth who were still coming to CHIEDZA. The quality of service delivery became compromised.

> And when we were interacting with the clients, I would talk to them but with fear, because I didn't know who had COVID or not amongst the clients so I would try and maintain a distance. Of course, it wouldn't be a meter or 2 meters apart distance because our booths are very small…I would talk with the clients with hesitance and having some small reservations that I shouldn't judge a client, maybe they don't have the virus or they have it but I honestly didn't know. (CHIEDZA provider-IDI4, Harare, Phase 1)

> I was worried at times even you know talking to the client. We also had this fear that you didn't need to be with the client for a longer time. So the issue was like even if the clients were coming, they wouldn't get all the information that we wanted to give them because the provider is also you know having all the fears of talking to someone and the fear of spreading COVID. (CHIEDZA provider-IDI2, Harare, Phase 1)

Closure of CHIEDZA and Travel Restrictions

CHIEDZA providers noted that in anticipation of CHIEDZA's closure, to prevent pregnancy, some women took readily accessible, available, and/or affordable contraceptives at CHIEDZA even if the method might not have been their ideal choice.

> …some of the clients were even changing their family planning methods…they were changing from tablets to injectables which last for 3 months and not

> because of the side effects of the pill that they were taking, but because of fearing that we won't be able to get the family planning pill if we lockdown because right now we were giving the one month supply. (CHIEDZA provider-IDI7, male, Harare, Phase 1)

When CHIEDZA was about to close, there was little time for providers to prepare for and address all of clients' family planning needs. Both provider and youth participants described how some youths stopped using contraceptives and condoms during the lockdown.

> I only stopped during the first lockdown when CHIEDZA was closed and I didn't have enough supply. (Youth-IDI2, Harare, female, 22 years, Phase 4)

> I know there's one boy in [cluster-X] who would come every week to get condoms and one day I asked him like you come every week, can I know like are you using them or are you selling them? And he told me that, look I have got 4 girlfriends and I have slept with all of them in the week that you guys are away so I need these condoms and I said okay, what happens when they get finished? And he was straight up in saying that when they finish, then I do unprotected sex. (CHIEDZA provider-IDI4, Harare, Phase 1)

Providers and youth agreed that closing down a readily accessible and youth-friendly HIV and SRH intervention such as CHIEDZA for even six weeks left youth clients vulnerable to SRH problems.

> The next big thing was family planning because the ladies we see at the centres always talk about how they appreciate the services and that they can get it for free and at the pharmacies, it's so expensive now so out there on the streets it's the same. So I know that people are going to be affected like those who have reached their resupply dates for family planning and the control pills. I know they will be affected by this because people don't have money to buy (them). (CHIEDZA provider-IDI4, Harare, Phase 1)

> During the lockdown, I failed to access my Depo because of the restrictions…I did not change my family planning, and I did not use anything. I am just lucky that I never fell pregnant, but I was not using any contraceptive. I was always in fear and scared. Men do not understand that you are not on contraceptives because all they want is sex, regardless of whether the contraceptive is effective or not that is none of his business to him. (Youth-IDI13, Bulawayo, female, 24 years, Phase 4)

Unlike family planning and HIV testing, HIV care and treatment were considered essential services. Where feasible, youth living with HIV were supported and provided with three to six months of treatment to accommodate the lockdown and its restrictions.

> For our CHIEDZA clients who are in the HIV cohort, there were arrangements that were made that they are all contacted to come and collect their resupplies and meet up with the nurses being given 3–6 months' resupplies. So for those, I am not worried. (CHIEDZA provider-IDI1, Bulawayo, Phase 1)

Impeded Access to Safe Family Planning Services Without CHIEDZA

New challenges brought about by COVID-19 reinforced existing ones, such as poverty and commodity stock-outs, and some existing weaknesses in the health system appeared more pronounced. This affected family planning service use patterns. Three of these patterns are described here.

Limited Alternatives to Accessing Contraceptives

In the absence of the readily available and accessible CHIEDZA services at a time of restrictions that minimized movement, some young women found alternative strategies to obtain contraceptives. Some of them or their partners risked harassment from the police by breaking travel restrictions and trying to find oral contraceptives at the few formal health facilities that remained open, while others told providers they bought contraceptives on the black market.

> I stay close to the [neighborhood] so that's where my husband would go and buy from the pharmacy…. (Youth-IDI9, Mashonaland East, 24 years, female, Phase 4)

> After reopening CHIEDZA we were asking clients what they were doing to access family planning services during the lockdown and they will tell you that they bought some from [suburb-black market] or in their communities there are some people who sell pills illegally. So we encourage them that they shouldn't buy pills from the illegal market because you won't know the expiry date of the pills or where they got them from. Because a lot of people sell painkillers like Ibuprofen and the family planning pills as well, for them to know where they come from is a question left unanswered…. (CHIEDZA provider-IDI4, Female, Mashonaland East, Phase 3)

In Zimbabwe, the sale and purchase of contraceptives on the informal market occurred before COVID-19, but lockdown restrictions likely increased it, as many young women had no other choice. Some young women were cognisant of risks associated with the black market, such as procuring expired oral contraceptives.

> I realized through my interaction with clients that if you deny them the services they will find other ways to get the service, like they end up buying from those people selling the pills in the community. I then ask them does the person selling explain how to use the pills, check their vitals, and their compatibility with the pill. They will tell you that when they go to the clinic, the nurses there refuse to give them the pills so they end up buying them on the streets. (CHIEDZA provider-IDI15, Female, Bulawayo, Phase 3)

> For those who sell family planning pills at the tuck shops; it is scary to buy from them because they may be selling expired pills (Youth-IDI9, Mashonaland East, female, 24 years, Phase 4)

Presented with limited alternatives, young women had to assess and weigh relative risks between the high likelihood of unintended pregnancies and accessing contraceptives by any means.

Reduced (or Unreliable) Supplies by Trading in Contraceptives and Condoms

The outbreak of the pandemic did not diminish young women's contraceptive needs and exacerbated the hard socioeconomic conditions in Zimbabwe. The youth participants supported provider reflections on how the pandemic reduced women's ability to afford contraception.

> Aaah, I remember [referring to 2020's lockdown] others used to buy them from the community health workers and some would get the pills in exchange for hard labor like doing laundry, slashing or cutting grass you know so that they would get money like $50 Bond to buy the family planning pills with…Other women couldn't do anything [no more hard labor opportunities] and I know quite a few who are pregnant now. (Youth-IDI2, Harare, female, 22 years old, Phase 4)

In both the formal and black markets, contraceptives had to be purchased and were too expensive for many young women. Not only did youth have less money during the lockdown, but they had become accustomed to free supplies offered by CHIEDZA. According to youth participants, among those who could not readily afford contraceptives, some "borrowed" oral contraceptives from neighbors or peers who had a surplus.

> You would hear people going around to their neighbors asking them if they have any extra supplies of family planning. (Youth-IDI13, Harare, male, 25 years, Phase 2)

> My mother is the one who gave me the batch to use up until I came back to CHIEDZA. She got them from a friend of hers who had bought extras, and she replaced them after buying her supply. (Youth-IDI24, Mashonaland East, female, 18 years old, Phase 2)

When all other options were not possible, some young women discontinued taking contraceptives.

> Recently, when we were still in total lockdown [level 5], I stopped taking them when my supply ran out and at the pharmacies. They were going for USD$1 for one pack and CHIEDZA was closed. (Youth-IDI16, Harare, female, 24 years, Phase 2)

Staying Away from "Unfriendly" Clinics

Having gained confidence in accessing the more reliable, supportive, and youth-friendly services at CHIEDZA, youth were forced to reconsider seeking family planning services from the public sector facilities that remained open when CHIEDZA closed. In some instances, this compromised condom and contraceptive refills due to the fear of negative staff attitudes.

> I stopped using condoms, and I feared going to the clinic because of what my friends said about how the nurses treated them. Plus, since we were on lockdown I feared the police as we were not allowed to move around. (Youth-IDI4, Bulawayo, male, 19 years, Phase 2)

Public sector clinics were meant to remain open during the lockdown, as they were classified as providing essential services. However, according to the mobilizers, young women constantly asked them if and when CHIEDZA would reopen so that they could refill their contraceptives as they had run out. This implies that these young women may not have returned to the public sector clinics, could not afford to, preferred to avoid them, or the public sector clinics did not view family planning as an essential service.

Challenges to CHIEDZA Access After Reopening

Once CHIEDZA reopened, mobility restrictions continued to constrain youth's ability to get to CHIEDZA. Some youth reported military or police resistance and harassment. From nonparticipant observations in the field and provider reports during team meetings, the police and military presence in the streets instilled fear of movement among young people. They were questioned and intimidated by the police as they were making their way to the CHIEDZA community centers. This interrupted access to CHIEDZA.

Accessing Contraceptives on Behalf of Parents or to Resell

While reopening CHIEDZA reinstated youth's access to free contraceptives, according to the providers, it also put pressure on some of them to use CHIEDZA as a source of contraception for others (ineligible parents or siblings) or to convert it into a resource to generate some income (selling the free contraceptives on the informal market).

> We discovered that some of these girls were getting these pills for resale. So some of them are in a bad space financially, and they do not have breadwinners to provide for them, so they then decide to come to CHIEDZA to get the pills and resell them to other people in their neighborhood…. At clinics, they screen people at the gate, so those who want condoms are turned away because collecting condoms is deemed not essential. Clients then end up coming to us to get condoms, possibly for resale. (CHIEDZA provider-IDI15, Bulawayo, Female, Phase 3)

> The only problem is that some mothers in the communities are now sending their 16-year olds to CHIEDZA to take the family planning services on their behalf since they don't fit in terms of criteria of inclusion. So you usually catch out that they are lying when you start asking them questions like how they take the pills, what the pills look like or when they started taking the pills… They will eventually tell you the truth that they were sent by their mother to take the family planning pills on their behalf. (CHIEZA provider-IDI4, Mashonaland East, Female, Phase 3)

In retrospect, health providers felt that CHIEDZA should have reverted to providing three months of oral contraceptive supply (as was done for ART) before the pandemic to reduce repeat visits to CHIEDZA and to subsequently ensure young women had sufficient supply during the lockdown. However, this could have increased the frequency of reselling or giving contraceptives to ineligible family members. CHIEDZA eventually decided to absorb this risk, and since mid-January 2021, it has resumed providing a three-month supply of oral contraceptives as part of COVID-19 mitigation measures.

DISCUSSION

This study highlights how COVID-19 exacerbated existing barriers to youths' ability to safeguard their sexual and reproductive health. Even before the COVID-19 pandemic, youth faced considerable barriers to accessing HIV and SRH services. CHIEDZA was configured to address some of these barriers and improve access to and coverage of HIV and SRH services. Contraceptive demand by young women continued to be high during the pandemic, but their ability to ensure the continuity of their supply was threatened by the lockdowns, mobility restrictions and limited availability of youth-friendly service options. When a service such as CHIEDZA, which is perceived as youth-friendly, was disrupted by the pandemic, youth sought alternative, often suboptimal, pathways for accessing and using contraceptives during the pandemic. Some stopped engaging with any care system and went without contraceptives as they waited for CHIEDZA to reopen.

CHIEDZA is based on empowering youth to act with autonomy by providing direct (and free) health services. During closure, some young women had to procure contraceptives at public clinics, private pharmacies, or the black market, all of which incurred costs. Respondents underscored the ways that crisis-related barriers to using family planning services were compounded by preexisting poverty. However, reopening CHIEDZA illustrated uneven access disaggregated by age. Youth who are often considered the most underserved had a greater degree of protection through CHIEDZA than their adult siblings and mothers, as their needs were generally considered to be better met. Thus, the pandemic revealed existing gaps in family planning access.

Research on the accessibility of SRH services for youth shows that there are many different components, including availability, affordability, acceptability, and quality services (Mazur, Brindis, and Decker 2018; WHO 2011; Denno, Hoopes, and Chandra-Mouli 2015; Ndayishimiye et al. 2020). This study showed that youth will prioritize different components, and when options become limited, compromises on these priorities will be made. Prior to the COVID-19 pandemic, due in part to existing difficult socioeconomic conditions, CHIEDZA offered affordability and acceptability. When the intervention was closed temporarily, acceptability was compromised for some as they engaged with less ideal care settings, and some youth pursued the only affordable and available options. Additionally, as the pandemic persisted and CHIEDZA reopened with COVID-19 control measures in place, the perceptions about CHIEDZA that made it acceptable shifted with the pandemic. CHIEDZA was originally designed in response to what youth had said they wanted: a place where they can access youth-friendly health services that do not look or feel like a health facility. However, with

the advent of the COVID-19 pandemic, CHIEDZA's status as a health care setting became more visible, both because the service sought recognition as an essential service provider and because growing fears of COVID-19 led to it being associated with potential risk of infection.

This study demonstrated the underinvestment and low attention to family planning for youth when compared to other SRH services such as HIV. In Zimbabwe, at the advent of the COVID-19 pandemic, within the health system, every effort was made to ensure effective continuity of care for HIV so that people living with HIV had adequate ART supplies to weather the lockdowns (Ministry of Health and Child Care 2020). In contrast, there was little attention invested in family planning, despite recognized adverse short- and long-term consequences of unintended pregnancies. Thus, we found that some young people switched contraceptive methods prelockdown or borrowed oral contraceptives during the lockdown. Although this demonstrates their willingness to adapt and make active decisions in the context of a fragile system, it also shows a lack of prioritization of family planning services despite government pledges to reduce unmet needs.

A substantial body of research has focused on health systems preparedness and resilience during crises (Kruk et al. 2015; Nuzzo et al. 2019; Kieny and Dovlo 2015; Martineau 2016; Fridell et al. 2020). Resilience became particularly relevant during the COVID-19 pandemic (Kieny and Dovlo 2015). Resilient health systems can operationalize a robust public health response during a crisis and provide an effective service delivery system during noncrisis times (Kruk et al. 2015; Martineau 2016). Such a health system must be able to maintain its core functions when a crisis occurs (Sundararaman, Muraleedharan, and Ranjan 2021; Doubova et al. 2021). Zimbabwe's health system was already fragile, with core functions compromised even before the COVID-19 pandemic (Meldrum 2008; Makoni 2020; Green 2018; Kidia 2018). Therefore, the system's capacity was rapidly overwhelmed. Our study reflected conditions in peri-urban and urban communities and systems in Zimbabwe. Predictions and simulations were made about disrupted access to SRH in other parts of Africa (Govender, Naidoo, and Taylor 2020; Sen and Govender 2015) and other parts of Zimbabwe (Murewanhema 2020). Decisions were made to suspend mobile outreach provider teams, shrink geographical coverage, and limit service provision at static clinics; in some instances, the provision of LARCS was terminated (Church, Gassner, and Elliott 2020). This indicates that it is likely that young women in remote and rural settings experienced harsher disruptions and interruptions to contraceptive use and access to care due to COVID-19. Discussions on COVID-19 recovery strategies have included building health systems resilience and preparedness (Kruk et al. 2015; Sundararaman, Muraleedharan, and Ranjan 2021; El Bcheraoui et al. 2020). Crises such as the COVID-19 pandemic present learning and systems transformation opportunities so that health systems do not return to the original vulnerable state but rather become continuously adaptive systems that can withstand shocks (Fridell et al. 2020). For example, the presence of protected conditions such as HIV care and treatment during a pandemic shows that, with attention and investment, it is possible to have robust systems in place for other conditions such as family planning, which can weather crises.

Since the COVID-19 pandemic began, commentaries (Hussein 2020; Aly et al. 2020; Kumar, Malviya, and Sharma 2020; Hall et al. 2020) and empirical studies on the impacts of COVID-19 on SRH have emerged (Gilbert et al. 2021; Bolarinwa 2021; Lewis et al. 2021a; Both, Castle, and Hensen 2021; Yarger et al. 2021; Endler et al. 2021; Balachandren et al. 2022;

Steiner et al. 2021). Some studies, such as ours, found that access to contraception became difficult during lockdowns (Balachandren et al. 2022), and others focused specifically on the impact on adolescents and young people (Lewis et al. 2021a; Both, Castle, and Hensen 2021; Yarger et al. 2021; Steiner et al. 2021). Two of these studies have shown findings that support our findings (Both, Castle, and Hensen 2021; Lewis et al. 2021b). In Scotland, an online survey was used to investigate the effects of COVID-19 on condom and contraceptive access and use among 16- to 24-year olds. Disrupted prevention care included unanticipated contraceptive pathways and switching from freely provided to commercially sold contraceptives to mitigate disrupted access (Lewis et al. 2021b). A mixed-methods study including 2700 youth from six low- and middle-income countries, including Zimbabwe, found that 30 percent of young women in the survey were unable to access the contraceptives they needed due to fear of catching COVID-19 in health facilities, lack of transport, and closure of health facilities (Both, Castle, and Hensen 2021). Different contraceptive pathways, purchasing contraceptives and fear of catching COVID-19 were effects that were also present in our study. Unlike in Scotland, where switching to purchasing contraceptives was affordable, affordability was limited for the young people in our study, as contraceptive prices were inflated due to rationed supply.

Studies focusing specifically on the impacts of COVID-19 on SRH in LMICs are scarce (Mukherjee et al. 2021), and those on young people's SRH in LMICs remain limited (Seme et al. 2021; Peters et al. 2021; Meherali et al. 2021). Our study adds to this body of knowledge and reflects how SRH is often sidelined and forgotten during crises.

The study had limitations. It was conducted during the pandemic period when perceptions and knowledge of COVID-19 were constantly evolving. This could affect retrospective data interpretation, as interviewees' knowledge and perceptions of COVID-19 may have shifted depending on when they were interviewed. The temporal specificity of the data is not unusual, but it becomes potentially more explicit as our developing understanding and knowledge of COVID-19 may illuminate how the existing empirical context shaped interpretations and experiences. The findings are also restricted to the context of the CHIEDZA trial, and therefore, some of them cannot be generalized in the standard of care. However, the lessons that can be absorbed into the standard of care and health systems are illustrated in this section. The CHIEDZA trial has responded as quickly as it can to adapt to the new challenges triggered by the pandemic. Ongoing research will capture to what extent service engagement has and can be maintained and to what extent there have been losses in satisfaction (if any), which could be detrimental to contraceptive uptake.

CONCLUSION

Although youth used alternative settings of care to access contraceptives during the COVID-19 pandemic, our study demonstrates that the sustained provision of quality youth-friendly services is needed for access and use of contraceptives, even during crises. The COVID-19 pandemic revealed existing systemic and structural gaps in SRH service provision. They were made worse by the pandemic and underscores the importance of maintaining access to broader health services as part of epidemic readiness and preparedness.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Constancia V. Mavodza, Joanna Busza, and Sarah Bernays conceptualized the study. Constancia V. Mavodza, Rangarirayi Nyamwanza, and Portia Nzombe collected the data. Constancia V. Mavodza analyzed the qualitative data with support from Joanna Busza, Sarah Bernays, and Constance R.S. Mackworth-Young and then wrote the first draft. Ethel Dauya, Chido Dziva Chikwari, Mandikudza Tembo, Constancia V. Mavodza, and Rashida Abbas Ferrand implemented the CHIEDZA trial. Katharina Kranzer participated in the COVID-19 adaptations of the trial. Rashida Abbas Ferrand is the PI of the CHIEDZA trial. All authors provided input to the draft manuscript and read and approved the final manuscript.

REFERENCES

Aly, Jasmine, Kristin O. Haeger, Alicia Y. Christy, and Amanda M. Johnson. 2020. "Contraception Access During the COVID-19 Pandemic." 5(1): 17. https://doi.org/10.1186/s40834-020-00114-9

Balachandren, N., G. Barrett, J. M. Stephenson, E. Yasmin, D. Mavrelos, M. Davies, A. David, and J. A. Hall. 2022. "Impact of the SARS-CoV-2 Pandemic on Access to Contraception and Pregnancy Intentions: A National Prospective Cohort Study of the UK Population." *BMJ Sex Reprod Health* 48(1): 60–65. https://doi.org/10.1136/bmjsrh-2021-201164

Birks, Melanie, Ysanne Chapman, and Karen Francis. 2008. "Memoing in Qualitative Research: Probing Data and Processes." *Journal of Research in Nursing* 13(1): 68–75. http://journals.sagepub.com/doi/abs/10.1177/1744987107081254

Bolarinwa, O. A. 2021. "Factors Associated with Access to Condoms and Sources of Condoms During the COVID-19 Pandemic in South Africa." *Arch Public Health* 79(1): 186. https://doi.org/10.1186/s13690-021-00701-5

Both, Rosalij n., Sarah. Castle, and Bernadette. Hensen. 2021. *"I Feel That Things are Out of My Hands": How Covid-19 Prevention Measures Have Affected Young People's Sexual and Reproductive Health in Ghana, Indonesisa, Kenya, Nepal, Uganda and Zimbabwe*. The Netherlands: Rutgers.

Chae, Sophia, Sheila Desai, Marjorie Crowell, Gilda Sedgh, and Susheela Singh. 2017. "Characteristics of Women Obtaining Induced Abortions in Selected Low- and Middle-Income Countries." *PLoS One* 12(3): e0172976. https://doi.org/10.1371/journal.pone.0172976. https://doi.org/10.1371/journal.pone.0172976.

Church, K., J. Gassner, and M. Elliott. 2020. "Reproductive Health Under COVID-19: Challenges of Responding in a Global Crisis." *Sexual and Reproductive Health Matters* 28(1): 1–3. https://doi.org/10.1080/26410397.2020.1773163

Compact for Young People in Humanitarian Action. 2020. "COVID-19: Working with and for Young People." UNFPA, New York USA; IFRC Geneva, Switzerland. https://static1.squarespace.com/static/5b2d24e39d5abbe187e75234/t/5ec3fd1456f8a03becbc2699/1589902616805/COMPACT+COVID19-05.pdf. Accessed: 11 May 2021.

Denno, D. M., A. J. Hoopes, and V. Chandra-Mouli. 2015. "Effective Strategies to Provide Adolescent Sexual and Reproductive Health Services and to Increase Demand and Community Support." *Journal of Adolescent Health* 56(1 Suppl.): S22–S41. https://doi.org/10.1016/j.jadohealth.2014.09.012

Doubova, Svetlana V., Hannah H. Leslie, Margaret E. Kruk, Ricardo Pérez-Cuevas, and Catherine Arsenault. 2021. "Disruption in Essential Health Services in Mexico During COVID-19: An Interrupted Time Series Analysis of Health Information System Data." *BMJ Global Health* 6(9): e006204. http://gh.bmj.com/content/6/9/e006204.abstract

Dziva Chikwari, Chido., Ethel. Dauya, Tsitsi. Bandason, Mandikudza. Tembo, Constancia. Mavodza, Victoria. Simms, Constance R.S. Mackworth-Young, Tsitsi. Apollo, Chris. Gundy, Helen A. Weiss, Katharina. Kranzer, Tino. Mavimba, Pitchaya. Indravudh, Aoife M. Doyle, Owen. Mugurungi, Anna. Machiha, Sarah. Bernays, Joanna. Busza, Bernard. Madzima, Feris. Terris-Prestholt, Ona. McCarthy, Richard J. Hayes, Suzanna C. Francis, and Rashida A. Ferrand. 2022. *The Impact of Community-Based Integrated HIV and Sexual and Reproductive Health Services for Youth on Population-Level HIV Viral*

Load and Sexually Transmitted Infections in Zimbabwe: Protocol for the Chiedza Cluster-Randomised Trial (in press with Wellcome Trust Open Research). London UK: Wellcome trust Open Research.

Dziva, Cowen, Idaishe Zhou, and Ellen Farisayi Zvobgo. 2021. "Covid-19 Pandemic and Women's Vulnerabilities in Zimbabwe." *The Dyke* 15(1): 104–115.

El Bcheraoui, Charbel, Heide Weishaar, Francisco Pozo-Martin, and Johanna Hanefeld. 2020. "Assessing COVID-19 Through the Lens of Health Systems' Preparedness: Time for a Change." 16(1): 112. https://doi.org/10.1186/s12992-020-00645-5

Endler, M., T. Al-Haidari, C. Benedetto, S. Chowdhury, J. Christilaw, F. El Kak, D. Galimberti, C. Garcia-Moreno, M. Gutierrez, S. Ibrahim, S. Kumari, C. McNicholas, D. Mostajo Flores, J. Muganda, A. Ramirez-Negrin, H. Senanayake, R. Sohail, M. Temmerman, and K. Gemzell-Danielsson. 2021. "How the Coronavirus Disease 2019 Pandemic is Impacting Sexual and Reproductive Health and Rights and Response: Results from a Global Survey of Providers, Researchers, and Policy-Makers." *Acta Obstetricia et Gynecologica Scandinavica* 100(4): 571–578. https://doi.org/10.1111/aogs.14043

Fridell, My, Sanna Edwin, Johan von Schreeb, and Dell D. Saulnier. 2020. "Health System Resilience: What Are We Talking About? A Scoping Review Mapping Characteristics and Keywords." *International Journal of Health Policy and Management* 9(1): 6–16. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6943300/

Gilbert, M., Chang H., Ablona A., T. Salway, G. S. Ogilvie, J. Wong, D. Haag, H. N. Pedersen, S. Bannar-Martin, L. Campeau, G. Ford, C. Worthington, D. Grace, and T. Grennan. 2021. "Accessing Needed Sexual Health Services During the COVID-19 Pandemic in British Columbia, Canada: A Survey of Sexual Health Service Clients." *Sexually Transmitted Infections*. https://doi.org/10.1136/sextrans-2021-055013

Govender, D., S. Naidoo, and M. Taylor. 2020. "Don't Let Sexual and Reproductive Health become Collateral Damage in the Face of the COVID-19 Pandemic: A Public Health Perspective." *African Journal of Reproductive Health* 24(s1): 56–63. https: //doi.org/10.29063/ajrh2020/v24i2s.9

Govt. of Zimbabwe. 2017. Family Planning 2020 Commitment. *London: Family Planning Summit*.

Green, Andrew. 2018. "Zimbabwe Post-Mugabe Era: Reconstructing a Health System." 391(10115): 17–18. https://www.sciencedirect.com/science/article/pii/S0140673618300072

Hall, Kelli Stidham, Goleen Samari, Samantha Garbers, Sara E Casey, Dazon Dixon Diallo, Miriam Orcutt, Rachel T Moresky, Micaela Elvira Martinez, and Terry McGovern. 2020. "Centring Sexual and Reproductive Health and Justice in the Global COVID-19 Response." *The Lancet* 395(10231): 1175–1177.

Hussein, Julia. 2020. "COVID-19: What Implications for Sexual and Reproductive Health and Rights Globally?" *Sexual and Reproductive Health Matters* 28(1): 1746065. https://doi.org/10.1080/26410397.2020.1746065

Khan, Candy, and Donna Chovanec. 2010. "Is Participatory Action Research Relevant in the Canadian Workplace?" *Journal of Contemporary Issues in Education* 5(1): 34–44.

Kidia, Khameer K. 2018. "The Future of Health in Zimbabwe." *Global Health Action* 11(1): 1496888. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6070968/

Kieny, Marie Paule, and Delanyo Dovlo. 2015. "Beyond Ebola: A New Agenda for Resilient Health Systems." *Lancet (London, England)* 385(9963): 91–92. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5513100/

Kruk, Margaret E., Michael Myers, S. Tornorlah Varpilah, and Bernice T. Dahn. 2015. "What is a Resilient Health System? Lessons from Ebola." *The Lancet* 385(9980): 1910–1912.

Kumar, Dharmendra, Rishabha Malviya, and Pramod Kumar Sharma. 2020. "Corona Virus: A Review of COVID-19." *EJMO* 4(1): 8–25.

Lewis, Ruth, Carolyn Blake, Michal Shimonovich, Nicky Coia, Johann Duffy, Yvonne Kerr, Jill Wilson, Cynthia Ann Graham, and Kirstin R Mitchell. 2021a. "Disrupted Prevention: Condom and Contraception Access and Use Among Young Adults During the Initial Months of the COVID-19 Pandemic. An Online Survey." *BMJ Sexual & Reproductive Health.* ttps://doi.org/10.1136/bmjsrh-2020-200975. https://srh.bmj.com/content/familyplanning/early/2021/03/10/bmjsrh-2020-200975.full.pdf

———. 2021b. "Disrupted Prevention: Condom and Contraception Access and Use Among Young Adults During the Initial Months of the COVID-19 Pandemic. An Online Survey." *BMJ Sexual & Reproductive Health*. https://srh.bmj.com/content/familyplanning/early/2021/03/10/bmjsrh-2020-200975.full.pdf

Lindberg, Laura D., David L. Bell, and Leslie M. Kantor. 2020. “The Sexual and Reproductive Health of Adolescents and Young Adults During the COVID-19 Pandemic.” *Perspectives on Sexual and Reproductive Health*. 52(2): 75–79. https://doi.org/10.1363/psrh.12151

Loaiza, E., and M. Liang. 2013. *Adolescent Pregnancy: A Review of the Evidence*. New York: UNFPA Population and Development Branch. Technical Division.

Makoni, Munyaradzi. 2020. “COVID-19 Worsens Zimbabwe’s Health Crisis.” *The Lancet* 396(10249): 457. https://doi.org/10.1016/S0140-6736(20)31751-7

Manyonga, E. 2019. “Zimbabwe Runs Out of Contraceptives.” NewsDay. Accessed May 11, 2019. https://www.newsday.co.zw/2019/11/zimbabwe-runs-out-of-contraceptives-2/

Martineau, Fred P. 2016. “People-Centred Health Systems: Building More Resilient Health Systems in the Wake of the Ebola Crisis.” *International Health* 8(5): 307–309.

Mazur, Amanda, Claire D. Brindis, and Martha J. Decker. 2018. “Assessing Youth-Friendly Sexual and Reproductive Health Services: A Systematic Review.” *BMC Health Services Research* 18(1). https://doi.org/10.1186/s12913-018-2982-4

Meherali, S., B. Adewale, S. Ali, M. Kennedy, B. O. Salami, S. Richter, P. E. Okeke-Ihejirika, P. Ali, K. L. da Silva, S. Adjorlolo, L. Aziato, S. O. Kwankye, and Z. Lassi. 2021. “Impact of the COVID-19 Pandemic on Adolescents’ Sexual and Reproductive Health in Low- and Middle-Income Countries.” *International Journal of Environmental Research and Public Health* 18(24): 13221. https://doi.org/10.3390/ijerph182413221

Meldrum, Andrew. 2008. “Zimbabwe’s Health-Care System Struggles On.” *The Lancet* 371(9618): 1059–1060. https://doi.org/10.1016/S0140-6736(08)60468-7

Ministry of Health and Child Care. 2016. *Zimbabwe National Family Planning Costed Implementation Plan 2016–2020*. Harare, Zimbabwe: MoHCC. https://www.familyplanning2020.org/sites/default/files/Zimbabwe-National-FP-Costed-Implementation-Plan-CIP-2016-2020_9.12.16.pdf

Ministry of Health and Child Care. 2020. *Rapid Guidance on HIV Service Delivery in COVID-19 Context*. Harare, Zimbabwe: Ministry of Health and Child Care.

Mmeje, Okeoma O, Jenell S Coleman, and Tammy Chang. 2020. “Unintended Consequences of the COVID-19 Pandemic on the Sexual and Reproductive Health of Youth.” *Journal of Adolescent Health* 67(3): 326–327.

Moore, G. F., S. Audrey, M. Barker, L. Bond, C. Bonell, W. Hardeman, L. Moore, A. O’Cathain, T. Tinati, D. Wight, and J. Baird. 2015. “Process Evaluation of Complex Interventions: Medical Research Council Guidance.” *Bmj* 350: h1258. https://doi.org/10.1136/bmj.h1258

Moyo, T. 2019. “Zimbabwe Hit by Birth Control Pills Shortage.” *Chronicle*. Accessed May 11, 2021. https://www.chronicle.co.zw/zimbabwe-hit-by-birth-control-pills-shortage/#:~:text=ZIMBABWE%20is%20facing%20a%20countrywide,not%20spared%20from%20the%20crisis

Mukherjee, Trena I., Angubeen G. Khan, Anindita Dasgupta, and Goleen Samari. 2021. “Reproductive Justice in the Time of COVID-19: A Systematic Review of the Indirect Impacts of COVID-19 on Sexual and Reproductive Health.” *Reproductive Health* 18(1): 252. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8686348/

Murewanhema, Grant. 2020. “Adolescent Girls, a Forgotten Population in Resource-Limited Settings in the COVID-19 Pandemic: Implications for Sexual and Reproductive Health Outcomes.” *The Pan African Medical Journal* 37 (Suppl. 1): 41. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7846263/

Ndayishimiye, Pacifique, Rosine Uwase, Isabelle Kubwimana, Jean de la Croix Niyonzima, Roseline Dzekem Dine, Jean Baptiste Nyandwi, and Justin Ntokamunda Kadima. 2020. “Availability, Accessibility, and Quality of Adolescent Sexual and Reproductive Health (SRH) Services in Urban Health Facilities of Rwanda: A Survey Among Social and Healthcare Providers.” 20(1): 697. https://doi.org/10.1186/s12913-020-05556-0

Nuzzo, Jennifer B., Diane Meyer, Michael Snyder, Sanjana J. Ravi, Ana Lapascu, Jon Souleles, Carolina I. Andrada, and David Bishai. 2019. “What Makes Health Systems Resilient Against Infectious Disease Outbreaks and Natural Hazards? Results from a Scoping Review.” *BMC Public Health* 19(1): 1–9.

Peters, R., A. Medina-Marino, C. Celum, and L. Bekker. 2021. *P167 Impact of COVID-19 on Adolescent Girls and Young Women in a Community-Based HIV PrEP Programme in South Africa*. BMJ Publishing Group Ltd, BMJ Sexually Transmitted Infections, 97:A102.

Pratt B. A., and Frost L. 2020. *COVID-19 and the Status of Women's, Children's, and Adolescents' Health and Rights: A Targeted Literature Review of Current Evidence for Action on Universal Health Care (UHC) and Accountability. Edited by Every Child UN SG's Independent Accountability Panel for Every Woman, Every Adolescent (IAP)*. Geneva: World Health Organization (WHO).

Riley, Taylor, Elizabeth Sully, Zara Ahmed, and Ann C. Full publication date Biddlecom. 2020. "Estimates of the Potential Impact of the COVID-19 Pandemic on Sexual and Reproductive Health in Low- and Middle-Income Countries." *International Perspectives on Sexual and Reproductive Health* 46: 73–76. https://www.jstor.org/stable/10.1363/46e9020

Seme, Assefa., Solomon Shiferaw, Ayanaw Amogne, Anna Popinchalk, Leilena Shimeles, Ephrem Berhanu, Ricardo Mimbela, and Margaret Giorgio. 2021. *Impact of the COVID-19 Pandemic on Adolescent Sexual and Reproductive Health in Ethiopia*. New York: Guttmacher Insitute. https://www.guttmacher.org/report/impact-covid-19-on-adolescent-srh-ethiopia

Sen, G., and V. Govender. 2015. "Sexual and Reproductive Health and Rights in Changing Health Systems." *Global Public Health* 10(2): 228–242. http://www.tandfonline.com/doi/pdf/10.1080/17441692.2014.986161

Steiner, R. J., L. B. Zapata, K. M. Curtis, M. K. Whiteman, A. W. Brittain, E. Tromble, K. R. Keys, and A. M. Fasula. 2021. "COVID-19 and Sexual and Reproductive Health Care: Findings from Primary Care Providers Who Serve Adolescents." *Journal of Adolescent Health* 69(3): 375–382. https://doi.org/10.1016/j.jadohealth.2021.06.002

Sundararaman, T., V. R. Muraleedharan, and Alok Ranjan. 2021. "Pandemic Resilience and Health Systems Preparedness: Lessons from COVID-19 for the Twenty-First Century." https://doi.org/10.1007/s40847-020-00133-x

UNFPA. 2020. "Impact of the COVID-19 Pandemic on Family Planning and Ending Gender-Based Violence, Female Genital Mutilation and Child Marriage." UNFPA, New York. https://www.unfpa.org/sites/default/files/resource-pdf/COVID-19_impact_brief_for_UNFPA_24_April_2020_1.pdf. Accessed: 11 May 2021.

UNFPA. 2021. "Impact of COVID-19 on Family Planning: What We Know One Year into the Pandemic." UNFPA, New York. https://www.unfpa.org/sites/default/files/resource-pdf/COVID_Impact_FP_V5.pdf. Accessed: 11 May 2021.

WHO. 2011. *The Sexual and Reproductive Health of Young Adolescents in Developing Countries: Reviewing the Evidence, Identifying Research Gaps, and Moving the Agenda: Report of a WHO Technical Consultation*. Geneva, Switzerland: World Health Organization.

WHO. 2017. *Evidence Brief: The Importance of Sexual and Reproductive Health and Rights to Prevent HIV in Adolescent Girls and Young Women in East and Southern Africa*. Geneva, Switzerland: WHO.

Wilkinson, Tracey A., Melissa J. Kottke, and Elise D. Berlan. 2020. "Providing Contraception for Young People During a Pandemic is Essential Health Care." *JAMA Pediatrics* 174(9): 823–824. https://doi.org/10.1001/jamapediatrics.2020.1884

"Worldometer." 2022. Accessed January 31. https://www.worldometers.info/world-population/zimbabwe-population/

Yarger, J., A. Gutmann-Gonzalez, S. Han, N. Borgen, and M. J. Decker. 2021. "Young People's Romantic Relationships and Sexual Activity Before and During the COVID-19 Pandemic." *BMC Public Health* 21(1): 1780. https://doi.org/10.1186/s12889-021-11818-1

Zimbabwe National Statistics Agency (ZIMSTAT), and UNICEF. 2019. *Zimbabwe 2019 Multiple Indicator Cluster Survey 2019 Report*. Harare, Zimbabwe: ZIMSTAT.

Zimbabwe National Statistics Agency and ICF International. 2016. Zimbabwe *National Demographic and Health Survey 2015: Final Report*. Rockville, MD: Zimbabwe National Statistics Agency (ZIMSTAT) and ICF International.

Zimbabwe National Statistics Agency and ICF International. 2016. *Zimbabwe National Demographic and Health Survey 2015: Final Report*. Rockville, MD: ZIMSTAT, ICF International.

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Chapter 6 : Family planning experiences and needs of young women living with and without HIV accessing an integrated HIV and SRH intervention in Zimbabwe-An exploratory qualitative study

Overview

As the implementation and context setting of the family planning intervention have been described, I now turn to the mechanisms of change for this family planning intervention that influences choice, uptake and use of family planning services and methods within the CHIEDZA trial. The following two chapters present the findings of these enquiries.

In this Chapter, I focus on the family planning needs and experiences of young women living with and without HIV. I focus on the family planning experiences of young women living with HIV (YWLHIV) because the primary outcomes of the CHIEDZA trial overall are HIV outcomes, and family planning was barely explored in this cohort of CHIEDZA clients (1, 2). The routine services uptake data showed that YWLHIV were more likely to access family planning services at CHIEDZA, compared to those without HIV (aOR 1.85 95% CI 1.63-2.09). It was important that I established a deep contextualised understanding of YWLHIV's experiences and perceptions of family planning as a means to establish the relationship between HIV and family planning services, and how this may contribute to both HIV and family planning outcomes. This ensures that, whatever the trial outcomes would be, there is evidence for components (family planning) of the trial which may or may not working.

Citation

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References

1. Pretorius L, Gibbs A, Crankshaw T, Willan S. Interventions targeting sexual and reproductive health and rights outcomes of young people living with HIV: a comprehensive review of current interventions from sub-Saharan Africa. Glob Health Action. 2015;8:28454.
2. Baryamutuma R, Baingana F. Sexual, reproductive health needs and rights of young people with perinatally acquired HIV in Uganda. African health sciences. 2011;11(2):211-8.

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First Name(s)	Constancia Vimbayi		
Surname/Family Name	Mavodza		
Thesis Title	Process evaluation of the family planning intervention for young women aged 16- 24 years, accessing CHIEDZA services in Zimbabwe		
Primary Supervisor	Joanna Busza		

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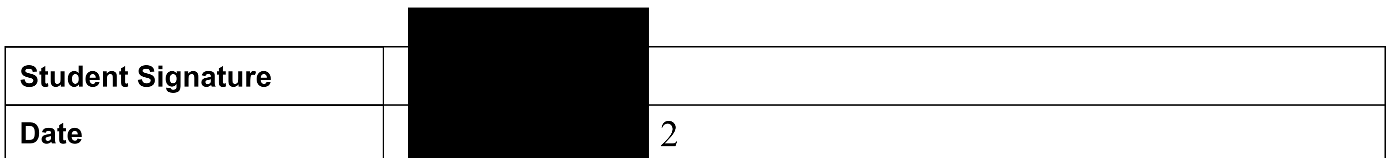

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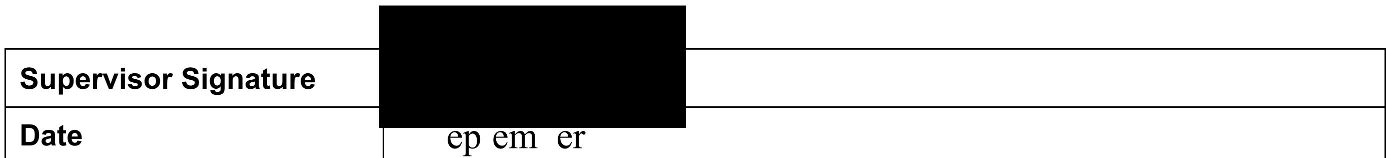

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Family Planning Experiences and Needs of Young Women Living With and Without HIV Accessing an Integrated HIV and SRH Intervention in Zimbabwe-An Exploratory Qualitative Study

Constancia V. Mavodza[1,2]*, *Joanna Busza*[2], *Constance R. S. Mackworth-Young*[1,3], *Rangarirai Nyamwanza*[1], *Portia Nzombe*[1], *Ethel Dauya*[1], *Chido Dziva Chikwari*[1,4], *Mandikudza Tembo*[1,5], *Victoria Simms*[1,6], *Owen Mugurungi*[7], *Tsitsi Apollo*[7], *Bernard Madzima*[8], *Rashida A. Ferrand*[1,4] and *Sarah Bernays*[3,9]

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Background: People living with HIV have higher unmet family planning needs compared to those without HIV. This is heightened for young people. However, the provision of family planning for young people within HIV programmes is uncommon. We investigated family planning uptake, acceptability of, and engagement with a service offering integrated HIV and sexual and reproductive health services for youth in a community-based setting in Zimbabwe.

Methods: CHIEDZA, a community-based intervention offering integrated HIV and sexual and reproductive health services to young people aged 16–24 years, is being trialed in Zimbabwe. This exploratory qualitative study was nested within an ongoing study process evaluation. Data was collected between March-May 2021 with two sets of interviews conducted: I) twelve semi-structured interviews with young women living with HIV aged 17–25 years and II) fifteen interviews conducted with young women without HIV aged between 20 and 25 years who used a contraceptive method. A thematic analysis approach was used.

Results: Before engaging with CHIEDZA, young women had experienced judgmental providers, on account of their age, and received misinformation about contraceptive use and inadequate information about ART-contraceptive interactions. These presented as barriers to uptake and engagement. Upon attending CHIEDZA, all the young women reported receiving non-judgmental care. For those living with HIV, they were able

to access integrated HIV and family planning services that supported them having broader sexual and reproductive needs beyond their HIV diagnosis. The family planning preference of young women living with HIV included medium to long-acting contraceptives to minimize adherence challenges, and desired partner involvement in dual protection to prevent HIV transmission. CHIEDZA's ability to meet these preferences shaped uptake, acceptability, and engagement with integrated HIV and family services.

Conclusions: Recommendations for an HIV and family planning integrated service for young people living with HIV include: offering a range of services (including method-mix contraceptives) to choose from; supporting their agency to engage with the services which are most acceptable to them; and providing trained, supportive, knowledgeable, and non-judgmental health providers who can provide accurate information and counsel. We recommend youth-friendly, differentiated, person-centered care that recognize the multiple and intersecting needs of young people living with HIV.

Keywords: HIV, family planning, integrated service delivery, young people living with HIV, Zimbabwe

INTRODUCTION

Two-thirds of people with HIV globally live in Sub-Saharan Africa (SSA) (1). In eastern and southern Africa, adolescent girls and young women (AGYW) aged 15–24 years old accounted for 26% of all new infections in 2018 (2). In Zimbabwe, HIV prevalence among adults in 2020 was estimated at 12.9% and the prevalence is higher among women (15.3%) compared to men (10.2%) (3). This gender disparity is even more pronounced among young people (20–24 years) with HIV prevalence nearly three times higher in young women (8.1%) than young men (2.1%) (4).

Numerous studies across diverse contexts have highlighted the family planning needs of people living with HIV, which include but are not limited to reducing HIV-positive births (5–8). Similar to HIV-negative women, women living with HIV (WLHIV) may wish to plan, avoid or delay pregnancies or limit family size (9). Historically, aside from condoms, few family planning methods were promoted or made easily accessible to WLHIV, undermining their health and well-being (10). Recent evidence indicates that they have lower contraceptive use and discontinue hormonal contraceptives more frequently than women without HIV (11, 12). One of the reasons for this is often unaddressed concerns about potential negative interactions between ART and hormonal contraceptives (13, 14). The few studies that have been conducted have shown limited data revealing that efavirenz-based ART may reduce the effectiveness of implants and combined oral contraceptives (15). Organizations and international bodies have created guidance materials to describe these interactions and provide a reference for service provision (16, 17). However, the limited data, clarity, and education on these interactions (15) adds additional complexity to the provision of HIV and family planning counseling, and further deters the provision of family planning within HIV programs (18–20).

WHO and other international bodies have made a case for integrating HIV and family planning services (21, 22). Previous studies show the acceptability of *"one-stop-shop"* approaches to improve both HIV and maternal health outcomes (23) and that such integration has resulted in increased contraceptive use among WLHIV (24–26).

There has been much less focus on the family planning needs of young people living with HIV (YPLHIV), and how approaches for older women may need to be adapted for younger women (27–29). Youth have high unmet need and already face considerable barriers to accessing family planning services (6, 30). These barriers include provider discrimination, lack of confidentiality, denial of young people's sexuality, parental consent mandates, and contraceptive use stigma (31). HIV is a chronic, already stigmatized condition that can pose additional barriers. Providers have reported low self-efficacy in their abilities to provide contraceptives to YPLHIV, due in part to poor knowledge about their SRH needs (32–34). Additionally, a review on the SRH needs of YPLHIV in low and middle-income countries found a paucity of clear policies to guide the provision of their SRH services (35). For young people who acquired HIV vertically, barriers include navigating the transitions from pediatric HIV programs where there are low/no exposure to sexual and reproductive health (SRH) services, to adult/youth HIV programs that may not recognize the need to introduce YPLHIV to SRH services (18, 19, 29, 36). A study in Uganda found that for these young people, there were no policies for youth-friendly transition clinics, and poor institutional and provider abilities to meet the SRH needs of YPLHIV (37). The evidence that exists suggests that there is limited consideration given to the SRH of YPLHIV and even lesser consideration for why their needs may differ from those without HIV (38). While there is a strong rationale for integrating HIV and family planning services, adaptations to address additional barriers to engagement and access faced by young women with HIV may be required.

We sought to understand young WLHIV's experiences accessing a community-based integrated service, exploring the acceptability, engagement, and uptake of HIV and family planning components. This includes comparing the experiences of young WLHIV and those without HIV to identify the influence of HIV status on youth's family planning needs and engagement in care.

METHODS

Study Setting

CHIEDZA is a cluster randomized control trial investigating the impact of offering HIV testing and care with integrated SRH services to young people aged 16–24 years on population-level HIV outcomes in Zimbabwe (39). The trial is being conducted in three provinces: Harare, Bulawayo, and Mashonaland East, and this study was conducted as part of an embedded process evaluation of the intervention. The CHIEDZA intervention package has a '*one-stop approach*' (23) that was co-designed with young people (40) and provides HIV testing and counseling, HIV treatment and adherence support (to those who are HIV-positive), as well as family planning information and counseling, mixed-methods contraceptives, condoms, Sexually Transmitted Infections (STI) testing and management, menstrual health information and products, and general health counseling in a community-based setting. For HIV services, young people with newly or previously diagnosed HIV can choose to join the CHIEDZA HIV cohort by opting to receive ART through CHIEDZA. Those who choose to continue to access their ART from other settings and come to CHIEDZA for non-HIV SRH services are defined as not being in the HIV cohort. They are still able to access viral load monitoring and adherence support through CHIEDZA. All young women attending CHIEDZA are able and encouraged to access the range of family planning methods available. A team of trained health providers consisting of nurses, community health workers, youth workers, and counselors offer services at community centers. The team received training on not only their roles and responsibilities but also in providing confidential, youth-friendly services and engaging with young people. CHIEDZA seeks to further address access barriers by creating a space where young people can access services discretely through private health booths. They can engage in social activities, which can serve as both an incentive and an explanation for their attendance. Furthermore, the integrated nature of service provision makes it difficult to know what services a young person came to access (39, 40).

From April 2019 to July 2021, 1152 young women living with HIV engaged with CHIEDZA, of whom 1022 took up family planning services. All were receiving ART with 22.9% receiving ART through CHIEDZA (in CHIEDZA cohort), and the remainder in other care settings.

Study Design

This study used an exploratory qualitative approach (41) to produce a detailed understanding of young WLHIV's experiences accessing integrated HIV and family planning services, and how these experiences have shaped uptake, acceptability, and engagement. This included examining through comparative analysis any differences in how WLHIV and those not living with HIV interact with and perceive integrated services.

Data Collection and Analysis

We conducted two sets of semi-structured interviews between March to May 2021 in Harare, Bulawayo, and Mashonaland East. One set of interviews was with twelve young WLHIV, irrespective of their current contraceptive use. The other was with fifteen young women who had tested HIV negative within the 12 months before the interview and were using contraceptives. Efforts were made to have samples that represented the use of diverse family planning methods. Participants were identified using CHIEDZA providers' knowledge of clients' HIV status and their contraceptive use. The providers approached eligible clients accessing the service on scheduled interview days to gauge their interest in participating and referred those interested to the interviewers. Interviews were conducted by the three trained female researchers (CM, RN, and PN), who were unknown to the participants, and not involved in directly providing CHIEDZA services.

Data collection took place during a period of restrictions related to the COVID-19 pandemic. To minimize the need for extra travel for participants from their homes to the CHIEDZA sites, in-person interviews were conducted on the same day that clients were attending the CHIEDZA sites for services. While COVID-19 restrictions imposed the need to adopt a convenience sampling approach, it did mean we were able to conduct in-person interviews where privacy and uninterrupted discussion could be guaranteed. Relying on telephone interviews, by contrast, could have been hampered by limited reception and uncertainty around the privacy of the conversation and restricted to participants who owned phones (42). Only three eligible young WLHIV declined to participate due to time constraints and we were able to include considerable variation within the sample of young WLHIV (**Table 1**). All interviews were conducted using appropriate infection prevention control measures including the use of face-covering, social distancing, and conduct of the interviews outdoors.

Given the likely influence of personal contexts in shaping young WLHIV's experiences and needs, the potential vulnerabilities of this group, and the desire for the narratives to be shaped by the participants rather than the researchers, the researchers deliberately asked open-ended questions and then followed the direction of the participants' conversations. The researchers (RN, PN) conducting the first set of interviews had prior experiences interviewing people living with HIV and drew on their understanding of the potentially emotional nature of discussions around HIV, and their previous experiences to help participants feel comfortable. The second set of interviews also used open-ended questions and an unstructured style to examine clients' narratives and experiences of contraceptive access and use. All interviews were conducted in the participant's preferred language (English, Shona, or Ndebele), and covered the following topics: knowledge and use of contraceptive commodities; access to and uptake of HIV and/ or family planning services in/out of CHIEDZA; and partner involvement in HIV and/ or family

TABLE 1 | Female participant characteristics.

HIV status	HIV positive (*n* = 12)	HIV negative (*n* = 15)
Age	Three were aged 16–19 years, and nine were aged 20–25 years Median age (range): 22 (17–25 years)	All 15 were aged between 20 and 25 years Median age (range): 23 (20–25 years)
Marital status	Six were married, six were single/never married, two were divorced	11 married, one divorced, one separated, two in a relationship
Contraceptive Commodities	Three were accessing oral contraceptives and two depo-injectables at CHIEDZA	Three combined oral contraceptive pills (COC) seven Depo-Provera injectable
	Two had 3–5-year implants inserted before attending CHIEDZA	Seven Jadelle implants • 4/7 implants were not inserted at CHIEDZA • 3 of these 4 had come to CHIEDZA specifically for jadelle Removal
	Two were using only condoms One was pregnant Two were not using any contraceptive methods	4/15 had switched family planning methods
Dual protection	4/7 on contraceptives were also using condoms • ¾ had supportive partners • ¼ had just separated from their partner	
Mode of HIV infection	Five vertically acquired HIV, seven horizontally acquired HIV	n/a
ART care	Six were receiving their ART through CHIEDZA, Six were receiving their ART from other care settings	n/a
Parity	Seven had children, five did not have children 5/7 women with children indicated wanting to wait before having any more	All 15 women had children 2/15 used non-condom family planning methods pre-partum, 13/15 only started using non-condom family planning methods postpartum

planning decisions and care. The interviews were audio-recorded, lasted between 15 and 50 min, and on average lasted approximately 29 min. All the interviews were transcribed into English.

A thematic analytical approach that was both deductive and inductive was used due to the exploratory nature of the study (43). The two data sets were collected separately from each other and analyzed separately initially. These parallel analyses were then considered comparatively to explore HIV and family planning integration. For this study, the second set of interviews (young women living without HIV and using contraceptives) was used only for comparative analysis of prior care and family planning experiences. CM manually coded all transcripts. Inductive codes emerging from the data were iteratively developed and integrated with deductive codes that were developed *a priori* from the research questions. Analytical memo-ing (44) was used to elucidate the emerging themes. In this iterative process, CM, JB, SB, and CM-Y identified, discussed, and compared key themes. This analytical approach provided a guide for examining the perspectives of participants, highlighting similarities and differences, and generating unanticipated insights, that became relevant for nuanced understanding.

Anonymized quotes are used to exemplify the themes, with IDI#, HIV status, age, and contraceptive use. Two or more contraceptive methods placed next to each other indicate a change in methods. In Zimbabwe, Secure is the brand name for the progesterone-only contraceptive pill, Control is the brand name for combined oral contraceptive pills, Jadelle is a brand name for an implant and Depo is the shortened name referring to Depo Provera injectable.

Ethical Approvals

Ethical approval was granted by the Medical Research Council of Zimbabwe (MRC/A/2266), the Biomedical Research and Training Institute Institutional Review Board (AP144/2018), and the London School of Hygiene and Tropical Medicine ethics committee (14652). All participants provided written informed consent. A waiver for the requirement of guardian consent was granted for those aged below 18 years.

RESULTS

A characteristic of this group was that some participants provided concise responses during their interviews. The young WLHIV were recruited not on account of their contraceptive use but on account of their status, such that for some of them, their accounts of family planning were limited which resulted in concise responses. Additionally, for some participants being interviewed about HIV and family planning was a novel experience and there was little familiarity in discussing these topics. The research

approach was underpinned by a youth-friendliness and youth-led model such that interviews could be as short or as long as the youth participants wanted them to be, and the researchers were not aiming to change or adapt that.

Of the seven horizontally infected young women, six were infected by partners who did not inform them of their positive HIV status.

Three major topics were explored: (1) Prior (before CHIEDZA) family planning experiences (2) Family planning experiences of attending CHIEDZA, and (3) Family planning preferences.

Prior Family Planning Experiences of All Young Women, Regardless of HIV Status

Prior experiences with judgmental providers, having received incorrect information on contraceptive eligibility and side effects, and exposure to mixed messages influenced young women's uptake, acceptability, and engagement with family planning services. This was particularly pronounced for those living with HIV compared to those without HIV.

Judgemental Providers Discourage Continued Engagement

Prior to engaging with CHIEDZA, most participants regardless of HIV status had accessed HIV or family planning care in other care settings. They commonly experienced judgmental and negative attitudes related to their age or marital status. Across the sample, participants noted that provider attitudes discouraged consistent engagement with care.

> *"When you want pills from the clinic, sometimes the staff at the clinic don't work many times and they work on their own time, and not working is normal. So, they can ignore you and make you feel like you are useless. So that's what they do sometimes, and they are ignorant and attend others"* (IDI03, HIV+, 23 years, Secure-Depo).

> *"Imagine asking an old lady from the clinic about depo and its effects (laughs). The nurses will obviously look at you and start judging you. At the end of the day, you will not be open enough to tell her your problems."* (IDI06, HIV+, 23 years, Depo).

> *"You may be unfortunate to get scolded whilst in the queue at the clinics and that's a discouraging factor. Even at the pharmacies, you may be unfortunate to get served with a teller who had attitude and be scolded yet you want to buy contraceptives."* (IDI11, HIV-, 21 years, Control-Depo).

Inaccurate Knowledge Influences Contraceptive Use

Both participant groups accessed CHIEDZA with prior beliefs and information that influenced contraceptive use. Some participants believed that they should not use family planning before having children as this would make conception a challenge when they did eventually want to have children.

> "*Well for now I am not taking any family planning because I have never had a baby, so I am not taking any. I was told that if you take family planning before having children it will be difficult to have children so that is why I do not use any family planning*" (IDI10, HIV+, 25 years, condoms).

> *"I once heard that when you start using pills before having a baby, they will be depositing in your womb such that when you stop taking them and now want to have a child; it becomes difficult because the pills will still be in one's womb"* (IDI7, HIV-, 20 years, Jadelle).

> *"I don't think it's a good idea to use for example Depo, yet you don't even have one child. Maybe when the time comes for you to have a child, you may take longer to conceive equivalent to the number of years your family planning method was. So, I think it becomes complicated for someone who hasn't had a child yet."* (IDI10, HIV-, 25 years, Depo).

Other participants did not have adequate information to properly take their contraception. One young WLHIV detailed her past experiences. She was diagnosed with HIV a week before she gave birth to her first child. Appropriately, at 6 weeks after the birth of her child, she started taking progesterone-only oral contraceptives. However, she fell pregnant again when her first child was still 4 months old.

> *"When l got my first child that's when I started to take [progesterone-only contraceptive] pills and I wasn't taking them regularly. I didn't have enough education on how they are taken. I don't know whether you would drink them every day or something. l thought you would take them when you wanted to have sex. That's what I used to do till I got pregnant again. So, I wasn't drinking them every day"* (IDI9, HIV+, 22 years, Secure-Jadelle-Control).

Across both groups, it was unusual to have accurate knowledge of contraception if unmarried. Participants associated knowledge and use of contraceptives with marriage. The limited knowledge was underpinned by normative judgment, whereby they avoided family planning to comply with expected moral standards.

> "*I haven't thought much about family planning or using it because I am not yet married*" (IDI2, HIV+, 21 years, none).

> *"Those who are not yet married but are using family planning methods are doing something which is not allowed"* (IDI10, HIV-, 25 years, Depo).

> *"Before having my child, I didn't use anything to prevent myself from getting pregnant... Young girls must not take family planning pills because they won't be married."* (IDI6, HIV-, 22 years, Control).

In these cases, these existing beliefs impacted demand for contraceptives when they did engage with CHIEDZA, with several opting not to seek family planning services.

Circulating Mixed Messages: HIV and Contraceptive Interactions

Some participants (***n* = 6**) across both interview sets had heard mixed messages about drug interaction between ART and hormonal contraceptives. For young WLHIV, this impacted the

contraceptive options and decision-making presented to them. One client had previously visited a health provider wanting one contraceptive method but was counseled to choose another due to drug interactions between ART and her initial choice.

> "*When I went to some surgery in town, I told them that I am HIV positive, and I wanted to insert jadelle. I was told not to use jadelle. I was told that ARVs contain chemicals that may disrupt the effectiveness of the jadelle and that I could easily fall pregnant. So, they advised me to use Depo and that is what I have been using ever since.*" (IDI6, HIV+, 23 years, Depo).

> "*I heard that a person living with HIV must not use Jadelle as a family planning method because the method overpowers ARVs hence making it difficult for an individual to suppress their virus.*" (IDI06, HIV-, 21 years, Control).

> *"I heard that family planning pills are overpowered by ARVs so, when one takes them together it means one between the two pills will not work for their intended purpose"* (IDI6, HIV-, 23 years, Control-Depo).

Another incorrect message a participant had heard was that their viral load determined whether one should or should not use contraceptives.

> "*It [contraception] works but it depends on how your viral load status is. You cannot have family planning when your viral load is high but when it's low you can do a family planning it depends on how your status is when you want to do family planning*" (IDI03, HIV+, 23 years, Secure-Depo).

When young WLHIV then came to CHIEDZA, they acted on previous information received and did not access the range of available contraceptives that they may have preferred.

Family Planning Experiences of Young WLHIV Attending CHIEDZA

While the desire for youth-friendly services was universally expressed, some young WLHIV had not considered family planning options as being relevant to them because they were HIV positive, highlighting the critical need of incorporating wider services within HIV care programmes. The findings in this section drew on data from young WLHIV.

Integrated HIV and Family Planning Service Provision for Widened Access

Integration of family planning with other services was considered convenient by all participants as it allowed for meeting multiple, simultaneous needs. Some participants came for every available service, and others combined specific services that they required. Some participants initially had heard about CHIEDZA only as offering menstrual pads and family planning. When they arrived for their first visit, they were surprised at the convenience of the range of services available to them. For young WLHIV, this included HIV services they had not immediately prioritized or considered.

> *"I was told about [CHIEDZA] by someone who came here. Like when l was told it was a program related to pads and family planning only, but when I came here, I noticed that they are so many services offered…They took my viral load and I got counseling!"* (IDI4, HIV+, 22 years, Implant).

Another client initially came to CHIEDZA with reproductive issues after being informed by her friend that CHIEDZA would be able to help with her incessant bleeding problem. She subsequently was tested for HIV and STIs and tested HIV-positive.

> *"She [her friend] said they check on the uterus and other things, so that's when l decided to go since I had been bleeding for some time… I sat on the bench, and I got inside and spoke to a lady, and she asked me why I'd come, my age, and all. So, I told her that I came to be checked in my uterus… she told me that we have other tests that we conduct, and she started to explain and then l agreed to be tested"* (IDI5, HIV+, 24 years, condoms).

The integrated approach enabled entry into either family planning or HIV care and then facilitated access to the other service. Some participants living with HIV who were not in the CHIEDZA cohort (i.e., were not diagnosed with HIV at CHIEDZA and continued to access ART elsewhere) similarly heard about CHIEDZA being a program providing family planning and menstrual hygiene products. Many came specifically for contraceptives and the highly acceptable counseling services. They also received viral load monitoring (with associated adherence support) at CHIEDZA. Their viral load samples were collected on the same day that they came for their 3-month Depo and oral contraceptives refill.

> *"I first came here because I wanted contraceptives. When I got here, I was also given pads and that is when I got to know that they test as well.… the last time, I tested for viral load I went inside the nurse's booth, and she drew blood from my left arm, and she filled two test tubes. The nurse told me that she was taking blood samples so that they get to see the amount of virus in my blood. During the testing, the nurse also told me the importance of taking my medication as this will assist in having a low viral load"* (IDI6, HIV+, 23 years, Depo).

> *The first time I went to CHIEDZA, I wanted to take family planning services and pads and I am glad that I came because I was offered all these services for free... Here at CHIEDZA, I come for family planning and my viral load* (IDI11, HIV+, 24 years, Control).

The availability of integrated services at CHIEDZA allowed these clients to customize the levels and content of their SRH and HIV care.

> *"I was told that I could take my medication from CHIEDZA if I wanted to, but I felt that it was going to be a burden. You know being transferred from the facility to CHIEDZA then back to the facility again was going to be a problem. That is why I decided to stick to my facility…The nurses [public sector facility] have also been very friendly and nice. I remember when I started taking ARVs they even told me that I might face side effects. So, both CHIEDZA*

> *and the facility have been very supportive and friendly* (IDI11, HIV+, 24 years, Control).

Participants living with HIV reported that the integrated service package offered by CHIEDZA was able to support them in both their HIV and family planning needs, especially those related to adherence. Adopting a similar approach to supporting ART adherence, CHIEDZA providers also encouraged those who were sexually active to take contraception regularly.

> *"CHIEDZA makes sure that I take my medication [ART] because at times when I think of it I stop and they call me and they counsel me so that I continue to take my medication. They tell me that 'a lot of people are taking their medication', so continue to drink your pills. They are the ones who encourage me to take my medication... CHIEDZA encourages family planning to avoid one having an unwanted pregnancy, so they have family planning, and they encourage to you to take pills or injection"* (IDI1, HIV+, 17 years, Depo).

The integration of HIV and family planning services was advantageous for these young women by encouraging both uptake and engagement with a wider constellation of services. If they returned for any given service, they would continue to experience the ease of taking up others, e.g., collecting pads and being encouraged to (re-) test for HIV. Uptake of services that clients may not have been specifically looking for or considered in the past was thus increased.

Components of Youth-Friendliness to Meet HIV and Family Planning Needs

Participants felt that CHIEDZA demonstrated friendliness through the availability of supportive and non-judgmental providers. For young WLHIV, CHIEDZA providers perceived and interacted with them as more than just being HIV-positive. They felt that the providers acknowledged that they were sexually active with a range of SRH needs that deserved to be met, which in turn encouraged engagement and uptake of CHIEDZA services.

> *"I come here for family planning and my viral load and so far, I have not encountered any problems in accessing these services. I love coming to CHIEDZA because the providers are very friendly, and they advise me a lot on a lot of things especially to do with sex as well as the use of protection."* (IDI11, HIV+, 24 years, Control).

> *"Yes, treatment is different here [CHIEDZA], you have all the time to ask some things and to understand everything"* (IDI4, HIV+, 22 years, Implant).

> *"I prefer coming to CHIEDZA to seek family planning services because the nurses here are very friendly and they do not judge. Here at CHIEDZA, the services are very good, and I love the fact that the providers are young people who can relate to our experiences"* (IDI06, HIV+, 23 years, Depo).

'Friendliness' was perceived as an accepting attitude toward their sexuality combined with the availability of the full range of SRH services that a young person may require. For young WLHIV, this particularly meant HIV being viewed as a manageable condition that need not subsume all their other needs and aspirations. 'Friendliness' was also perceived to be the provider support young WLHIV received when they selected only services that they wanted, respecting their choice not to take up various options.

Family Planning Preferences of Young WLHIV

Young WLHIV 's preference of family planning methods was influenced by their HIV status and the intersecting multiple "other" identities (marital status; with/without children).

A Preference for Available Contraceptives That Do Not Require Daily Maintenance

For young WLHIV, adherence and side effects were already a challenge in relation to their ART. To potentially reduce pill burden and further adherence concerns with family planning, some of them sought contraceptives that did not require daily intake, which were free and readily available at CHIEDZA. Participants also reported switching from oral contraceptives to a medium or long-acting method because of side effects.

> *"I use the implant... The issue of pills, I would forget, forgetting plus the control [combined oral contraceptive] pill would affect me. I would feel dizzy"* (IDI4, HIV+, 22 years, Implant).

> *"I was still using Secure since I responded well to them. I recently got Depo because I sometimes used to forget to take the pills"* (IDI3, HIV+, 23 years, Secure-Depo).

> *"I take Depo. Depo is better than pills because with Depo, with pills you forget but with Depo, you can last longer"* (IDI1, HIV+, 17 years, Depo).

For some, uptake of long-acting contraceptives was particularly associated with marital status. One participant who was not married but sexually active with an also HIV-positive partner used condoms only. She reported not taking contraceptives because she was not married yet, explaining that when she gets married, she would get the Jadelle implant because she would forget to take pills.

Partner Influences Use of Condoms for Dual Protection

Most of the participants living with HIV articulated that regardless of their contraceptive use, condom use with their partners would offer dual protection against pregnancy, and HIV and STI transmission/reinfection. While condoms, contraceptives, and ART adherence services were readily available within CHIEDZA, their combined use by YPLHIV was shaped by relational dynamics. For young WLHIV who preferred to use dual protection, doing so was enabled by supportive partners. Some participants disclosed their HIV-positive status to partners who were accepting and supportive.

> *"I just told him that I am positive, I don't know if you accept it or not. He said, 'No problem we condomise'... he tells me to eat healthy food"* (IDI4, HIV+, 22 years, Implant).

> *"I told him about it [disclosed status] and he has been supportive too as he encourages me to take my medication [ART] correctly all the time."* (IDI6, HIV+, 23 years, Depo).

For those WLHIV who did not have supportive partners that encouraged dual protection and ART adherence, condom use was inconsistent:

> *"At first, we used to wear condoms then, later on, we ended up not using protection since we are both positive and since no one is infecting the other one... currently we are using condoms... he refuses at times, but I force him to use"* (IDI8, HIV+, 18 years, condoms).

Across both samples, women in difficult or unsupportive relationships were less likely to use dual protection and used covert ways of preventing pregnancy. HIV-positive status amplified this. One client living with HIV switched from taking oral contraceptives to Depo injectable before her current pregnancy because her partner had wanted her to get pregnant and she wasn't ready. Similarly, another participant had a husband also living with HIV who did not adhere to his ART medication. He insisted on having another child with her when she was not ready.

> *"My husband was now shouting at me. Since 2019 he wanted to have another child... so he would see it* [implant]. *Then he used to tell me to go and get it removed. He ended up shouting at me that 'jadelle is meant for prostitutes. You put it for you not to get pregnant and do prostitution and have another sexual partner so that you don't get pregnant.' So, I went to get the jadelle removed and I never told him that l removed, and I came to CHIEDZA, and I collected control pills"* (IDI09; HIV+, 22 years, Jadelle-Control).

Her husband was unaware that she was now taking combined oral contraceptive pills covertly *"so now I take them every day at the same time as my [ART] medication"*.

DISCUSSION

In this study, we explored young WLHIV's experiences accessing HIV and family planning services in an integrated community-based intervention in Zimbabwe. This exploration included comparing experiences with those of young women without HIV. Our findings illustrate the SRH needs that are common amongst young women regardless of HIV status but by adopting a comparative approach we have also been able to identify the specific needs of young WLHIV. For young WLHIV, an integrative approach that includes providing both HIV and family planning services across their continuum of care was perceived to be acceptable and preferable to separate services. The importance of the provision of 'youth-friendly' services to meet SRH needs has been extensively researched (45, 46). However, what 'friendliness' entails is rarely examined in a nuanced way. For young WLHIV, being treated as more than just 'HIV-positive', support for their agency, and integration of HIV care and family planning with flexibility around their care-seeking practices was important.

Our findings support those from other studies that have shown that supportive provider-client relationships are crucial for helping young people seek and adhere to ART and prevent unintended pregnancies through family planning care (47, 48). Therefore, in the context of HIV care, where individuals are seen repeatedly, there is an opportunity to develop such relationships. Discussions about family planning and fertility discussions could be layered onto such foundational relationships with providers within integrated HIV and SRH services (18–20, 49, 50). Additionally, provider support for women to select only the services that they wanted, including choosing not to take up certain options enables them to exercise agency. In our study, for example, some of these clients were accessing other care settings (sometimes for their ART), yet still chose to come to CHIEDZA for free family planning services and additional HIV support.

Our study's findings echo other studies that suggest that while HIV care programmes may adequately provide HIV treatment, they are insufficient in addressing the broader health needs of WLHIV with family planning (51) and HIV services are often separate and vertical (10). In addition, in many HIV programmes, the specific needs of young women within both adult and pediatric services are overlooked, particularly the SRH needs of those who are unmarried (29). Seeking family planning is a recognition of active sexual status (52), which for young people in Zimbabwe is often considered immoral behavior by parental figures and health practitioners in clinics. In CHIEDZA this is not only accepted but anticipated and accommodated for with a range of options, demonstrating the intent to provide an acceptable and convenient family planning option that is tailored to the individual needs of young women. The study demonstrates the importance of accepting, responsive and supportive services that for those living with HIV, acknowledges and views them as sexually active youth with a range of additional SRH needs.

Studies in eastern and southern Africa have noted the missed opportunities in providing family planning through HIV care and treatment programs (ART clinics) to reduce the unmet need for people living with HIV (53, 54). Some of our participants were vertically infected. In their HIV care trajectory, they had been exposed to pediatric HIV services which tend to deny their fertility or attempt to postpone their reproductive desires (55), or adult HIV services that may pass judgment as experienced by our participants (29). Zimbabwe, like many other countries in the region, has been making a concerted effort to integrated HIV and family planning services (56, 57). In cooperating family planning at ART clinics within a youth-friendly setting, could improve health outcomes for young WLHIV.

Like women without HIV, WLHIV had limited knowledge about family planning and contraceptive use, but in addition, had misguided presumptions about the effects of hormonal contraceptives. Concerns about drug-drug interactions

and viral load being a determinant for eligibility to use contraceptives limited their perceived contraceptive options. Studies have shown that HIV providers have not always been confident in their knowledge to effectively provide quality family planning counseling for young WLHIV (18, 32–34, 49, 58). Mixed messages from providers and subsequent incorrect comprehension may result in WLHIV discontinuing either ART or contraception. Zimbabwe has successfully implemented and adopted at scale, the ZVANDIRI CATS programme to provide care and support for children, adolescents, and YPLHIV (59, 60). With training and support, there is potential to embed family planning education or information within this model as part of integrating HIV and family planning services for YPLHIV. Additionally, integration of HIV and family planning services must go beyond making commodities available to incorporate adequate training of providers, so they are well-equipped to address these issues and minimize the prevailing inadequate information about the use of family planning concurrently with ART.

The choice of family planning approaches was influenced by the need to minimize pill burden and daily maintenance. In the context of adherence, young WLHIV's preference for medium to long-acting contraceptive options because of a fear to forget taking pills daily may be revealing of adherence challenges with ART which also has to be taken daily. This association between adherence and preferred contraceptive method requires further investigation. Young WLHIV's preference for contraceptive options that did not require daily maintenance supports the potential of long-acting injectable ART (61) for improving adherence and virological suppression in young people, and the potential for combining delivery of long-acting ART with that of LARC. Importantly, the provision of choice of contraceptives enables YPLHIV to exercise more agency over their contraceptive choices.

Partners play a significant role in contraceptive decision-making and for young WLHIV. A study conducted with urban women of reproductive age in Zimbabwe reported that for WLHIV, male partners had more control in their intimate relationships and there was a greater association between positive HIV status postpartum, and male partners who ever refused to use a family planning method (62). Where feasible, providers can strongly encourage and support education which may result in improved HIV and family planning service delivery for young WLHIV (63).

In many instances, integration is usually examined only for a component of the cascade. For example, '*integrating HIV testing with family planning*'. A strength of this study was that by including women exposed to the whole HIV cascade (testing, care, and treatment, adherence support) and those accessing HIV care outside the CHIEDZA service, integration with family planning could be examined across this spectrum. Limitations are that the study had a small interview sample and only included CHIEDZA clients. Eligible women not accessing any family planning and /or HIV care were not included in this study and examining their access challenges may improve understanding and need for accessing and providing integrated HIV and family planning services. Further research is needed to examine some of the findings in this paper. Understanding research with young men living with HIV and the partners of young women living with HIV would provide a more comprehensive understanding as partners shape choices.

CONCLUSION

Differentiated models of care that customize youth-friendliness to provide integrated HIV and family planning services that recognize the multiple and intersecting needs of young people are essential. The range of services offered (including method-mix contraceptives and LARCs), the ability of these young people to have agency over which services work for them; and the presence of supportive, knowledgeable, and non-judgmental health providers who can provide accurate information and counsel, could improve the uptake, acceptability, and engagement of HIV and family planning services by young WLHIV. Our findings highlight the need for further research co-designed with policymakers, implementors, and young people living with and without HIV to understand the provision and utilization of integrated HIV and family planning counseling and service provision, that reflect the diverse experiences and needs of young WLHIV.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethical approval was granted by the Medical Research Council of Zimbabwe (MRC/A/2266), the Biomedical Research and Training Institute Institutional Review Board (AP144/2018), and the London School of Hygiene and Tropical Medicine Ethics Committee (14652). All participants provided written informed consent. A waiver for the requirement of guardian consent was granted for those aged below 18 years. Written informed consent from the participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

This paper was conceptualized by CM, JB, SB, and RF. RN and PN conducted the interviews, led by CM and CM-Y. CM led data analysis with support from SB and JB. CM led on writing this manuscript with SB and JB and support from CM-Y, RF, TA, VS, CD, MT, and ED who implement the CHIEDZA trial. CM conducts the

process evaluation of the family planning intervention in the trial, with support and guidance from SB, JB, and CM-Y. RF is the principal investigator of the CHIEDZA trial. All authors contributed to the article and approved the submitted version.

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REFERENCES

1. UNAIDS. Global HIV and AIDS Statistics- Fact Sheet. New York: UNAIDS (2020). Available online at: https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf
2. Chabata ST, Hensen B, Chiyaka T, Mushati P, Musemburi S, Dirawo J, et al. The impact of the DREAMS partnership on HIV incidence among young women who sell sex in two Zimbabwean cities: results of a non-randomised study. *BMJ Global Health.* (2021) 6:e003892. doi: 10.1136/bmjgh-2020-003892
3. Ministry of Health and Child Care, ICAP. Zimbabwe Population-Based HIV Impact Assessment 2020 (ZIMPHIA2020)- Summary Sheet. New York: Columbia University (2020). Available online at: https://phia.icap.columbia.edu/wp-content/uploads/2020/11/ZIMPHIA-2020-Summary-Sheet_Web.pdf
4. Ministry of Health and Child Care. Zimbabwe Population-Based HIV Impact Assessment (ZIMPHIA) 2015–16 Report. Harare, Zimbabwe: Ministry of Health and Child Care (2017).
5. Bell E, Mthembu P, O'Sullivan S, Moody K. Sexual and reproductive health services and HIV testing: perspectives and experiences of women and men living with HIV and AIDS. *Reprodu Health Matters*. (2007) 15(29 Suppl):113–35. doi: 10.1016/S0968-8080(07)29029-9
6. Bharat S, Mahendra VS. Meeting the sexual and reproductive health needs of people living with HIV: challenges for health care providers. *Reprodu Health Matters*. (2007) 15(29 Suppl):93–112. doi: 10.1016/S0968-8080(07)29030-5
7. Gruskin S, Ferguson L, O'Malley J. Ensuring sexual and reproductive health for people living with HIV: an overview of key human rights, policy and health systems issues. *Reprodu Health Matters*. (2007) 15(29 Suppl):4–26. doi: 10.1016/S0968-8080(07)29028-7
8. Yaya I, Nambiema A, Dieng S, Djalogue L, Agboyibor MK, N'Dri MK, et al. Factors associated with unmet need for limiting childbirth among women living with HIV in Togo: an averaging approach. *PLoS ONE.* (2020) 15:e0233136. doi: 10.1371/journal.pone.0233136
9. Mitchell HS, Stephens E. Contraception choice for HIV positive women. *Sex Transm Infect.* (2004) 80:167–73. doi: 10.1136/sti.2003.008441
10. Wilcher R, Cates W Jr, Gregson S. Family planning and HIV: strange bedfellows no longer. *AIDS*. (2009) 23 Suppl 1:S1–6. doi: 10.1097/01.aids.0000363772.45635.35
11. Todd CS, Jones HE, Langwenya N, Hoover DR, Chen PL, Petro G, et al. Safety and continued use of the levonorgestrel intrauterine system as compared with the copper intrauterine device among women living with HIV in South Africa: a randomized controlled trial. *PLoS Med*. (2020) 17:e1003110-e. doi: 10.1371/journal.pmed.1003110
12. Todd CS, Anderman TC, Long S, Myer L, Bekker L-G, Petro GA, et al. A systematic review of contraceptive continuation among women living with HIV. *Contraception.* (2018) 98:8–24. doi: 10.1016/j.contraception.2018.02.002
13. Todd CS, Stibich MA, Laher F, Malta MS, Bastos FI, Imbuki K, et al. Influence of culture on contraceptive utilization among HIV-positive women in Brazil, Kenya, and South Africa. *AIDS Behav*. (2011) 15:454–68. doi: 10.1007/s10461-010-9848-z
14. Mbonye AK, Hansen KS, Wamono F, Magnussen P. Barriers to contraception among HIV-positive women in a periurban district of Uganda. *Int J STD AIDS.* (2012) 23:661–6. doi: 10.1258/ijsa.2009.009357
15. Nanda K, Stuart GS, Robinson J, Gray AL, Tepper NK, Gaffield ME. Drug interactions between hormonal contraceptives and antiretrovirals. *Aids.* (2017) 31:917–52. doi: 10.1097/QAD.0000000000001392
16. *FHI360 Contraceptive Method Considerations for Clients with HIV Including Those on ART: Provider Reference Tool.* (2017). Available online at: https://www.fhi360.org/resource/contraceptive-methodconsiderations-clients-hiv-including-those-art-provider-reference-tool (accessed September, 2021).
17. USAID., PEPFAR., CDC. Technical Issue Brief: Drug interactions between Hormonal Contraceptive methods and anti-retroviral medications used to treat HIV. Washington D.C.: USAID, PEPFAR, CDC (2014).
18. Feyissa TR, Harris ML, Loxton D. "They haven't asked me. I haven't told them either": fertility plan discussions between women living with HIV and healthcare providers in western Ethiopia. *Reprod Health*. (2020) 17:124. doi: 10.1186/s12978-020-00971-2
19. Matthews LT, Crankshaw T, Giddy J, Kaida A, Psaros C, Ware NC, et al. Reproductive counseling by clinic healthcare workers in Durban, South Africa: perspectives from HIV-infected men and women reporting serodiscordant partners. *Inf Dis Obst Gynecol.* (2012) 2012:146348. doi: 10.1155/2012/146348
20. Mindry D, Crankshaw T, Maharaj P, Munthree C, Letsoalo T, Milford C, et al. "We have to try and have this child before it is too late": missed opportunities in client-provider communication on reproductive intentions of people living with HIV. *AIDS Care.* (2015) 27:25–30. doi: 10.1080/09540121.2014.951311
21. World Health Organization. *Strategic Approaches to the Prevention of HIV Infection in Infants. Strategic Approaches to the Prevention of HIV Infection in Infants.* Geneva: WHO (2003). p. 22.
22. UNFPA U. *The New York call to commitment: Linking HIV/AIDS and Sexual and Reproductive Health*. New York, NY: United Nations Population Fund (2004).
23. Wood, K., and Aggleton, P. (2004). *Promoting Young People's Sexual and Reproductive Health: Stigma, Discrimination and Human Rights.* London: Safe Passages to Adulthood.
24. Church K, Mayhew SH. Integration of STI and HIV prevention, care, and treatment into family planning services: a review of the literature. *Stud Fam Plann.* (2009) 40:171–86. doi: 10.1111/j.1728-4465.2009.00201.x
25. Kennedy CE, Spaulding AB, Brickley DB, Almers L, Mirjahangir J, Packel L, et al. Linking sexual and reproductive health and HIV interventions: a systematic review. *J Int AIDS Soc.* (2010) 13:1–10. doi: 10.1186/1758-2652-13-26
26. Spaulding AB, Brickley DB, Kennedy C, Almers L, Packel L, Mirjahangir J, et al. Linking family planning with HIV/AIDS interventions: a systematic review of the evidence. *Aids.* (2009) 23:S79–88. doi: 10.1097/01.aids.0000363780.42956.ff
27. Bernays S, Jarrett P, Kranzer K, Ferrand RA. Children growing up with HIV infection: the responsibility of success. *Lancet*. (2014) 383:1355–7. doi: 10.1016/S0140-6736(13)62328-4
28. Pretorius L, Gibbs A, Crankshaw T, Willan S. Interventions targeting sexual and reproductive health and rights outcomes of young people living with HIV: a comprehensive review of current interventions from sub-Saharan Africa. *Glob Health Action.* (2015) 8:28454. doi: 10.3402/gha.v8.28454
29. Baryamutuma R, Baingana F. Sexual, reproductive health needs and rights of young people with perinatally acquired HIV in Uganda. *Afr Health Sci.* (2011) 11:211–8.
30. Naré C, Katz K, Tolley E. Adolescents' access to reproductive health and family planning services in Dakar (Senegal). *Afr J Reprod Health.* (1997) 1:15–25. doi: 10.2307/3583373
31. WHO. *Evidence Brief: The Importance of Sexual and Reproductive Health and Rights to Prevent HIV in Adolescent Girls and Young Women in East and Southern Africa*. Geneva, Switzerland: WHO, hrp (2017). p. 24.
32. Vujovic M, Struthers H, Meyersfeld S, Dlamini K, Mabizela N. Addressing the sexual and reproductive health needs of young adolescents living with HIV in South Africa. *Child Youth Serv Rev.* (2014) 45:122–8. doi: 10.1016/j.childyouth.2014.03.028
33. Busza J, Besana GV, Mapunda P, Oliveras E. I have grown up controlling myself a lot. Fear and misconceptions about sex among adolescents vertically-infected with HIV in Tanzania. *Reprod Health Matters.* (2013) 21:87–96. doi: 10.1016/S0968-8080(13)41689-0
34. Mburu G, Hodgson I, Teltschik A, Ram M, Haamujompa C, Bajpai D, et al. Rights-based services for adolescents living with HIV: adolescent self-efficacy

and implications for health systems in Zambia. *Reprod Health Matters.* (2013) 21:176–85. doi: 10.1016/S0968-8080(13)41701-9

35. Mkumba LS, Nassali M, Benner J, Ritchwood TD. Sexual and reproductive health needs of young people living with HIV in low- and middle-income countries: a scoping review. *Reprod Health.* (2021) 18:219. doi: 10.1186/s12978-021-01269-7
36. Lanyon C, Seeley J, Namukwaya S, Musiime V, Paparini S, Nakyambadde H, et al. Because we all have to grow up: supporting adolescents in Uganda to develop core competencies to transition towards managing their HIV more independently. *J Int AIDS Soc*. (2020) 5(Suppl 5):e25552-e. doi: 10.1002/jia2.25552
37. Obare F, Birungi H, Kavuma L. Barriers to sexual and reproductive health programming for adolescents living with HIV in Uganda. *Popul Res Policy Rev.* (2011) 30:151–63. doi: 10.1007/s11113-010-9182-1
38. Bernays S, Lanyon C, Paparini S. Adolescents living with HIV: checking unhelpful terminology. *J Adolescent Health.* (2020) 67:477–8. doi: 10.1016/j.jadohealth.2020.07.021
39. Dauya E, Bandason T, Tembo M, Mavodza C, Simms V, Mackworth-Young C, et al. The impact of community-based integrated HIV and sexual and reproductive health services for youth on population-level HIV viral load and sexually transmitted infections in Zimbabwe: protocol for the CHIEDZA cluster-randomised trial [version 1; peer review: awaiting peer review]. *Wellcome Open Res*. (2022) 7. doi: 10.12688/wellcomeopenres.17530.1
40. Dauya E, Bandason T, Tembo M, Mavodza C, Simms V, Mackworth-Young C, et al. Putting youth at the centre: co-design of a community-based intervention to improve HIV outcomes among youth in Zimbabwe [version 1; peer review: awaiting peer review]. *Wellcome Open Res*. (2022) 7:17531. doi: 10.12688/wellcomeopenres.17531.1
41. Bradshaw C, Atkinson S, Doody O. Employing a qualitative description approach in health care research. *Global Qual Nurs Res.* (2017) 4:2333393617742282. doi: 10.1177/2333393617742282
42. Hensen B, Mackworth-Young CRS, Simwinga M, Abdelmagid N, Banda J, Mavodza C, et al. Remote data collection for public health research in a COVID-19 era: ethical implications, challenges and opportunities. *Health Policy Plan.* (2021) 36:360–8. doi: 10.1093/heapol/czaa158
43. Green J, Thorogood N. *Analyzing Qualitative Data. Qualitative Methods for Health Research*. London: Sage Publications (2004). p. 195–228.
44. Birks M, Chapman Y, Francis K. Memoing in qualitative research:Probing data and processes. *J Res Nurs.* (2008) 13:68–75. doi: 10.1177/174498710708 1254
45. Mazur A, Brindis CD, Decker MJ. Assessing youth-friendly sexual and reproductive health services: a systematic review. *BMC Health Ser Res.* (2018) 18:2982. doi: 10.1186/s12913-018-2982-4
46. Ambresin A-E, Bennett K, Patton GC, Sanci LA, Sawyer SM. Assessment of youth-friendly health care: a systematic review of indicators drawn from young people's perspectives. *J Adoles Health.* (2013) 52:670–81. doi: 10.1016/j.jadohealth.2012.12.014
47. Yam EA, Kahabuka C, Mbita G, Winani K, Apicella L, Casalini C, et al. Safer conception for female sex workers living with HIV in Dar es Salaam, Tanzania: cross-sectional analysis of needs and opportunities in integrated family planning/HIV services. *PLoS ONE.* (2020) 15:e0235739. doi: 10.1371/journal.pone.0235739
48. Zuma T, Seeley J, Mdluli S, Chimbindi N, McGrath N, Floyd S, et al. Young people's experiences of sexual and reproductive health interventions in rural KwaZulu-Natal, South Africa. *Int J Adolesc Youth.* (2020) 25:1058–75. doi: 10.1080/02673843.2020.1831558
49. West N, Schwartz S, Phofa R, Yende N, Bassett J, Sanne I, et al. "I don't know if this is right … but this is what I'm offering": healthcare provider knowledge, practice, and attitudes towards safer conception for HIV-affected couples in the context of Southern African guidelines. *AIDS Care.* (2016) 28:390–6. doi: 10.1080/09540121.2015.1093596
50. Wanyenze RK, Wagner GJ, Tumwesigye NM, Nannyonga M, Wabwire-Mangen F, Kamya MR. Fertility and contraceptive decision-making and support for HIV infected individuals: client and provider experiences and perceptions at two HIV clinics in Uganda. *BMC Public Health.* (2013) 13:98. doi: 10.1186/1471-2458-13-98
51. Busza J, Chiyaka T, Musemburi S, Fearon E, Davey C, Chabata S, et al. Enhancing national prevention and treatment services for sex workers in Zimbabwe: a process evaluation of the SAPPH-IRe trial. *Health Policy Plan.* (2019) 34:337–45. doi: 10.1093/heapol/czz037
52. Higgins JA, Smith NK. The sexual acceptability of contraception: reviewing the literature and building a new concept. *J Sex Res.* (2016) 53:417–56. doi: 10.1080/00224499.2015.1134425
53. Rucinski KB, Powers KA, Schwartz SR, Pence BW, Chi BH, Black V, et al. Longitudinal patterns of unmet need for contraception among women living with HIV on antiretroviral therapy in South Africa. *PLoS ONE.* (2018) 13:e0209114. doi: 10.1371/journal.pone.0209114
54. Abubeker FA, Fanta MB, Dalton VK. Unmet Need for Contraception among HIV-positive women attending HIV care and treatment service at saint paul's hospital millennium medical college, Addis Ababa, Ethiopia. *Int J Reprod Med.* (2019) 2019:3276780. doi: 10.1155/2019/3276780
55. Woollett N, Pahad S, Black V. "We need our own clinics": adolescents' living with HIV recommendations for a responsive health system. *PLoS ONE.* (2021) 16:e0253984. doi: 10.1371/journal.pone.0253984
56. Kachale F, Mahaka I, Mhuriro F, Mugambi M, Murungu J, Ncube B, et al. Integration of HIV and sexual and reproductive health in the era of anti-retroviral-based prevention: findings from assessments in Kenya, Malawi and Zimbabwe [version 1; peer review: 3 approved with reservations]. *Gates Open Res*. (2021) 5:145. doi: 10.12688/gatesopenres.13330.1
57. Ministry of Health and Child Care. *Zimbabwe National Family Planning Strategy (ZNFPS) 2016-2020*. Harare: Ministry of Health and Child Care (2016).
58. Hodgson I, Ross J, Haamujompa C, Gitau-Mburu D. Living as an adolescent with HIV in Zambia–lived experiences, sexual health and reproductive needs. *AIDS Care.* (2012) 24:1204–10. doi: 10.1080/09540121.2012.658755
59. Mavhu W, Willis N, Mufuka J, Mangenah C, Mvududu K, Bernays S, et al. Evaluating a multi-component, community-based program to improve adherence and retention in care among adolescents living with HIV in Zimbabwe: study protocol for a cluster randomized controlled trial. *Trials.* (2017) 18:478. doi: 10.1186/s13063-017-2198-7
60. Willis N, Napei T, Armstrong A, Jackson H, Apollo T, Mushavi A, et al. Zvandiri-bringing a differentiated service delivery program to scale for children, adolescents, and young people in Zimbabwe. Journal of acquired immune deficiency syndromes (1999). 2018(78 Suppl 2):S115–s23. doi: 10.1097/QAI.0000000000001737
61. Phillips AN, Bansi-Matharu L, Cambiano V, Ehrenkranz P, Serenata C, Venter F, et al. The potential role of long-acting injectable cabotegravir–rilpivirine in the treatment of HIV in sub-Saharan Africa: a modelling analysis. *Lancet Glob Health.* (2021) 9:e620–e7. doi: 10.1016/S2214-109X(21)00025-5
62. Rwafa T, Shamu S, Christofides N. Relationship power and HIV sero-status: an analysis of their relationship among low-income urban Zimbabwean postpartum women. *BMC Public Health.* (2019) 19:792. doi: 10.1186/s12889-019-7137-y
63. Patel R, Baum S, Grossman D, Steinfeld R, Onono M, Cohen C, et al. HIV-positive men's experiences with integrated family planning and HIV services in western Kenya: integration fosters male involvement. *AIDS Patient Care STDS.* (2014) 28:418–24. doi: 10.1089/apc.2014.0046

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Chapter 7 : Fertility protection, and preservation: a qualitative analysis of young women's decision-making about contraceptive use in Zimbabwe

Overview

It is well established that social and cultural norms influence the acceptability of modern contraceptives (1-3). This was also evident from very early on in my data collection phases as both providers and youth clients constantly cited how the desire to protect and demonstrate their fertility made people concerned about contraceptive side effects, which became a barrier to using hormonal contraceptives. However, what I then realised was that there was limited evidence about which social and cultural narratives become or remain dominant and how do they come to be so closely associated with family planning preferences.

I collected data to better understand these pervasive influences and nuances by asking young women what these norms were and why they believed these norms as realities and truth. This manuscript presents findings from this inquiry. This paper specifically seeks to illustrate how socially constructed and imagined knowledge on contraceptive use and non-use, and the processes by which this knowledge comes to be accepted, can be a mechanism of change for family planning outcomes (low uptake of long-acting contraceptives).

This chapter concludes the presentation of findings from my PhD. The manuscript presented here is the final version that, at the time of submitting this

PhD thesis has been sent to the co-authors for approval before submitting to SSM-Population Health.

References

1. Engelbert Bain L, Amu H, Enowbeyang Tarkang E. Barriers and motivators of contraceptive use among young people in Sub-Saharan Africa: A systematic review of qualitative studies. PLOS ONE. 2021;16(6):e0252745.
2. Krishnaratne S, Hoyt J, Hamon JK, Ariko AB, Atayo C, Morukileng J, et al. Acceptability of family planning in a changing context in Uganda: a realist evaluation at two time points. BMJ Open. 2022;12(4):e054277.
3. Swartz A, Colvin C, Harrison A. The problem or the solution? Early fertility and parenthood in the transition to adulthood in Khayelitsha, South Africa. Reproductive health matters. 2018;26(54):145-54.

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Thesis Title	Process evaluation of the family planning intervention for young women aged 16- 24 years, accessing CHIEDZA services in Zimbabwe		
Primary Supervisor	Joanna Busza		

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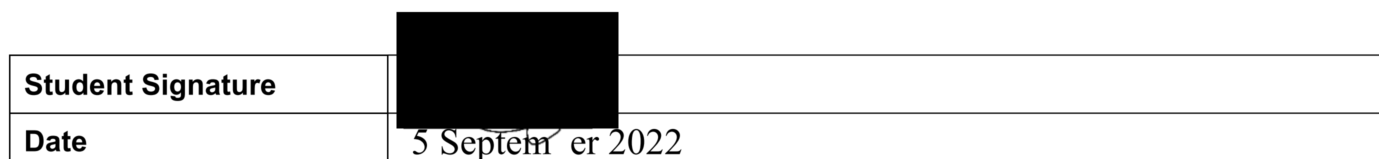
SECTION E



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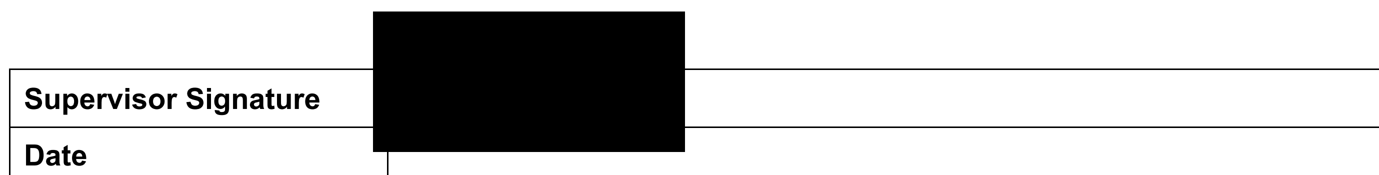

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Fertility preservation and prevention: a qualitative analysis of young women's decision-making about contraceptive use in Zimbabwe

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Keywords: decision-making, family planning, contraceptives, young women, access, Zimbabwe

Abstract

Background

Young women in Zimbabwe have a high unmet need for family planning and seldom utilise family planning services. Even when services were available and accessible through a community intervention, uptake remained low. To better understand why, we explored the social and health system influences on their decision-making about family planning methods and services uptake.

Methods

The study was embedded within a cluster randomised trial (CHIEDZA) of a community-based integrated package of HIV and sexual and reproductive health services for 16-24 year olds, conducted in Zimbabwe between April 2019 and March 2022. Seventy-two semi-structured interviews were conducted with young women accessing CHIEDZA, and health practitioners providing CHIEDZA services. Interviews were conducted between April 2020 - November 2021. A thematic analytical approach was employed.

Results

Young women decided on which family planning options to take up, within a broader set of considerations about their present and future needs and priorities. Influenced by prevailing social norms that were conveyed by peers and female relatives, young women had concerns that hormonal contraception could damage future fertility and so tended to these concerns. In their accounts, they emphasised the widely held assumption that hormonal contraception was only

appropriate for post-partum women. Despite availability of mixed method options, nulliparous young women often considered short-term contraception as the most suitable method for them.

Conclusion

While family planning interventions may seek to broaden the options available to young women to mitigate the risks of unintended pregnancy, our findings demonstrate that access to and uptake of family planning options are shaped by local contextual understanding of suitability, and availability. Successful implementation of family planning interventions requires responding to locally specific conditions, including engaging with social norms, and the influential groups that perpetuate them. These norms shape young women's decision-making and may be narrowing the accessibility of available options.

1. Introduction

Eastern, Southern, Central and Western Africa have the highest rates of teenage pregnancies in the world (Ahinkorah et al., 2021). Within these regions, approximately 35% of the pregnancies in girls below 18 are unintended, underscoring the unmet need for family planning among young women (Chae et al., 2017; Izugbara & Egesa, 2014). Where young women do take-up family planning options, they often use short-term methods that have high failure and discontinuation rates (Chandra-Mouli et al., 2014; Radovich et al., 2018; Willan et al., 2020).

In Zimbabwe, substantial investment in modern contraceptive access has led to Zimbabwe having one of the highest modern contraceptive prevalence rates (mCPR) for all women of reproductive age (WRA)- 65% (Zimbabwe National Statistics Agency & International., 2016), compared to the average 29% for the rest of the region (Ahinkorah et al., 2021). However, the high unmet family planning need for young unmarried women persists at 37% for 15-19 year olds and 17% for 20-24 years compared to 12.6% overall for WRA (15-49 years) (Ministry of Health and Child Care, 2016; Zimbabwe National Statistics Agency (ZIMSTAT) & UNICEF, 2019). This suggests that there are specific factors impeding access which disproportionately affect the 15-24 year olds

Evidence suggests that on the demand-side, socio-cultural expectations, denial of young women's sexuality, and the stigma around contraceptive use by young women can prevent them from using family planning methods or accessing family planning services, even when they may be available (Chandra-Mouli et al., 2014; WHO, 2017).

On the supply side, discrimination by health providers, confidentiality concerns, and commodity availability challenges, can result in not only limited service provision for young women but also reduce their willingness to engage with family planning services (Denno et al., 2015; WHO, 2017). When they do engage, young women tend to take up short-acting contraception (Chandra-Mouli et al., 2014; Radovich et al., 2018), but limited attention has been paid to articulating whether they do this in the presence or absence of mixed methods short and long-acting contraceptives.

Sexual and reproductive health (SRH) interventions which seek to address these challenges have demonstrated limited sustained impact on reducing unintended pregnancy outcomes among young women (Kristien et al., 2010; Phillips & Mbizvo, 2016; Wamoyi et al., 2014). This indicates a need to further explore 'access' to move beyond supply and availability to better understand the influences that may shape young women's decision-making and uptake (de Vargas Nunes Coll et al., 2019; Mutumba et al., 2018; Smith, 2020) and to examine how this may differ by contraception method.

Many health service utilisation theories consider the point of contact with the formal health system as being the most important for understanding access to and use of these services (Andersen, 2008; Ricketts & Goldsmith, 2005). However, demand-side experiences and behaviours outside of the health care service delivery system (supply side) may also be significant contributors to young people's family planning decision-making and health seeking behaviours. These in turn shape their willingness to engage with the health system (Stackpool-Moore et al., 2017; Starrs et al., 2018).

The World Health Organization (WHO) has made a public health case for making a wide-range of family planning options available to young women, including long-acting contraception which can provide discrete and ongoing protection (WHO, 2011, 2017). However, whether this logic of the protective suitability of long-acting contraception is shared by nulliparous young women themselves, and those that influence them within their local context, has received relatively limited attention. This paper examines whether young women consider themselves suitable candidates to take up hormonal, including long-acting contraception, if it is freely available to them. The intention is to provide evidence that can inform the approaches to framing family planning options within interventions, so that they can better align with young women's needs and improve health outcomes.

2. Methods

2.1 Study Design

This qualitative study was conducted as part of the nested process evaluation of a community-based integrated HIV and sexual reproductive service, which included offering family planning, for young people aged 16-24 years, that is being evaluated through a cluster-randomised trial in Zimbabwe (CHIEDZA—trial registration number NCT03719521).

2.2 Study Setting

The CHIEDZA trial was conducted in three provinces in Zimbabwe: Harare, Bulawayo, and Mashonaland East between April 2019 and March 2022. The details of the

CHIEDZA intervention are published elsewhere (Dziva Chikwari et al., 2022; Mackworth-Young, 2022), and evidence indicates that CHIEDZA is generally perceived to be available and accessible to young people (Mavodza et al., 2021; Tembo et al., 2022).

2.2.1 Family Planning in CHIEDZA

Family planning services within CHIEDZA included provision of information, counselling, and contraceptive commodities by youth-friendly and family planning trained providers. Oral contraceptives and Depo-Provera injectables were supplied by the CHIEDZA nurses. Between April 2019- October 2020, long-acting reversible contraceptives (LARCS), specifically Implants and Intra-Uterine Devices (IUDs), were provided via referral to a partner non-governmental organization, Population Services Zimbabwe (PSZ) who operate out of public sector clinics or their own centres. From October 2020, LARCS were provided at the CHIEDZA community centres by PSZ. Ideally, PSZ should have been present every time that CHIEDZA was open (same day each week), but this was not always feasible.

2.3 Data Collection

Data were collected in five phases, three with providers (phases 1, 3 and 5) and two with female service attendees (phases 2 and 4), referred to as clients. Data was collected across all provinces between April 2020 and November 2021. Each phase informed subsequent phases and a total of seventy-two semi-structured interviews were conducted (Table 1).

Due to COVID-19 lockdown mobility restrictions, interviews were conducted both in-person and telephonically, depending on lockdown restrictions at the time (Table 1). Interviews were conducted by qualified qualitative researchers, who were not directly involved in CHIEDZA service provision (CM, RN and PN). Each interview took between 15-90 minutes, and on average lasted approximately 45 minutes. Written informed consent was provided prior to each interview.

2.3.1 Provider Interviews

A total of 42 interviews were conducted with the same group of providers in phase 1 (n=16), phase 3 (n= 15), and phase 5 (n= 11) (Table 1). Only 11 providers were interviewed in phase 5 as we had reached data saturation. In phase 1, the interviews broadly explored the issues that arose in their discussions with clients about family planning. In phase 3, the interviews explored whether, how and why these issues and concerns persisted, as well the providers' perceptions of these concerns. In phase 5, the interviews explored providers' experiences of addressing these concerns during the implementation of CHIEDZA.

Table 1: Qualitative data collection timelines, participants, methods, and areas of exploration

Phase		Sampling Strategy	Type of Interview Participants	Data collection method	Area of exploration
4.	Apr 2020	Purposive sample: each province and type of health provider represented	16 health providers (10 females; 6 males)	Phone interviews	Family planning issues that young people talk to/ask the providers about

5.	May-Jun 2020	Purposive sample: all female youth mobilisers to cluster representation	13 female youth clients	2 Phone interviews 11 In-person interviews	What they think about family planning, their experiences with family planning, who can and should use family planning
6.	Jul-Aug 2020	Purposive sample: each province and each type of health provider represented	15 health providers (10 females; 5 males) 8 new; 7 repeat interviews	5 Phone interviews 10 In-person interviews	Family planning issues that young people talk to/ask the providers about; any challenging family planning issues/ concerns that young people have raised when seeking family planning services
7.	Mar-May 2021	Purposive sample: for maximum variation by contraceptive type used (short-acting & long-acting)	15 female youth clients All in-person interviews	8 narrative-style in-person interviews 7 topic guide in-person interviews	Discussions about fertility, sex, pregnancy, and contraceptive (non) use. Experiences of family planning services at CHIEDZA
8.	Oct-Nov 2021	Purposive sample: each province and type of health provider represented	11 health providers (6 females; 5 males)	in-person interviews	Implementation of the trial is coming to an end Experiences of implementing family planning services at CHIEDZA over time

2.3.2 Client interviews

CHIEDZA client interviews were conducted in phase 2 (n=13) and phase 4 (n= 15) (Table 1). The phase 2 interviews sought to generate a broad understanding of young people's decision-making about family planning. In phase 2, thirteen CHIEDZA female youth community mobilisers were interviewed because of their distinct perspectives in being clients of CHIEDZA, and their roles within CHIEDZA their roles to CHIEDZA. As youth mobilisers, they sensitised the communities and mobilised their peers to attend CHEDZA. This positioned them well to understand CHIEDZA, their own needs as young people, as well as the ideas circulating within their communities

The phase 4 interviews (n=15) were conducted with CHIEDZA clients. A purposive sampling approach was used to select participants who were female, not having participated in phrase 2, using contraceptive methods and in a diverse range of relationship situations (Table 2). We sampled for mixed-methods contraceptive use to understand perceptions, beliefs, and experiences by contraceptive method. The participants were selected from three clusters (1 in each province) where LARC provision by PSZ had been most consistent, to enable sufficient recruitment of young women with LARC uptake in CHIEDZA.

Seven interviews were conducted using a semi-structured topic guide. The remaining eight interviews were unstructured, conducted without a topic guide, to elicit their own narratives about SRH. In this unstructured style, the researchers (RN and CM) used a conversational format to talk about fertility, sex, pregnancy, and contraceptive use with the participants. Prior rounds of data collection were also flexible in the topics discussed and were responsive to additional issues raised by participants, but predominantly covered subjects that the research team had determined as priority areas. We adopted an unstructured approach with seven participants to enable young people to have more control over the topics discussed. Despite the slight variation in approaches, topics covered were similar between the two approaches.

2.4. Data analysis

All interviews were conducted in a participant's preferred language (English, Shona, or Ndebele) and audio recorded. Each interview was transcribed directly into English

by bilingual researchers. To maintain confidentiality, de-identification was done during transcription.

The analysis was guided by the principles of interpretive thematic analysis (Braun & Clarke, 2006). CM read all transcripts to familiarise with the data. Data was coded, and the initial coding was informed by a general inductive approach, with codes such as 'contraceptive use postpartum' and 'contraceptive use within marriage'. Through this initial coding process, social influences on young women's decision-making was identified as an important topic for further analytical attention to explore what effect they had on the process and why. Inductive codes like 'fertility threats', 'information sources and hormonal contraceptive side-effects' from the whole data set were compiled in data summary notes using Microsoft Word. Analytical memos were subsequently drafted to explore connections between codes and further develop emerging ideas, and to highlight and arrange the significant themes (Birks et al., 2008). To advance the analysis, coded excerpts from the transcripts and data summaries were extracted and grouped under the identified themes presented in this manuscript. The analytical processes were iterative and involved collaborative discussions of emerging themes between CM and SB.

Anonymised quotes from the providers are described with only the interview number, province, and data collection phase details to protect their anonymity, given the small groups of cadres. Quotes from CHIEDZA clients are described by interview number, type of contraceptive used, marital status, and data collection phase. In Zimbabwe, Secure is the brand name of the progesterone-only contraceptive pill

(PoP), Control is the brand name for combined oral contraceptive (COC) pills, Jadelle is a brand name for an implant and Depo is the shortened name referring to Depo Provera injectable. If the participant descriptor has two or more methods, it indicates that they had switched methods at some point in their SRH journey.

3. Findings

Table 2 outlines the key characteristics of the participants who were attending CHIEDZA. Many young women described themselves as married, although their situations may not have met the local, legal or cultural threshold of the definition of marriage. We intentionally used the descriptor provided by the young women themselves to determine their marital status.

All participants in phase 4 had children and some spoke of their reproductive journeys in retrospect. Three of the participants in phase 2 were sexually active, nulliparous and considered themselves unmarried. The diverse range and statuses of young women in the study enabled the understanding of both present and past lived experiences of contraceptive decision-making.

Table 2: Key characteristics of CHIEDZA female client participants

	Phase 2 (n=13)	**Phase 4 (n=15)**
Age	4 aged 16-19 years 9 aged 20-24 years Median age (range): 22 (16-24years)	All 20-25 years Median age (range): 23 (20-25)
Marital status	3 married 5 in a relationship 5 single	12 married 1 Divorced 2 in a relationship
Contraceptive use	3 combined oral contraceptives 1 Depo-Provera Injectable 3 Condoms only 6 no contraception	3 combined oral contraceptive 5 Depo-Provera injectable 7 Implants (3 inserted at CHIEDZA)

Parity	5 have children 8 do not have children	All 15 have children

3.1 Proving fertility: an embodiment of womanhood

The socially and morally acceptable sequence of sexual and fertility events for young women was as follows: no sex before marriage, marriage, no hormonal contraceptives before proving fertility, and having a baby within a marital situation. Among the clients interviewed, the emphasis they placed on the importance of young women proving their fertility through childbearing to establish their identity as embodying socially acceptable womanhood was pervasive. This socially anticipated sequence of events was very influential in shaping young women's decision-making about family planning options.

> *"You must have a baby first then think of using any family planning you wish to use."* (IDI04, COC-Depo, married, Phase 4)

Most of the participants perceived that a hormonal contraceptive was for married women and only once they had had at least one child.

> *"I know that when you get married you don't start by using family planning. You have to have a baby first then think of using any family planning you wish to use. When you want to have your second child that's when you start using it so that there is the spacing between your first and your second child" (IDI04, COC-Depo, married, Phase 2)*

> *"I wouldn't want to use the contraceptives before getting married because maybe it would lower the chances of me getting pregnant. I think since the uterus wouldn't have carried a child before, it might become complicated for an unmarried woman to start using the contraceptives."* (IDI02, COC, married, Phase 4)

3.1.1 Protecting fertility

A widely held assumption was that hormonal contraception could disrupt a young woman's future fertility. This perceived side-effect significantly shaped why such contraception should be avoided by nulliparous women. Long-acting contraception was considered to be a direct threat to their reproductive intentions, and in turn to their projected attainment of womanhood. Both providers and client participants cited this as the primary reason for low uptake of hormonal contraception among young unmarried women and their preference for condoms, or in many cases deliberately avoiding contraception all together.

> *"I feared to tarnish my reproductive health system before I have started bearing children hence the choice of condoms."* (IDI10, condoms only, in a relationship, Phase 2)

> *"I was not using anything [before having a child] … I heard that one should never use family planning especially if they do not have a child. I was told that it makes one infertile and they may face challenges when they now want to have a baby*

and so I did not want that to happen to me." (IDI15, Jadelle, in a relationship, Phase 4)

3.1.2 Performing the moral trajectory of womanhood

The expectation to prove one's fertility was layered onto moral codes surrounding sexual debut and marriage. The social ideal was that young women were expected to have their sexual debut within a marital situation. At that point, the expectation shifted towards proving fertility, by having a baby soon after marriage. However, the trajectory of being married before becoming sexually active was not consistently adhered to and participants' accounts illuminate the malleability of both what might constitute marriage and what could become an 'approved' reproductive trajectory in attaining the status of womanhood. Some young women perceived that being sexually active with a consistent partner, was a proxy indicator for marriage. For example, for the participant quoted below it was the event of pregnancy which conferred her status shift into being married and only post-partum did she then take up hormonal contraception:

> *"I got married as a result of the pregnancy. When we were boyfriend and girlfriend, we used to sleep together. When I later found out that I was pregnant. I had to go and stay with my boyfriend. It has been two years now so I can safely say he is now my husband."* (IDI14, Jadelle, married, Phase 4)

Participants' accounts emphasised that marital status could be conferred retrospectively or informally. Despite the negotiability of whether a couple were

considered to be married, becoming a mother through bearing a child was publicly visible and a clearly definable state. Even if a young woman's marital status was somewhat ambiguous at the time of childbirth, bearing a child carried social value and conferred an elevated status to young women, through their performative attainment of a critical element of womanhood. Some young women had been, or were sexually active prior to marriage, and therefore had already deviated from the socially approved sequence. However, refusing to engage in family planning methods or services until after having had a baby (usually) within marriage, was an opportunity to demonstrate a compliance to social expectations.

In phase 4, 13 of the 15 women reported only ever using hormonal contraceptives post-partum (Table 2). For these 13 women, intervening to control fertility through hormonal contraception, after having demonstrated it, carried little social risk. Instead, their transition in status warranted contraceptive use to become a socially permissible option that enabled responsible planning for subsequent pregnancies. In phase 2, the nine young women who were using only condoms or no contraception did not yet have any children.

> *"So those who take family planning are married people who have newly born babies so that they don't have babies after every year or less."* (IDI11, no contraception, single, Phase 2).

3.2 Acceptability thresholds for different contraceptive methods

Although prioritising the perceived preservation of fertility was a generalised trend within the dataset, there was some variation in the degree to which it shaped methods choices. Even once LARCs had become a socially permissible choice for participants who already had children, some were still very wary of their perceived fertility-damaging potential side effects. This influenced the choices they made and limited the appeal of the longer-acting contraceptive options.

There were a number of widely circulating misconceptions about LARCs which undermined young women's confidence in the suitability of these options for them. One perception was that the fertility threat increased proportionate to the length of time a woman was using hormonal contraception. Specifically, client participants considered that time on contraception was equivalent to the time it would take to conceive once they had stopped taking contraception. For example, one young mother chose not to take Jadelle because of her concerns that it might provoke a repetition of the previous conception challenges she had encountered once she wanted to have another baby:

> *"I thought for me to use Jadelle it may take about 5 more years for me to conceive. I decided not to use it since I took about 1 year and 9 months without a child. So, Jadelle was a no for me. I decided to go for the Depo and thought to myself that if 3 months lapses and I decide that I want a child I will not go back to the clinic for another shot; simple as that."* (IDI10, Depo, married, Phase 4)

This led some women to use Depo, which acted only for three months. Depo was a convenient medium-term method that allowed them to 'check' their fertility through stopping periodically and allowing their menstrual cycle to return. For them this option was preferred because it provided reassurance about their ongoing reproductive potential.

> *"I prefer Depo because of its short effective period. After three months, I can go back to my meses cycle. Unlike Jadelle which is effective for 3 years, thus a long time for someone to be missing her menses… I like the fact that each time I come for my jab I am tested for pregnancy."* (IDI13, Depo, in a relationship, Phase 4)

However, the providers highlighted that there were community rumours about the fertility-damaging side effects of Depo as well, which further discouraged uptake of this medium-term option.

> *"Information went viral that if you have only one child you are not supposed to use Depo; if you decide to have another baby you will face some conception problems. So, it was wrong information being given and making Depo less popular."* (Harare Provider, IDI02, Phase 5)

3.2.1 Diverging from the norm

There were exceptions (n=3) to the dominant pattern of prioritising the desire to prove one's fertility, over protecting against conception, when deciding which family planning option to take up (n=25). These three women, who were amongst the eldest

within the sample, were more persuaded by the public health rationale than the social expectations prevailing within their communities. They considered contraception to be appropriate for sexually active individuals, independent of marital or fertility status, who wanted to prevent unintended pregnancies. As indicated by this quote:

> *"For someone who is sexually active but not married, I think they should get a long-term family planning so that they don't risk having unwanted pregnancies when the time isn't ripe yet for them to have one. I would recommend that person to use loop or Jadelle which are long term methods because that will be the safest thing to do"* (IDI12, PoP-Jadelle-Jadelle removal, married, Phase 4)

However, their preference for LARCs as not only because they considered it protective against unintended pregnancies but also because it enabled them to be discrete which protected the confidentiality of their contraceptive choices. This made it preferable compared to the contraceptive pill, which in needing to take it each day , risked them being 'found out', which would highlight a deviation from social norms and provoke social sanctions. They recognised that needing to take the pill in secret would potentially disrupt their ability to adhere, and also undermine its effectiveness:

> *"People will start asking you why you are taking family planning pills, yet you don't have a husband. Others will also make me hide them to the extent that I*

will forget where I hid them and eventually misplace or lose them." (IDI08, COC, in a relationship, Phase 2)

3.3 Sources of Information and influence.

Young women's decisions about contraception were shaped by the social meanings attributed to the contraceptive options rather than clinical evidence. These social meanings were conveyed by trusted adults, as well as peers, within their community, who drew on their lived experience or the reported learning of others. As each story and advice that young women heard from those in their community tended to reinforce each other, the consistency of the accounts and advice they heard reinforced its status as 'truth'. As such these influential individuals mediated the perceived choices available to young women.

> "*It's not only my friends who said that, also people from my community said the same thing. Since a lot of people are saying that it could mean it's true."* (IDI14, Jadelle, Married, Phase 4)

3.3.1 Role of providers in shaping decisions

Young women also trusted health providers who gave them family planning information. Before they came to CHIEDZA, some of these young women were told about infertility being a contraceptive side effect by health providers at their local clinics. One young woman was still in school, and not yet ready to have a baby. She got pregnant because she was not using any hormonal contraceptives, and she said it was because:

“I was given these teachings at the local clinic. We were told it's not advisable to use family planning before you have a child. The providers at the clinic just advised us to use condoms. I used to track my days and not have sex when I was ovulating. Guess I was not an expert on that. That is why I fell pregnant because my partner never loved using condoms.” (IDI13, Depo, in a relationship, Phase 4).

When young women then attended CHIEDZA, much of the information that they were given about family planning options contradicted what they had come to understand as true through community discourse or from other health care workers. This was acknowledged by CHIEDZA providers. They recognised that the information that they were providing, in which all family planning options were appropriate for sexually active young women, was in direct tension with the localised understanding about who family planning should be for.

CHIEDZA providers recounted being told by community members that what they doing was *“a taboo”* (Harare Provider, IDI10, Phase 5). They attempted to correct the instructions that young women had previously been given by providing accurate information on all the contraceptive methods so that young women could make an informed decision on their method of choice.

“Sometimes there were myths and misconceptions surrounding family planning. After explaining to the client, some would switch and take up a

> *different method after knowing more about it."* (Bulawayo Provider, IDI07, Phase 5)

For LARCs specifically, CHIEDZA providers tried to directly dispel the misinformation which was widely circulating within communities and contributing to young women's low uptake of LARCs.

> *"Information that people in the community have (about implants) is false. They say that implants are irreversible and if you decide to have a baby you will face many problems. So that's another issue on long term methods, that's why these young people didn't want to use them… But it also takes time for one to understand all the information, and with time the clients would come back switching the methods from pills to implants."* (Harare Provider, IDI02, Phase 5)

Some of the providers acknowledged that they were also influenced by the social expectations about what was appropriate for a young woman regarding use of family planning methods by young women. According to them, these beliefs did not influence their service provision.

> *"From my beliefs I think young adolescents do not need those services [family planning]. At that age it's time to discover yourself and focus more on growing yourself as an individual instead of intimacy. But I do not let my beliefs interfere with my work. I am a professional and it's not about me. It's about*

my client. So, I simply offer the clients what they want without asking questions." (Bulawayo Provider, IDI05, Phase 5)

For these providers, their job was to provide family planning methods to young people. This superseded their personal and socialised beliefs about contraceptive use for young people. However, it highlights an important tension that may not have necessarily been addressed through their professional training.

4. Discussion

The findings in this study demonstrated patterns in family planning decision-making pathways for young women. Young women preferred short or medium acting methods when they presented for family planning services, reflected in the higher acceptability of short acting contraceptives including Depo. This aligns with previous research which has shown that young women often use short-term methods that have higher rates of failure and discontinuation (Radovich et al., 2018; Willan et al., 2020). We sought to understand why this may persist, even when LARCs were offered in a youth-friendly accessible service.

Socially constructed and acceptable identities of womanhood contributed to how young women viewed themselves as being appropriate candidates to use contraceptive methods and access family planning services. These young women's social contexts prioritised the significance of fertility, marriage, and sexual debut within marriage. Actively protecting their reproductive potential played an important social role in effectively attaining womanhood status. As the side-effects of hormonal

contraceptives, especially LARCs, were framed as a direct threat to this, they only became a safe and suitable option once their fertility had been proven and even then, for some, it remained risky.

These perceptions, knowledge, and information on the effects of contraceptives on fertility, appear to derive from influential and trusted sources within the community- namely community members, immediate referral groups and health providers. As such, the local and social contexts that young women engage with before and during contact with a public health intervention (Mackenzie et al., 2013) directly moderated their 'choices'. Their conviction in the damaging side-effects of hormonal contraception and its inappropriateness for young women influenced when and how young women exercised their agency to use family planning methods and services.

This study revealed that the priorities concerning young women's sexual and reproductive concerns were not necessarily the same as the priorities of public health interventions. For public health, the rationale is that family planning methods should be a consideration when one is sexually active, regardless of marital status or parity. Investments to improve access to LARCs have been lauded as being critical to improving unintended pregnancy outcomes among young people (Health Communication Capacity Collaborative, 2014). Yet, our findings showed that young women considered social acceptability factors like the public acceptance of being known to be sexually active, marital status, as well as when and how they preserved and proved their fertility. All these factors converged to influence which family planning options, if any, they considered to be appropriate for them. Our study

reflects that there may be a tension between the presumed appeal of hormonal contraceptives, especially LARCS for young women, underpinned by a public health rationale, and the rationale described by young women and some providers which positions LARCS as unsuitable and even threatening to their social priorities. The inadequate consideration of this within SRH intervention may explain why, even when family planning methods and services are available to young nulliparous women, their uptake may be low and uneven.

This illuminates the need to focus on how intended beneficiaries' motivations to access services may shape uptake, alongside availability. In our study, decision-making was influenced by whether or not young women perceived themselves to be candidates for family planning. Candidacy refers to the ways in which individuals deem themselves to be eligible for accessing and utilising health services (Dixon-Woods et al., 2006). There have been a number of studies with young people which have demonstrated how prevailing local socio-cultural views have converged to compromise their candidacy for a particular service (Kawuma et al., 2021; Nkosi et al., 2019). Our study's findings suggests that young women assessed their 'candidacy' for family planning by examining social constructions for family planning decision-making and help-seeking. For example, in this study, the reticence about the effects of LARCS persisted even after fertility had been proven (post-partum) suggesting that the social threshold for hormonal contraception was demonstration of fertility overall, but the threshold for LARCs may be even higher.

Improving access to and knowledge of family planning services, although helpful, is unlikely to be adequate for young women to use services that they know are available (Haider et al., 2013). There is a need to adjust community-based distribution of contraceptives to suit the context (Marston et al., 2020; Nyundo et al., 2021), reinforcing the call for research and programs in family planning service provision to respond to and accommodate the role of socio-cultural factors in contraceptive behaviours (Agha et al., 2021; Senderowicz, 2020; Williamson et al., 2009).

Our research which focused on understanding the prevailing, local influences on family planning decisions can inform how we contextualise and tailor interventions to more effectively communicate the protective value of LARCs on managing, and protecting, fertility to improve overall reproductive outcomes. Part of this contextualisation approach may require directly engaging with how to align the service so that it can directly appeal to, and adjust, a young person's candidacy for it.

Our findings also highlight the contextual importance of engaging with social networks which influence young people's family-planning decisions. This may include addressing the broader misconceptions within the community by engaging with influential community members, as well as health providers. A mixed methods study in the Democratic Republic of Congo showed that improving community access of some contraceptive methods by community health agents did not necessarily improve contraceptive use, but addressing spousal and socio-cultural related barriers was important to instigate change (Sheff et al., 2019). Proactively engaging with

social networks to equip them to become sources of correct information on hormonal contraceptive use, including addressing the misconception that LARCs threaten fertility, may be critical to shifting the prevailing local norms away from undermining the protective opportunities of LARCs for young women. Unless, and until, public health interventions intentionally engage with social influences and forces, then family planning outcomes for young women may remain compromised.

4.1 Strengths and Limitations

We recruited young women who were already accessing CHIEDZA family planning services. Although we were not able to include young women who were not accessing CHIEDZA and/or not using contraceptives, participants reflected on what had previously impeded them from taking up family planning options, even when attending CHIEDZA, and, for many, were able to explain their continued preference for short or medium-term contraception. A strength of the study was the use of qualitative methods that had open and responsive topic guides as well as unstructured formats, to more fully explore issues to generate hypotheses and to develop broader and rich understandings.

5. Conclusion

Understanding how locally specific social meanings around fertility, and perceived threats, shape the appeal and perceived 'suitability' of different types of contraception for young women is critical, and could occur through intentional community dialogues. This enables public health interventions to effectively engage

with, and potentially influence, social norms and structures to optimise the acceptability of young women accessing and taking up family planning care, and to improve subsequent outcomes amongst young women. Young women commonly obtain trusted information on fertility and contraceptive methods from non-medical reference groups within their communities, as well as health providers, such that these reference groups could be a public health target for accurate family planning knowledge and information diffusion.

Ethical Statement

The ethical clearance approvals required for this project were obtained from the Medical Research Council of Zimbabwe (MRC/A/2266), London School of Hygiene and Tropical Medicine (14652), and Biomedical Research and Training Institute (AP144/2018). Written informed consent for participation was obtained from all participants.

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Author Contributions

This paper was conceptualised by CM and SB. CM, RN and PN conducted the interviews, supported by CMY. CM led data analysis and writing this manuscript with SB and JB, supported by CMY, RAF, TB, VS, CDC, MT, and ED who implemented the

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Declaration of competing Interests

The authors have no conflicts of interest to declare

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References

Agha, S., Morgan, B., Archer, H., Paul, S., Babigumira, J. B., & Guthrie, B. L. (2021). Understanding how social norms affect modern contraceptive use. *21*(1), 1061. https://doi.org/10.1186/s12889-021-11110-2

Ahinkorah, B. O., Kang, M., Perry, L., Brooks, F., & Hayen, A. (2021). Prevalence of first adolescent pregnancy and its associated factors in sub-Saharan Africa: A multi-country analysis. *PLoS One*, *16*(2), e0246308. https://doi.org/10.1371/journal.pone.0246308

Andersen, R. M. (2008). National Health Surveys and the Behavioral Model of Health Services Use. *Medical Care*, *46*(7), 647-653. https://doi.org/10.1097/MLR.0b013e31817a835d

Birks, M., Chapman, Y., & Francis, K. (2008). Memoing in qualitative research:Probing data and processes. *Journal of Research in Nursing*, *13*(1), 68-75. https://doi.org/10.1177/1744987107081254

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa

Chae, S., Desai, S., Crowell, M., Sedgh, G., & Singh, S. (2017). Characteristics of women obtaining induced abortions in selected low- and middle-income countries. *PLoS One*, *12*(3), e0172976. https://doi.org/10.1371/journal.pone.0172976

Chandra-Mouli, V., McCarraher, D. R., Phillips, S. J., Williamson, N. E., & Hainsworth, G. (2014). Contraception for adolescents in low and middle income countries: needs, barriers, and access. *11*(1), 1. https://doi.org/10.1186/1742-4755-11-1

de Vargas Nunes Coll, C., Ewerling, F., Hellwig, F., & De Barros, A. J. D. (2019). Contraception in adolescence: the influence of parity and marital status on contraceptive use in 73 low-and middle-income countries. *Reprod Health*, *16*(1), 1-12.

Denno, D. M., Hoopes, A. J., & Chandra-Mouli, V. (2015). Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. *J Adolesc Health*, *56*(1 Suppl), S22-41. https://doi.org/10.1016/j.jadohealth.2014.09.012

Dixon-Woods, M., Cavers, D., Agarwal, S., Annandale, E., Arthur, A., Harvey, J., Hsu, R., Katbamna, S., Olsen, R., Smith, L., Riley, R., & Sutton, A. J. (2006). Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. *BMC Med Res Methodol*, *6*, 35.

Dziva Chikwari, C., Dauya, E., Bandason, T., Tembo, M., Mavodza, C., Simms, V., Mackworth-Young, C. R. S., Apollo, T., Gundy, C., Weiss, H. A., Kranzer, K., Mavimba, T., Indravudh, P., Doyle, A. M., Mugurungi, O., Machiha, A., Bernays, S., Busza, J., Madzima, B., . . . Ferrand, R. A. (2022). The impact of community-based integrated HIV and sexual and reproductive health services for youth on population-level HIV viral load and sexually transmitted infections in Zimbabwe: protocol for the CHIEDZA cluster-randomised trial *(in press with Wellcome Trust Open Research)*. In. London UK: Wellcome trust Open Research.

Haider, S., Stoffel, C., Donenberg, G., & Geller, S. (2013). Reproductive health disparities: a focus on family planning and prevention among minority women and adolescents. *Global advances in health and medicine*, *2*(5), 94-99. https://pubmed.ncbi.nlm.nih.gov/24416701 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3833575/

Health Communication Capacity Collaborative. (2014). Barriers to LARC Uptake Among Youth: Highlights from the Research Brief.

Izugbara, C., & Egesa, C. (2014). The Management of Unwanted Pregnancy Among Women in Nairobi, Kenya. *International Journal of Sexual Health*, *26*(2), 100-112. https://doi.org/10.1080/19317611.2013.831965

Kawuma, R., Ssemata, A. S., Bernays, S., & Seeley, J. (2021). Women at high risk of HIV-infection in Kampala, Uganda, and their candidacy for PrEP. *SSM-population health*, *13*, 100746.

Kristien, M., Matthew, C., Stanley, L., & Marleen, T. (2010). Concurrency and the limited effectiveness of behavioural interventions on sexual risk behaviour of youth in sub-Saharan Africa. *AIDS*, *24*(13), 2140-2142.

Mackenzie, M., Conway, E., Hastings, A., Munro, M., & O'Donnell, C. (2013). Is 'Candidacy' a Useful Concept for Understanding Journeys through Public Services? A Critical Interpretive Literature Synthesis. *Social Policy & Administration*, *47*(7), 806-825. https://doi.org/10.1111/j.1467-9515.2012.00864.x

Mackworth-Young, C. a. D., S and Dauya, E and Dziva Chikwari, C and Mavodza, C and Tembo, M and Doyle, A and McHugh, G and Simms, V and Wedner-Ross, M and Apollo, T and Mugurungi, O and Ferrand, R and Bernays, S. (2022). Putting youth at the centre: co-design of a community-based intervention to improve HIV outcomes among youth in Zimbabwe [version 1; peer review: awaiting peer review]. *Wellcome Open Research*, *7*(53). https://doi.org/10.12688/wellcomeopenres.17531.1

Marston, C., Arjyal, A., Maskey, S., Regmi, S., & Baral, S. (2020). Using qualitative evaluation components to help understand context: case study of a family planning intervention with female community health volunteers (FCHVs) in Nepal. *20*(1), 685. https://doi.org/10.1186/s12913-020-05466-1

Mavodza, C., Mackworth-Young, C. R., Bandason, T., Dauya, E., Dziva Chikwari, C., Tembo, M., Apollo, T., Ncube, G., Kranzer, K., & Ferrand, R. (2021). When healthcare providers are supportive," I'd rather not test alone": Exploring uptake and acceptability of HIV self-testing for youth in Zimbabwe-a mixed method study. *Journal of the International AIDS Society*, 1-21.

Ministry of Health and Child Care. (2016). *Zimbabwe National Family Planning Costed Implementation Plan 2016-2020*. https://www.familyplanning2020.org/sites/default/files/Zimbabwe-National-FP-Costed-Implementation-Plan-CIP-2016-2020_9.12.16.pdf

Mutumba, M., Wekesa, E., & Stephenson, R. (2018). Community influences on modern contraceptive use among young women in low and middle-income countries: a cross-sectional multi-country analysis. *18*(1), 430. https://doi.org/10.1186/s12889-018-5331-y

Nkosi, B., Seeley, J., Ngwenya, N., McHunu, S. L., Gumede, D., Ferguson, J., & Doyle, A. M. (2019). Exploring adolescents and young people's candidacy for utilising health services in a rural district, South Africa. *19*(1), 195. https://doi.org/10.1186/s12913-019-3960-1

Nyundo, L., Whittaker, M., Eagle, L., & Low, D. R. (2021). Adaptation of community-based distribution of family planning services to context-specific social networks: a case of marriage counsellors in Lusaka district, Zambia. *21*(1), 437. https://doi.org/10.1186/s12913-021-06422-3

Phillips, S. J., & Mbizvo, M. T. (2016). Empowering adolescent girls in Sub-Saharan Africa to prevent unintended pregnancy and HIV: A critical research gap. In *Int J Gynaecol Obstet* (Vol. 132, pp. 1-3). © 2015 International Federation of Gynecology and Obstetrics. Published by Elsevier Ireland Ltd. https://doi.org/10.1016/j.ijgo.2015.10.005

Radovich, E., Dennis, M. L., Wong, K. L. M., Ali, M., Lynch, C. A., Cleland, J., Owolabi, O., Lyons-Amos, M., & Benova, L. (2018). Who Meets the Contraceptive Needs of Young Women in Sub-Saharan Africa? , *62*(3), 273-280. https://www.sciencedirect.com/science/article/pii/S1054139X17304792

Ricketts, T. C., & Goldsmith, L. J. (2005). Access in health services research: The battle of the frameworks. *Nursing Outlook*, *53*(6), 274-280. https://doi.org/10.1016/j.outlook.2005.06.007

Senderowicz, L. (2020). Contraceptive Autonomy: Conceptions and Measurement of a Novel Family Planning Indicator. *Studies in Family Planning*, *51*(2), 161-176. https://doi.org/10.1111/sifp.12114

Sheff, M. C., Jackson, E. F., Kanté, A. M., Rusibamayila, A., & Phillips, J. F. (2019). The impact of adding community-based distribution of oral contraceptives and condoms to a cluster randomized primary health care intervention in rural Tanzania. *16*(1), 181. https://doi.org/10.1186/s12978-019-0836-0

Smith, J. (2020). Improving adolescent access to contraception in sub-Saharan Africa: a review of the evidence. *African Journal of Reproductive Health*, *24*(1), 152-164.

Stackpool-Moore, L., Bajpai, D., Caswell, G., Crone, T., Dewar, F., Gray, G., Kyendikuwa, A., Mellin, J., Miller, A., & Morgan, F. (2017). Linking sexual and reproductive health and rights and HIV services for young people: the Link Up Project. *Journal of Adolescent Health*, *60*(2), S3-S6.

Starrs, A. M., Ezeh, A. C., Barker, G., Basu, A., Bertrand, J. T., Blum, R., Coll-Seck, A. M., Grover, A., Laski, L., & Roa, M. (2018). Accelerate progress—sexual and reproductive health and rights for all: report of the Guttmacher–Lancet Commission. *The Lancet*, *391*(10140), 2642-2692.

Tembo, M., Renju, J., Weiss, H., Dauya, E., Gweshe, N., Ndlovu, P., Nzombe, P., Chikwari, C., Mavodza, C., Mackworth-Young, C., Ferrand, R., & Francis, S. (2022). Integration of a

menstrual health intervention in a community-based sexual and reproductive health service for young people in Zimbabwe: a qualitative acceptability study. *22*.

Wamoyi, J., Mshana, G., Mongi, A., Neke, N., Kapiga, S., & Changalucha, J. (2014). A review of interventions addressing structural drivers of adolescents' sexual and reproductive health vulnerability in sub-Saharan Africa: implications for sexual health programming. *Reprod Health*, *11*(1), 1-15.

WHO. (2011). The sexual and reproductive health of young adolescents in developing countries: reviewing the evidence, identifying research gaps, and moving the agenda: report of a WHO technical consultation, Geneva, 4-5 November 2010.

WHO. (2017). Evidence Brief: The importance of sexual and reproductive health and rights to prevent HIV in adolescent girls and young women in East and Southern Africa. In (pp. 24). Geneva, Switzerland: WHO, hrp.

Willan, S., Gibbs, A., Petersen, I., & Jewkes, R. (2020). Exploring young women's reproductive decision-making, agency and social norms in South African informal settlements. *PLoS One*, *15*(4), e0231181. https://doi.org/10.1371/journal.pone.0231181

Williamson, L. M., Parkes, A., Wight, D., Petticrew, M., & Hart, G. J. (2009). Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. *Reprod Health*, *6*, 3-3. https://pubmed.ncbi.nlm.nih.gov/19228420 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2652437/

Zimbabwe National Statistics Agency, & International., I. (2016). *Zimbabwe National Demographic and Health Survey 2015: Final Report*.

Zimbabwe National Statistics Agency (ZIMSTAT), & UNICEF. (2019). Zimbabwe 2019 Multiple Indicator Cluster Survey 2019 Report. In. Harare, Zimbabwe: ZIMSTAT.

Chapter 8 : Discussion

When this research study began, there had been considerable effort and work on evaluating HIV and/or SRH services for AYP (1-5). However, there were limited process evaluations of family planning interventions within these integrated SRH services. The process evaluations that have been conducted have largely been on information-based interventions, few on service delivery interventions and even fewer on family planning service delivery models of care.

Within Zimbabwe, although organisations have monitored and evaluated their SRH interventions for AGYW (6, 7), these evaluations have not focused on the processes of delivering the interventions and how this shapes how the interventions are received by beneficiaries and outcomes. Therefore this process evaluation study on a family planning intervention for young women in Zimbabwe has the potential to contribute to understanding how family planning or SRH interventions can work in Zimbabwe, to effectively address young people's needs.

The value of addressing unwanted pregnancies amongst young people in Zimbabwe where rates of teenage pregnancies are high, and contraceptive use in this cohort is low, has been established (8-11). When prioritising young women's contraceptive needs, it is crucial to comprehend existing patterns not only of young women's use and experiences of family planning services, but also the experiences of the health care workers providing these same services and the

broader context in which young women's understanding of demand and need are shaped.

This thesis used the 2015 MRC's guidance on process evaluations (12) to explore implementation, mechanisms of change and context of a family planning intervention for young women in Zimbabwe, with the following six objectives:

I. **Implementation:** To investigate how the intervention was *delivered* through assessing *fidelity to, and adaptations of* the intended intervention including how this shapes *feasibility* and *quality* of the intervention
II. **Mechanisms of Change:** To explore the experiences and perspectives of the intervention from both CHIEDZA clients and providers/implementers.
III. **Mechanisms of Change:** To understand the effects of the intervention through participants' expectations and perceptions of the intervention
IV. **Context:** To identify and assess the influence of *context*ual factors, including COVID-19 and any adaptations based on these factors, to implementation and mechanisms of change for family planning
V. **Relevance to policy and practise:** To generate practise and research recommendations to improve family planning interventions for young people within this setting

This chapter will begin by examining the potential contributions of process evaluations, highlighting how the approach utilised in this study sought to respond to conventional gaps in process evaluations that do not adequately take into account the complexities of both the intervention and the context, and the

impact of these complexities on intervention shape and effect. This will be followed by the synthesis of the study findings.

To synthesise my findings from across the PhD, I organise the discussion section into four key learning themes. Firstly, I explore the role and place for adaptive public health interventions, as was evidenced in my implementation and context findings. Secondly I make a case for the need to be proactive about including contextual knowledge into public health intervention design, delivery and evaluations. The role of context in shaping the implementation of the family planning intervention, and the process and outcomes of engaging with it as clients and providers, was illustrated across all my findings chapters. Thirdly, which is related to, the second theme, I argue that critical approaches which consider the sociocultural, political, historical conditions of the system that an intervention will be embedded in, are necessary for intervention design and delivery. Often, critical approaches are seen as methodology concerns for a researcher or evaluator to consider, but I will use my findings to show that these approaches are valuable for implementors to consider in the delivery of family planning interventions. Lastly I will draw together the first three learnings to inform what we can learn from this study about working with young people, and what works for family planning interventions for young people, to maximise effective impact.

The strengths and limitations of this work as well as the dissemination strategies are then also presented. This is followed by additional reflections on this research's contributions and implications for policy, synthesising the reflections

on impact, that are woven throughout the discussion section, and potential areas of future research.

8.1 Conducting Process evaluations

Process evaluations are considered as integral part of complex public health interventions (13-15). As established in the Methodology chapter, the information on how to integrate and conduct these evaluations is sparse (16), and Oakley and colleagues have argued that the conduct of process evaluations is often not systematic, and deliberate (17). As such the knowledge generating potential of process evaluations is rarely realised. Hence, process evaluations are encouraged to be 'nested within a trial', so that they can be implemented within experimental conditions and contribute to intervention adaptations as appropriate (13); and then later to understanding and explaining the findings from outcome or impact evaluations.

The UK's MRC's process evaluation guidance has over time significantly influenced the funding, conduct, implementation and evaluation of complex public health interventions (18). As the guidance has gained momentum, so have critiques in the literature advocating for a complex systems approach instead of a complex interventions approach as presented by the guidance (19-21). By highlighting the blind spots and narrow application lens in the previous version of the guidelines, these critiques have been beneficial and resulted in the updated 2021 MRC guidance that offers more understanding of adaptability and how evaluations interact with complex systems approaches (22). While there has

been a theoretical development, which has extended the potential value of process evaluations, the lack of practical examples about how to execute complex system approaches continue to hinder the realisation of this potential.

Trial interventions that are being evaluated do not exist in a vacuum and are inevitably shaped and changed through the context in which they are being trialled. When assessing complex interventions, investigating complexity beyond the intervention itself to include complexity in the context and setting in which the intervention was introduced and interacted with is necessary (20).

My research experience conducting this process evaluation was an attempt to provide a practical example of the consideration in applying process evaluations in the design, delivery, and evaluation of a complex intervention. Conceptualising the intervention within the health and social system it is embedded in, and also assessing context and implementation (23) was necessary to understand whether the intervention will really make a difference to family planning access and use. My methodological decisions, as detailed in Chapter 3, were focused on designing and conducting a process evaluation that could attend to and respond to the context of the implementation of the intervention. The findings in Chapters 4, 5, 6, and 7 presented these interactions between the intervention and the health and social systems it was immersed in.

My research question deliberately focused on understanding the mechanisms of change in evaluating the effect of the intervention, instead of the often quantitative measure associated with 'effect'. Intervention effects do not need to

be considered absolute, and can be implicit. By this I mean, 'effect' does not have to be only in terms of binary outcomes in which an intervention is considered a success or failure. My approach was interested in impact that includes soft outcomes. Therefore, in my investigations, effect sought to understand whether the way that the family planning intervention was being experienced or perceived was better or worse than what would have been happening anyways (standard of care). This is a question that I thought was best explored by being contextually sensitive in the collation of data, so that I could learn what could be transferable to other diverse health and social systems.

There is often a specific logic/rationale underpinning the design of a public health intervention. This logic, and way of understanding the health problem and considering the 'solutions' may not be shared by other stakeholders, including those for whom the intervention is intended. The understandings of the latter, often socially constructed in the local setting, will affect implementation effectiveness. It is thus important to design evaluations conducted alongside implementation interventions, that carefully consider how to elicit, construct, and interpret findings to reflect the perceptions and experiences of the beneficiaries, not just those of researchers or experts.

8.2 Synthesising the findings

8.2.1 Implementing adaptative family planning interventions

Since its inception, the CHIEDZA intervention was designed to respond to needs and context during its implementation. Adaptation was accommodated in the

intervention's program theory as a way of ensuring that contextual influences were assimilated into a logic model that was designed to retain integrity in the (anticipated) events of context-induced shifts. Chapter 4 documented the implementation of the CHIEDZA family planning intervention, including the adaptations that were made to the form of the intervention so that its function could be maintained. This manuscript also explored how this implementation strategy impacted feasibility and quality of the family planning intervention. In Chapter 5, the effect of the COVID-19 pandemic on contraceptive access and use by young women in a CHIEDZA that now had to accommodate preventative measures for COVID-19 (adapted) was investigated (24). As presented and argued in Chapter 4, implementation fidelity was a dynamic concept, and the value of responsive adaptations to need and context in the family planning intervention, and its setting, were an overarching finding.

Historically, fidelity has referred to the faithful implementation of the intervention as originally intended by its creators; and adaptations have been seen to seemingly be in tension with intentions (16, 25). In line with the suggestions made by Perez et. al, and others, my findings support the necessary co-existence of fidelity and adaption (22, 26, 27) within complex interventions. As shown in Chapter 4, implementation of the family planning intervention was dynamic. The process and sequences of adaptations were similar across all sites and performed the same function, with the precise form of the intervention shifting over time. The adaptive design element diverges from the typical definitions of fidelity where an intervention is expected to adopt a standardised form that essentially remains the same across all sites (28, 29).

The delivery of the family planning intervention, including the adaptations and rationale for them (Chapter 4), illustrated the non-linearity of the intervention and need for iterative local tailoring (22) due to the changing contexts, to be able to continuously meet the needs of beneficiaries by understanding what they want and need. Rather than have fidelity nullify adaptation, Chapter 4 showed how one, through a process evaluation, can systematically assess the intervention aspects that are adapted. My findings demonstrated that when fidelity is dynamic, it is not necessarily compromised, because the intervention still adhered to its underpinning program theory displayed in the logic model. The function of the family planning interventions: providing youth-friendly, quality family planning services was core and standardised, and the aim was to keep this function the same across intervention sites (30). However, I did not define or determine what a meaningful fidelity-adaptation balance can look like, because this was challenging to do in advance of the intervention and study. For others who may implement adaptive interventions, assessing this balance may be necessary to better establish which adapted components positively or negatively contribute to outcomes.

Carroll et al. mentions how several factors can moderate the degree of implementation fidelity, and the effect on implementation outcomes (31). For example, CHIEDZA used to have social spaces before the COVID-19 pandemic which distinguished it as being a non-clinic setting (24). These were removed as young people were not allowed to gather because of the COVID-19 pandemic, and this removal meant that the space shifted into becoming akin to a clinic-like

setting. This adaptation was necessary but did not reflect what the young people wanted. Overall, the function of the intervention (providing SRH services) was still acceptable, but the form it had now taken was met with some disappointment and disgruntlement from the young people.

In Chapter 4, I identified that one of the unintended consequences of introducing a partner organization to deliver LARCs was the increased wait times for young women, and the diminished guarantee of actually receiving the service and support that they needed within the time that they had available to attend. Before COVID-19, young people constantly mentioned that not only was the wait time short for CHIEDZA services, but while waiting they had something to do/engage with (social activities). Before COVID-19, it wasn't so much that young people minded the wait, but it was about what to do/what they did during the time that they were waiting that worked for engaging young people in care. Further research would need to be conducted to explore how the presence of social/engagement activities for young people affects acceptability of 'wait time' and influences engagement with family planning services.

A component of the family planning intervention's logic was meaningful youth engagement (see logic model Chapter 4, Figure 1). Meaningful youth engagement contributes to the youth friendliness of health services. It implies that young people are experts on their health needs and wants, and should therefore participate in the design and delivery of the interventions to address their needs. These wants and needs are not static- they change with time, context and circumstance. Therefore public health interventions that seek to address these

wants and needs also cannot be static. Intervention developers should be willing to consider adaptative programming (22, 26, 27) from the conceptualisation of the intervention, so that it can always respond to the dynamisms of young people's SRH needs.

8.2.2 Context matters

Contextual elements in my research study included the national family planning shortages, covid-19 pandemic, national guidelines that only allow stationery health facilities as settings for LARC provisions; community resistance to SRH services; and community beliefs and values about contraceptive use. CHIEDZA was embedded in these contextual complexities, and by addressing these elements, my research study sought to demonstrate dynamics in the delivery and reception of the family planning intervention that might not have been understood and potentially point out ways to improve the intervention.

Mukherjee et al. conducted a systematic review in 2021 to identify empirical studies examining the direct and indirect impacts of COVID-19 on SRH (32). Of the 24 identified studies included in the review, 22 were quantitative in nature, and the remaining two were mixed methods. Only one study was in Africa. In the research that I conducted on the effects of the COVID-19 pandemic on family planning (Chapter 5), context was not explicitly defined, but rather it was operationalised through detailed descriptions of the interventions, its stakeholders and the macro-level shifts that ultimately framed and shaped the delivery of the intervention (33).

At the start of the COVID-19 pandemic, CHIEDZA temporarily closed. For four to five months after CHIEDZA reopened, the routine services uptake data, presented during team meetings would show a noticeable increase in the uptake of family planning commodities. This could be indicative of young women's family planning needs during crises, which I presented in Chapter 5. My qualitative study on the COVID-19 impacts on young women in Zimbabwean communities (Chapter 5), contextualizes numerical findings for improved decision-making about circumventing averse SRH outcomes during crises. It is also a study conducted in Africa, which as seen from Mukherjee's review is rare.

Previous studies and reviews conducted prior to the pandemic have established what has historically worked to improve access to, uptake of, and use of family planning services (34, 35) for young people (36-38). However, Bonell et al (2012), and Moore & Evans (2017) have argued, that a history of what has worked is exactly that- history. This has been starkly illuminated by the analysis of the temporally specific impact of the COVID-19 pandemic. Time and places shift and influence mechanisms of change (21, 39) which directly affects what works or doesn't. My PhD is not seeking to prescribe a generalisation of what works or does not work for family planning interventions. Rather, I intentionally paid close attention to the role of context within a particular place and moment in time to show that evaluation of the family planning intervention can reveal disruptive systems that perpetuate or sustain access challenges during a particular time, and in Zimbabwe.

In Zimbabwe, the government made a commitment to double the family planning budget from 1.7% to 3% of the national budget to support better access to family planning for the poorest women and girls in the country (40). It also committed to improving method mix with a focus on LARCs and, strengthening integration of family planning with other reproductive health services like HIV and maternal health services (40, 41). These commitments have not yet been realised. This directly affected implementation fidelity in the CHIEDZA family planning intervention. For example, the provision of training for CHIEDZA providers on how to deliver LARCS did not happen in its entirety. This was because the training was offered inconsistently by the government parastatal organisation, but the training also coincided with the national contraceptive shortage. The suboptimal provider training in LARCs therefore impacted the quality of family planning service delivery in CHIEDZA as a partner had to be brought in that could not operate with the same intensity and consistency that CHIEDZA did.

Additional complexities of the family planning intervention's context surfaced over time. It was revealed that the trial's community-based set up, that was separate from but complemented the public sector clinics in these communities, disqualified CHIEDZA from being a recipient of the supplies of LARC within the national supply-chain. Unable to rely on national suppliers, CHIEDZA had to procure its own commodities, which became a challenge during the national commodity shortage as shown in Chapter 4. Navigating these health system contexts revealed the nuances and components that have to be in place, available, accessible and acceptable for a quality, youth-friendly family planning

intervention that offers both short and long acting methods to be consistently delivered for young women in Zimbabwe.

On the demand side, there is a need to understand why young women in Zimbabwe and elsewhere may decide to use or not use a method, so that interventions can respond accordingly and effectively. The findings in Chapter 7, showed how even though the family planning intervention in CHIEDZA might have been accessible and acceptable, the intervention's social context conditioned accessibility by narrowly validating contraceptive use only for post-partum women. These findings highlight that there are varying characteristics deeply enmeshed in social practices and that these must be understood and engaged with for any processes geared towards improving contraceptive uptake and use amongst young women to be successful, especially if attending to reach those who are unmarried, and nulliparous, but are also sexually active.

The factors that influence young women's contraceptive decision-making that were raised in the manuscript in Chapter 7 could possibly be amplified for those living with HIV or interact with the additional vulnerabilities that young women living with HIV may face. In my study, young women's reproductive desires sought to protect and prove their fertility- where hormonal contraceptives were perceived as a threat. It is possible that this desire may be present in those living with HIV, but further complicated by other vulnerabilities- fear of stigma, disclosure issues that they may already face in their communities. Therefore, efforts to improve demand-side drivers for contraceptive use, in the context of HIV need to be understood and better supported.

Within public health, family planning means giving individuals/couples the information and services to be able to decide how to manage their reproductive health, as well as how many children they want or will have and when (42). For the young women in my study (Chapter 7), not using hormonal contraceptives before they've had a child was a means of planning for a family. They were protecting their fertility for the eventuality of wanting to conceive later in their reproductive lives. When designing interventions and during their delivery, it remains critical to continue paying attention to compatibility- the degree to which the meanings and values attached to the intervention, align with the involved individuals' own norms, values and perceived risks and needs (43).

There is a potential misalignment as public health might rationalise that family planning is necessary for young women, but the meaning attached to, and configuration of priority needs for family planning is different for young women compared to the public health intervention. From my findings, these young women's cultural system, understands and enacts 'family planning' differently from generic public health. Public health interventions and policies may need a greater understanding of how the enforcement of hegemonic womanhood, women's performance of sociocultural norms, and the social production of fertility and reproduction, influence contraceptive method and use.

8.2.3 Critical approach to intervention design, delivery, and evaluations

Critical approaches, as I established in the methodological chapter 3, are often considered as part of evaluation methodological and epistemology approaches that a researcher or evaluation can use. In that case, critical approaches entail a researcher taking into consideration that social, political and/or historical conditions contribute to how knowledge and meaning are generated; and this will not look the same for different stakeholders (44, 45). This same critical approach may be just as important to consider and use when designing, delivering, and evaluating public health interventions like the one that was evaluated in this study. Taking into account the socio-cultural, political, and/or historical conditions in which an intervention is immersed, acknowledges how intervention activities and their effects may expose, challenge, express, and/or support beneficiaries' understandings of their experiences and the choices available to them (19, 21).

I highlighted in chapter 4, the complex intervention (family planning) being implemented in a complex health and social system which complemented the prioritisation of adaptative programming within CHIEDZA. This thread of findings critically showing the adaptative trajectories of the family planning intervention that can help explain the outcomes, highlights how the drivers of intervention outcomes, even in randomised trials like CHIEDZA, are not necessarily directly caused by the intervention. Rather, the interactions between young people, their communities, health providers and the family planning intervention in context also play a role. The focus on these interactions as the

basis for knowledge generation and creation of meaning, exemplify a critical approach to intervention delivery and its evaluation. In this manner, the critical approach is about viewing the intervention within its context (in design, delivery, and evaluation), rather than trying to extract the intervention from its implementation context.

8.2.4 What works for delivering family planning interventions for young women

The WHO has established LARCs to be the first recommended option for AGYW (46), as young people may have less predictable sexual behaviours, which makes non-daily options like LARCS, more appropriate for this age cohort (47). However, while there have been significant commitments to, there has been limited actual investment in LARCS in SSA (48). A recent study used DHS data from 60 countries in SSA to investigate where young women aged 15-24 years sourced their modern contraceptives, and the capacity and content of care of these sources (49). The study found that compared to older women (25+ years), young women used more short-term methods sourced from private providers and there was limited capacity to provide mixed-methods contraceptive options. Of the few young women who sourced long-term methods, over 85% of them did so from the public sector (49).

LARCs are highly effective (50, 51). Yet they are sparsely accessed by, or considered acceptable by and for youth- particularly those who are unmarried and nulliparous (49, 52). Young women in my study feared and did not get IUD insertions because they had heard much more about the lived experiences of IUD

expulsion or pain, than more positive stories, from their peers. There is some evidence from research that showed that young women under 18 are more at risk of IUD expulsion compared to their 18–21-year-old counterparts; and those who are nulliparous compared to those who are multiparous are also more at risk (51, 53). This might explain some of the peer expulsion experiences, and subsequent non-use of IUDs by young women. Therefore, public health interventions should proactively engage with and address information that conveys disproportionate emphasis on the probability of side effects, rather than risk dismissing or ignoring it. Additionally, public health interventions should assess method preferences for young women. Then, ensure that availability of methods is sustained, and coupled with adequate information about these methods to support their decision making.

The supply side challenges that were explored in Chapter 4; and demand side-side challenges that were revealed in Chapter 7, show that in Zimbabwe, more still needs to be done to improve LARC access, acceptability, and availability for young women- specifically the nulliparous and unmarried ones. The evidence suggests that supportive government practises and policies, widespread training of providers, improvements in commodity supply-chains and increasing women's knowledge of implants have resulted in increased implant use in countries like Malawi, Ethiopia, and Rwanda (50, 52, 54). Zimbabwe could invest in these same enabling factors in the health system and assess if this results in improved or increased use of implants in the population; and disaggregate this use by age-bands that show the effect of these enablers on young women's use of implants or LARCs overall.

In Zimbabwe, as in other countries within the region, the government and family planning stakeholders have made efforts to increase awareness, supply and information to modern contraceptives (10, 11). However, as shown in the findings presented in chapter 7, socio-cultural expectations of who family planning options are for may prevail, and this is an example of the need for increased emphasis on public health interventions to appreciate, through a deeper understanding of how the local social context in which an effect is planned functions, before attempts to influence that system are made.

Awareness building needs to take these nuances into consideration, and also put significant effort into building young women' intentions to use contraceptives. Health promotion messages need to go beyond informing young people about the availability of hormonal contraceptives. The approach needs to be more thorough and engaged than a didactic presentation of options. Instead, in designing tailored health promotion messages, it is necessary to firstly understand and potentially acknowledge young people's concerns about hormonal contraceptive use; and then seek to respond to and address said concerns. When these socio-cultural factors and young women's concerns are not addressed, they potentially undermine public health efforts to improve family planning outcomes for young people because they may appear to ignore or dismiss locally framed expertise and 'truths'.

In addition, part of providing tailored family planning counselling and service provision should involve considering where young women are in their

reproductive journeys. Adopting a person-centred approach would assist services to then respond more effectively to young women's situations. It is not a one size fits all. In Zimbabwe, person-centred approaches in family planning, particularly for young people, may not be a priority for family planning health providers, who may be driven by financial factors like having many paying clients served, or constrained by social contexts that do not support family planning use for young people . For example, in Chapter 4, I noted that CHIEDZA providers reported on how the family planning partner organisation had a target-driven approach to family planning services that was often at odds with CHIEDZA's more person-centred and youth-friendly one. This finding was echoed in a separate study for another ASRH program in Zimbabwe, where again another partner noted that youth-friendliness was not a part of their mandate- even though some of their clients were young people (7). These findings illustrate the conditions of family planning service delivery that young people are exposed to, that might explain why they do not access family planning services or use family planning methods that may be readily available through a provider.

Family planning method choice is influenced by many other factors, some of which are external to the individual (52). Method and use are also driven by country-level policies and government practises. In Zimbabwe for example, a new law has recently been passed, which states that the age of sexual consent is now 18 years old (55). While the law is progressive in seeking to reduce the high rates of child marriages and GBV in the country, it is now at tension with the public health guidelines that allow young people to seek SRH services (most of which- like contraception- imply one is sexually active) without parental consent,

at age 16 years and above. It has already been a challenge for young unmarried nulliparous young women to access SRH services, as evidenced by the 37% (15-19 years) unmet need for family planning, compared to the national 12.6% for WRA (56) and the socio-cultural factors established and reported on in Chapter 7. It is possible that this law will impact 16–18-year olds' access to and use of contraception. Action to communicate the correct interpretation of this law is required to ensure that it is not misinterpreted to disservice young women's access to family planning is required.

The level and number of providers trained, also contributes to method choice and use (57). As already noted, CHIEDZA providers were not able complete training on LARCs due to the limited provision of opportunities to train, coupled with the national shortage of contraceptive commodities (Chapter 4). Zimbabwe already has a limited number of providers who are trained and fully able to provide LARCS, which contributes to their low uptake (11), and the situation with the CHIEDZA providers was an exemplar to that. However, the training of providers is a supply side challenge, beyond supply of LARCs, and there is inadequate demand generation for them as noted in the above sections.

Earlier in this section, I argued for the importance of having method mix and capacitated providers to enable interventions to determine preferred methods, and respond accordingly. In Zimbabwe, the proportion of women wanting to use the Depo injectable has been steadily increasing, despite community distribution programs delivering only oral contraceptives and condoms within the community (58). Young women living with HIV in my study also preferred to take

up non-oral options, including Depo (59). Depo injectable is considered a short-term contraceptive. However, it does not require daily adherence For YWLHIV, they were already taking ART, and wanted to reduce pill burden and poor adherence to oral pills (59). Integrated services can ensure that all people living with HIV have access to family planning services that support their fertility desires and choices. In the case of my study (chapter 7) for example specific preferences against non-daily pill contraception were raised by young women living with HIV. Supporting context-responsive models of integration would better meet the holistic needs of such clients.

The considerable shift of young women's preferences for the injectable perhaps indicates an appetite for longer acting non-oral methods. A community-based intervention like CHIEDZA, could complement the efforts of CBD agents who are unable to provide injectables but can direct potential clients to an intervention set up like CHIEDZA so that the needs of clients can still be met. There is currently no ideal method mix. Therefore paying attention to client preferences remains key (48). Further research to understand this shift would be useful in aligning method mix to women's preferences in Zimbabwe.

Health concerns and side effects have often been the reasons for women's method switches or discontinuation (60). Young women often have concerns and misconceptions about how contraceptives work (38, 61). A survey study was conducted in Zimbabwe, aiming to understand individual and community factors that influence contraceptive use among 15-19 year olds. It showed that the odds of using contraceptives were higher among 15-19 year olds who had at least one

child, and for those who had ever been married (62). The dominance of post-partum contraceptive use are similar to my research findings on contraceptive use decision-making among young women (Chapter 7). These qualitative findings in Chapter 7, may help in understanding Zimbabwe's DHS data which shows higher contraceptive uptake post-partum and among married women (56), and also help explain the persistence of mistimed and unintended pregnancies among young women in Zimbabwe.

In addition to health concerns and side effects, the legitimacy of the source of contraceptive information was important for young women 's contraceptive decision making (Chapter 7). It influenced the acceptability of the family planning intervention. Young people believed the CHIEDZA providers, but not every CHIEDZA providers believed in the legitimacy of offering family planning to young people. My findings showed that young women trusted CHIEDZA health providers who were friendly and non-judgemental. Having integrated health services with providers such as CHIEDZA's, that can engage these young women for other non-family planning SRH services will provide an opportunity to provide and receive family planning information to help young women make more informed decisions about its use or non-use. However, it is also important to investigate and understand health providers' socio-cultural positions, that may influence their professional behaviours. Supporting providers to navigate this, may enhance their quality of the intervention they provide.

8.3 Recommendations and policy implications

Substantial recommendations and reflections have been provided in the previous section about what works for providing family planning interventions for young people. These are synthesised in Table 8.1.

Table 8-1: Recommendations for improving family planning interventions

Area of concern	Recommendation
Demand generation: Correct and adequate information	Proactively engage with and address misinformation, and lack of information about family planning methods to support young women's decision making
Supply side: Quality Service provision	Assess method preferences of young women and ensure that availability of methods is sustained.
Supply and demand: LARC uptake and acceptability	Supportive government practises coupled with widespread training of providers, improvements in commodity supply-chains and improving women's knowledge of implants, IUDs, and their side-effects
Demand generation: uptake of accessible and available services	Develop a thorough understanding of how the local social context shapes young women's decision-making about contraceptive use; and engage/address young women's concerns about using contraceptives
Supply side: Quality service provision	Adopt a person-centred approach to family planning service provision for young women
Supply side: Quality service provision	Further research to understand young women in Zimbabwe's method preferences

Contraceptive use by young people is a culturally sensitive issue, as it implies one is sexually active, and the denial of young people's sexuality continues to prevail. This denial will continue to hamper the use of otherwise potentially effective family planning interventions. ***Working with information sources that young people find legitimate (friendly providers, community members) would***

contribute towards effective demand generation for contraceptive use among young people.

Efforts to provide youth-friendly integrated and community-based SRH services have often been program initiatives, often run by NGOs or in the CHIEDZA case, a research trial setting. Government-run programs often provide these services with limited capacity. The Zvandiri program in Zimbabwe has been successful in part, because of the intense engagement and commitment from the government and other HIV stakeholders to embed the Zvandiri model of care into the national HIV program (63). ***The beneficial strategies identified in this PhD also need to be reinforced by public policy and commitment, and garner government buy-in and support*** to transform the poor family planning outcomes of young women in Zimbabwe. Additionally, ***research, and health system stakeholders must collaborate and co-create interventions more intentionally, with the overall goal of delivering interventions at scale.***

9.4 Strengths and Limitations

The major strengths of this study's methodological approaches and rationale have been outlined in section 8.1. Other strengths are outlined in the individual manuscripts (Chapters 4, 5,6, and 7) that responded to the overall objectives of this research study. An additional strength of this study was its focus on both the family planning experiences of the providers implementing the intervention, and the clients receiving it. Focusing on experiences can be a challenge, but it shifts the evidence narrative to so that there is a broader platform as to who can claim

‘expertise’ on family planning needs of young people and how to meet them. Importantly, it reinforces the credence of young people’s contributions and insights into what constitutes acceptable and effective intervention design. The Zvandiri program has been successful partly because it managed to view and treat young people living with HIV as experts on their needs and how to approach them (64). This PhD aimed to show how young women were experts in their needs, and the providers delivering the intervention also needed to be prioritised as they could influence young people’s experiences. This has implications for understanding what can work in the delivery and reception of family planning interventions for young women.

This PhD study also had some limitations. I did not interview young women who did not access CHIEDZA services. Young women who came to CHIEDZA were already acting on a decision to access services. There are other young women, who knew about and were eligible for the family planning intervention but did not come to CHIEDZA at all. The remit of my PhD study was limited to young women who accessed CHIEDZA. There are also many young women still who came to CHIEDZA, and said they were not sexually active. It is possible this was not always the case, reflecting young women’s desire to conceal their sexual behaviours. This explains the challenges with investigating further and recruiting those who were not accessing family planning even though they may have had unmet need- because they denied their sexual activities when asked by service providers. Future research could aim to investigate why, in the presence of a readily available and accessible intervention like CHIEDZA, young women still decided not to access family planning services. Such research would provide

more complete evidence that supports the complex systems approach to understanding intervention effects.

Another limitation was that most of the respondents in my study were young married women. For significant periods within the data collection stages of my study, my recruitment strategies were limited by COVID-19 restrictions, where I had to adjust to recruit and interview on the same day, and the available women were mostly married women. The increased chance of married women's availability could also be because, as established in Chapter 7, most women only use contraceptives within marriage, and postpartum- I was recruiting for young women using contraceptives. Regardless, there is need to understand and know more about young, unmarried, sexually active nulliparous women's contraceptive needs and uses for better and more effective interventions.

Lastly, this research study focused on three provinces (four communities each, with geographical boundaries in the communities), and made a case for contextual and localised solutions, so generalisability is limited. However, this was a process evaluation conducted in an overall resource-limited setting, where influential contextual events were related to these resource-limits. Findings could be comparable to other resource-limited settings within Southern Africa.

9.5 Dissemination

As of the end of August 2022, the findings from this thesis have been disseminated to CHIEDZA providers, colleagues at BRTI, LSHTM, other

researchers, programmers, and policy makers as well as at international conferences. There are also further dissemination plans at more international conferences, for SRH stakeholders like the MoHCC in Zimbabwe, as well as the research participants themselves.

I shared some of my findings with the CHIEDZA providers, and broader research team during the weekly internal meetings and/or the monthly study meetings. This was a way to update them on the work I'd been doing, as well as give context or explanation to the routine quantitative data on family planning, some family planning provider experiences and to inform some of the adaptations that were made in the intervention.

I've also presented my research to colleagues at BRTI, and peers during research club meetings. BRTI hosts a monthly research club for early career researchers in Zimbabwe, and I've been able to share my research from the proposal stage as well as once I had findings to share.

My PhD was funded by the NIH Forgaty fellowship. I've also presented on my PhD work to my peer fellows, as well an oral presentation at the Forgaty International Center (FIC) HIV Research Training Network Meeting for D43 trainees and K Grantees. This network meeting enables PhD and post-doctoral students and mentors who are supported by NIH to network and explore future opportunities for collaboration and academic or professional advancement. Additionally, I have spoken on international radio (Voice of America) on the high rates of teenage

pregnancies in Zimbabwe, and some of the findings (Chapter 7) that might help us examine this.

I have also submitted abstracts and presented on them at international conferences, and workshops below:

- Oral presentation on decolonising global health power structures at the Women Leaders in Global Health Conference in 2019
- Oral presentation on the role of young women in Global Health Leadership at the Women Leaders in Global Health Conference in 2021
- Oral presentation on the integration of family planning and HIV services at the Wellcome Trust Bloomsbury Centre Scientific Meeting conjointly held in Harare Zimbabwe and the Gambia in March 2022. In Harare, programmers, policymakers, and researchers including the MoHCC were present. This was followed with a blog on this presentation via the MARCH centre to share the experiences with the broader LSHTM community.
- Plenary session oral presentation on trends in abortion and family planning among young people in Sub-Saharan Africa at the virtual SafAIDS Regional SRHR Linking and Learning Symposium in March 2022. At this symposium regional, and international SRH stakeholders were presented

I have also presented on my broader PhD work and findings to academics and professionals in South Africa during my HIV Research Trust fellowship experiences at the University of Cape Town in 2021. I have spoken on the effects of COVID-19 on SRH access on a Webinar hosted by the Friends of the Global Fight against AIDS, TB, and Malaria in July 2020. I have been invited to present

my findings at meetings with UNFPA Zimbabwe and FHI360 to support their work and thinking around family planning programming for young women in Zimbabwe, and OPHID in Zimbabwe to support their thinking around dual HIV and pregnancy prevention, particularly for AGYW.

The work on the effects of COVID-19 and family planning (Chapter 5) has also been accepted for oral presentation at the International Conference on Family Planning (ICFP) in November 2022, where in addition I will also moderate a panel on Understanding the use of modern and traditional contraceptives. The abstract for work on integrated HIV and family planning services (Chapter 7) has also been accepted as a poster presentation at the HIV and Adolescence Workshop to be held in Cape Town in October 2022. I am also curating a seminar on Sex Work for the new MSc. SRHR programming and policy at LSHTM, where students will use a human rights lens to explore sex work and interrogate its intersection with contraceptive use. The seminar will occur in term 1 of the academic year.

Lastly, the CHIEDZA trial will be unblinded in November 2022 at an event that will bring together programmers, policymakers, researchers, and beneficiaries of HIV and SRH interventions in Zimbabwe, and beyond. Some of the research participants will be present for this dissemination event, and findings will be shared with them.

8.6 Opportunities for future research

Process evaluations identify why an intervention works the way it does, including how it may deviate from what was originally envisaged. Based on this PhD study's findings about what works or doesn't, future research can focus on:

- Investigating how quality improvement and method choice amongst providers who are frequented and accepted by young people can affect family planning outcomes.
- Service provision legal challenges are already being experienced. A new law was passed that says a person can only be voluntarily sexually active at 18 years old, has implications for access to and provision of family planning and other SRH services for the young people in the 16-18year old range. Providers are already wary of providing services to young people, and this law will exacerbate this. If another intervention like CHIEDZA is recreated within this policy, legal and political landscape- research on how this law affects service use and delivery is needed.
- In my study, as part of young women's agentic endeavours during the covid-19 pandemic, some were willing and able to access contraceptive supplies in the private sector (pharmacy) and the community (street vendors). For a sustainability lens, more nuanced research efforts need to explore to understand which kinds of young women are able to access available family planning services in the private sector, and then equip the private sector to be able to serve this cohort of young women.

- There is literature and evidence on the tensions between PLHIV wanting to know how to conceive safely, and providers not having enough expertise to support these clients. The issue of safe conception, particularly among young people living with HIV is still underexplored and further research on this is needed.
- My manuscript on fertility protection and preservation and family planning decision-making (Chapter 7), did not include HIV-related considerations. It is possible that HIV status, could also interact with beliefs and decision-making about fertility and contraceptive use. This is an area that could be further researched to enable understanding of how to better support YPLHIV who may want to have children.

8.7 Conclusions

Process evaluations that are nested within and conducted alongside trials, and intentionally attend to context and complexity, may be better equipped to address tension between evidence-based practices and local ones. A process evaluation approach that is adaptive, iterative and prioritises local knowledge and expertise, while also carefully assessing, planning and responding to local contexts and preferences, is much more likely to yield findings that are transferable within context.

Young people are not a homogenous group and should not be treated as such. Personal circumstances, cultured priorities, physiological stages, and the context they live in determine the kinds of family planning services and methods they

need. For effective family planning interventions to be implemented, a paradigm shift needs to occur within public health. Public health approaches need to acknowledge these determinants as influential on impact and outcomes, and either address them or adapt accordingly in the design, delivery, and evaluation of family planning interventions.

In addition to engaging with socio-cultural factors; and physiological timelines of young women, family planning interventions for young women need to have adequate method mix, and competent providers to deliver the intervention. Beyond competence, considerations for providers perceptions about family planning should also be addressed as they can directly affect how young people receive and perceive family planning services.

Lastly, crises and shocks within social or health systems will occur and influence access to, and use of family planning services and methods by young people. As health systems are adapting in the wake of the COVID-19 pandemic, it is crucial that the adapted version of health systems have measures, guidelines and/or policies in place to ensure that the next crises have minimal disruption to access and use of family planning for young people.

8.8 References

1. Njue C, Voeten HACM, Ohuma E, Looman C, Habbema DF, Askew I. Findings of an evaluation of community and school-based reproductive health and HIV prevention programs in Kenya. African Population Studies. 2015;29(2, Suppl.):1934-53.

2. Chenneville T, Gabbidon K, Drake H. The HIV SEERs Project: A Qualitative Analysis of Program Facilitators' Experience. J Int Assoc Provid AIDS Care. 2019;18:2325958218822308.

3. Kinsman J, Kamali A, Kanyesigye E, Kamulegeya I, Basajja V, Nakiyingi J, et al. Quantitative process evaluation of a community-based HIV/AIDS behavioural intervention in rural Uganda. Health Educ Res. 2002;17(2):253-65.

4. Arnold R, Maticka-Tyndale E, Tenkorang E, Holland D, Gaspard A, Luginaah I. Evaluation of school- and community-based HIV prevention interventions with junior secondary school students in Edo State, Nigeria. Afr J Reprod Health. 2012;16(2):103-25.

5. Renju J, Andrew B, Nyalali K, Kishamawe C, Kato C, Changalucha J, et al. A process evaluation of the scale up of a youth-friendly health services initiative in northern Tanzania. Journal of the International AIDS Society. 2010;13:32-.

6. UNDP. IC End-Term Evaluation for the Global Fund Supported Adolescent Girls and Young Women (AGYW) Program 2018-2020 New York: UNDP; 2021 [Available from: https://jobs.undp.org/cj_view_job.cfm?cur_job_id=99742.

7. Mavodza C, Dzvia Chikwari C, *at the request of MSF-OCB*. Evaluation of MSF's Adolescents' Sexual and Reproductive Health Project in Mbare, Zimbabwe. Harare, Zimbabwe: Médecins Sans Frontières (MSF); 2021.

8. Zimbabwe National Family Planning Council. Knowledge, Attitudes and Practices of Contraceptive Use among Students in Selected Universities in Zimbabwe. Harare, Zimbabwe: Zimbabwe National Family Planning Council; 2019.

9. Ministry of Health and Child Welfare, Zimbabwe National Family Planning Council, National AIDS Council (Zimbabwe), Prevention. USCfDCa. The Zimbabwe Young Adult Survey 2001-2002. Harare, Zimbabwe: Ministry of Health and Child Welfare and U.S. Centers for Disease Control and Prevention. ; 2004.

10. MoHCC. *Zimbabwe National Family Planning Strategy (ZNFPS) 2016-2020*. Zimbabwe; 2016.

11. MoHCC. Zimbabwe National Family Planning Costed Implementation Plan 2016-2020. Harare, Zimbabwe: MoHCC; 2016.

12. Moore G, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: UK Medical Research Council Guidance. United Kingdom,: UK Medical Research Council; 2015.

13. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. BMJ. 2015;350(mar19 6):h1258-h.

14. Grant A, Treweek S, Dreischulte T, Foy R, Guthrie B. Process evaluations for cluster-randomised trials of complex interventions: a proposed framework for design and reporting. Trials. 2013;14(1):15.

15. Brainard J, Hunter PR. Do complexity-informed health interventions work? A scoping review. Implement Sci. 2016;11(1):127.

16. Quasdorf T, Clack L, Laporte Uribe F, Holle D, Berwig M, Purwins D, et al. Theoretical approaches to process evaluations of complex interventions in health care: a systematic scoping review protocol. 2021;10(1):268.

17. Oakley A, Strange V, Bonell C, Allen E, Stephenson J. Process evaluation in randomised controlled trials of complex interventions. BMJ. 2006;332(7538):413-6.

18. Moore GF, Evans RE, Hawkins J, Littlecott H, Melendez-Torres GJ, Bonell C, et al. From complex social interventions to interventions in complex social systems: Future directions and unresolved questions for intervention development and evaluation. Evaluation. 2019;25(1):23-45.

19. Hawe P, Shiell A, Riley T. Theorising Interventions as Events in Systems. American Journal of Community Psychology. 2009;43(3-4):267-76.

20. Shiell A, Hawe P, Gold L. Complex interventions or complex systems? Implications for health economic evaluation. BMJ. 2008;336(7656):1281-3.

21. Moore GF, Evans RE. What theory, for whom and in which context? Reflections on the application of theory in the development and evaluation of complex population health interventions. SSM Popul Health. 2017;3:132-5.

22. Moore G, Campbell M, Copeland L, Craig P, Movsisyan A, Hoddinott P, et al. Adapting interventions to new contexts-the ADAPT guidance. BMJ (Clinical research ed). 2021;374:n1679-n.

23. Pfadenhauer LM, Gerhardus A, Mozygemba K, Lysdahl KB, Booth A, Hofmann B, et al. Making sense of complexity in context and implementation: the Context and Implementation of Complex Interventions (CICI) framework. 2017;12(1):21.

24. Mackworth-Young CRS, Mavodza C, Nyamwanza R, Tshuma M, Nzombe P, Dziva Chikwari C, et al. "Other risks don't stop": adapting a youth sexual and reproductive health intervention in Zimbabwe during COVID-19. Sex Reprod Health Matters. 2022;30(1):2029338.

25. Collins LM, Murphy SA, Bierman KL. A conceptual framework for adaptive preventive interventions. Prevention science. 2004;5(3):185-96.

26. Pérez D, Van der Stuyft P, Zabala MdC, Castro M, Lefèvre P. A modified theoretical framework to assess implementation fidelity of adaptive public health interventions. 2016;11(1):91.

27. Cannata M, Rubin M, Neel M. From Fidelity to Integrity: Navigating Flexibility in Scaling Up a Statewide Initiative. American Journal of Education. 2021;127(2):233-63.

28. Mihalic S. The importance of implementation fidelity. Emotional and Behavioral Disorders in Youth. 2004;4(4):83-105.

29. Masterson-Algar P, Burton CR, Rycroft-Malone J, Sackley CM, Walker MF. Towards a programme theory for fidelity in the evaluation of complex interventions. Journal of Evaluation in Clinical Practice. 2014;20(4):445-52.

30. Hawe P, Shiell A, Riley T, Gold L. Methods for exploring implementation variation and local context within a cluster randomised community intervention trial. Journal of epidemiology and community health. 2004;58(9):788-93.

31. Carroll C, Patterson M, Wood S, Booth A, Rick J, Balain S. A conceptual framework for implementation fidelity. Implementation Science. 2007;2(1):40.

32. Mukherjee TI, Khan AG, Dasgupta A, Samari G. Reproductive justice in the time of COVID-19: a systematic review of the indirect impacts of COVID-19 on sexual and reproductive health. Reproductive health. 2021;18(1):252-.

33. Mavodza CV, Bernays S, Mackworth-Young CRS, Nyamwanza R, Nzombe P, Dauya E, et al. Interrupted Access to and Use of Family Planning Among Youth in a Community-Based Service in Zimbabwe During the First Year of the COVID-19 Pandemic. Studies in Family Planning. 2022;n/a(n/a).

34. Yeh PT, Kautsar H, Kennedy CE, Gaffield ME. Values and preferences for contraception: A global systematic review. 2022.

35. Mwaikambo L, Speizer IS, Schurmann A, Morgan G, Fikree F. What Works in Family Planning Interventions: A Systematic Review. Studies in Family Planning. 2011;42(2):67-82.

36. Denno DM, Hoopes AJ, Chandra-Mouli V. Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. J Adolesc Health. 2015;56(1 Suppl):S22-41.

37. Denno DM, Chandra-Mouli V, Osman M. Reaching Youth With Out-of-Facility HIV and Reproductive Health Services: A Systematic Review. Journal of Adolescent Health. 2012;51(2):106-21.

38. Chandra-Mouli V, McCarraher DR, Phillips SJ, Williamson NE, Hainsworth G. Contraception for adolescents in low and middle income countries: needs, barriers, and access. 2014;11(1):1.

39. Bonell C, Fletcher A, Morton M, Lorenc T, Moore L. Realist randomised controlled trials: A new approach to evaluating complex public health interventions. Social Science & Medicine. 2012;75(12):2299-306.

40. UNFPA. Policy Brief: Investing in Sexual and Reproductive Health and Rights. Harare, Zimbabwe: UNICEF; 2018.

41. Govt. of Zimbabwe, editor Family Planning 2020 Commitment. Family Planning Summit; 2017; London: FP2020.

42. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: the unfinished agenda. Lancet (London, England). 2006;368(9549):1810-27.

43. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. The Milbank quarterly. 2004;82(4):581-629.

44. Williams GH. The determinants of health: structure, context and agency. Sociology of Health & Illness. 2003;25(3):131-54.

45. McIntyre SA, Francis JJ, Gould NJ, Lorencatto F. The use of theory in process evaluations conducted alongside randomized trials of implementation interventions: A systematic review. Translational Behavioral Medicine. 2018;10(1):168-78.

46. WHO. Evidence Brief: The importance of sexual and reproductive health and rights to prevent HIV in adolescent girls and young women in East and Southern Africa. Geneva, Switzerland: WHO, hrp; 2017. p. 24.

47. WHO. The sexual and reproductive health of young adolescents in developing countries: reviewing the evidence, identifying research gaps, and moving the agenda: report of a WHO technical consultation, Geneva, 4-5 November 2010. Geneva: World Health Organization; 2011.

48. Bertrand JT, Ross J, Sullivan TM, Hardee K, Shelton JD. Contraceptive Method Mix: Updates and Implications. Global Health: Science and Practice. 2020;8(4):666-79.

49. Radovich E, Dennis ML, Wong KLM, Ali M, Lynch CA, Cleland J, et al. Who Meets the Contraceptive Needs of Young Women in Sub-Saharan Africa? 2018;62(3):273-80.

50. Jacobstein R. Liftoff: The Blossoming of Contraceptive Implant Use in Africa. Global Health: Science and Practice. 2018;6(1):17-39.

51. Allen RH, Goldberg AB, Grimes DA. Expanding access to intrauterine contraception. 2009;201(5):456.e1-.e5.

52. Health Communication Capacity Collaborative. Barriers to LARC Uptake Among Youth: Highlights from the Research Brief. Washington, DC.: USAID; 2014.

53. Gold MA, Johnson LM. Intrauterine devices and adolescents. Curr Opin Obstet Gynecol. 2008;20(5):464-9.

54. Jacobstein R, Stanley H. Contraceptive implants: providing better choice to meet growing family planning demand. Global health, science and practice. 2013;1(1):11-7.

55. MAKARAU JCC, JCC H, JCC P. DIANA EUNICE KA WENDA v (1) MINISTER OF JUSTICE, LEGAL AND PARLIAMENTARY AFFAIRS (2) MINISTER OF HEALTH AND CHILD CARE (3) THE ATTORNEY -GENERAL OF ZIMBABWE. In: Zimbabwe CCo, editor. Harare: Constitutional Court of Zimbabwe; 2022.

56. Zimbabwe National Statistics Agency, International. I. *Zimbabwe National Demographic and Health Survey 2015: Final Report*. Rockville, Maryland, USA: ZIMSTAT, ICF International; 2016.

57. Osei I, Birungi H, Addico G, Askew I, Gyapong JO. What happened to the IUD in Ghana? Afr J Reprod Health. 2005;9(2):76-91.

58. Maggwa BN, Askew I, Marangwanda C, Nyakauru R, Janowitz BS. An assessment of the Zimbabwe National Family Planning Council's community based distribution programme: FRONTIERS Final Report. Nairobi: Population Council; 2001.

59. Mavodza CV, Busza J, Mackworth-Young CRS, Nyamwanza R, Nzombe P, Dauya E, et al. Family Planning Experiences and Needs of Young Women Living With and Without HIV Accessing an Integrated HIV and SRH Intervention in Zimbabwe-An Exploratory Qualitative Study. 2022;3.

60. Ali MM, Cleland JG, Shah IH, World Health O. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys. Geneva: World Health Organization; 2012.

61. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. Reproductive health. 2009;6:3-.

62. Ngome E, Odimegwu C. The social context of adolescent women's use of modern contraceptives in Zimbabwe: a multilevel analysis. Reproductive health. 2014;11:64.

63. Willis N, Napei T, Armstrong A, Jackson H, Apollo T, Mushavi A, et al. Zvandiri-Bringing a Differentiated Service Delivery Program to Scale for Children, Adolescents, and

Young People in Zimbabwe. Journal of acquired immune deficiency syndromes (1999). 2018;78 Suppl 2:S115-s23.

64. Rufurwadzo TG, Inarukundo A, Noviyanti I, Subero MA. Young people are experts and leaders in the HIV response. Journal of the International AIDS Society. 2020;23(Suppl 5).

Appendices

Appendix 1: Phase 1 CHIEDZA Providers Interview Guide

<u>Tools for CHIEDZA Process Evaluation on COVID-19</u>
<u>Interviews with CHIEDZA staff</u>

Interviews with CHIEDZA staff

1. What have you heard about Coronavirus? What do you understand about it?
    a. How knowledgeable do you feel you are about COVID? What are your information sources.?
2. How are you feeling personally about the Coronavirus situation?
    a. How has your life changed so far in response / preparation for Coronavirus?
3. How has your work in CHIEDZA changed so far in response / preparation for Coronavirus?
    a. Do you have any concerns with how CHIEDZA happened during COVID? How much support have you been receiving- was it adequate? What kind of support do you think you would have wanted or still want?
    b. based on your experiences/talks with CHIEDZA stakeholders, what about the CHIEDZA communities? The clients? How have they been responding to COVID?
4. As a healthcare worker (in CHIEDZA or otherwise), what are your views on the COVID situation?
    a. do you think the measures are adequate? What would you want to see more of?
    b. Based on your experiences, how feasible do you think changes (the lock down) might be in Zimbabwe?
    c. Do you think people will comply with the lockdown? or other COVID interventions?
5. Can you tell me about other changes that you know of, outside of your own life and work, that are being made in response or preparation for Coronavirus?
6. What changes do you think could be made to help and support healthcare workers?
7. What do you think the general public's perception of Coronavirus is? What is most people's understanding around it? Where to most people get their information around it?
    a. CHIEDZA clients? Have they talked to you about it? What has been the general feeling?
    b. How did doing CHIEDZA start to change because of COVID? based on interventions?
8. What do you think the health impact of Coronavirus might be? What impact do you think COVID; and the lockdown would have- on health services in general/ What about on CHIEDZA services? (HIV, Family Planning, MHM, might have?)
    a. Do you think there might be health impact of Coronavirus beyond the disease itself?
9. Who do you think is the most vulnerable because of COVID? why? or would suffer the worst of the pandemic.
10. How does the Coronavirus situation compare to your experience of other disease outbreaks or times of widespread upheaval?
11. What would you like to know about Coronavirus if you could?

Appendix 2: Phase 2 CHIEDZA mobilisers Interview Guide

IDI Topic Guide for CHIEDZA youth champions/ mobilisers

INSTRUCTIONS for the Interviewer: How to use the IDI Guide

The goal of the data collection is to inform implementation, mechanisms of change and context of the CHIEDZA intervention considering the COVID-19 pandemic

1. There are two levels of questions:
   - Primary interview questions: appear in **bold** text. They address the topics that you as the interviewer must ask and discuss with participants. The questions are suggestions for getting the discussion going. You are not required to read them verbatim, but they are written to ensure some consistency across IDIs. They are not exhaustive, and they are not prescriptive. This means that as the interview progresses, you may ask questions that are not included below, and similarly, it may not be appropriate or necessary to ask all the questions included in this topic guide- *the discussion should be guided by what your participant says, NOT by the topic guide.* For that to happen, you should make sure that you're familiar with the guide so that so that you can engage more fully in the discussion and be responsive to what the participant is telling you, by exploring these responses further. Try to integrate some of the information that they have told you into your subsequent questions – this will demonstrate that you're listening and give participants a chance to clarify anything you might be misunderstanding. It is important for you to show that you are interested in what they are saying, and that you are there to learn from them.
   - Probing topics: are indicated with a bullet. These are to assist and encourage further discussion with a participant who may be providing very little information. It's not a requirement to cover every probe. Which probes you may or may not ask will depend on what has already been discussed.

2. Words found in (parentheses) are meant to tag the memory of the interviewer in relation to PE objectives.

3. The IDI guide is divided into two columns.
   - **The left-hand column** contains the research questions and probes to be used during the IDI with CHIEDZA clients.
   - **The right-hand column** contains the research questions and probes to be used during the IDI's with non- CHIEDZA clients
4. The interviewer (with permission from the participant) should take notes and these notes should be labelled with initials, participant's ID, IDI guide is not meant to be used to take notes. Rather, a separate notes form, where with interviewer initials, the participant's PTID, as well as the date, start and end time of the interview should be used.

Before starting the IDI, ensure the participant has provided written informed consent

Interviewer:

Date: ....

Interview Start Time: ....

Interview Stop Time: ....

Participant ID (initials/cluster letter/XX): ....

Pre-interview background questions

Thank you for giving your consent to be interviewed. Before we begin it would be useful to collect some background information about you and I assure you that the information you provide will be kept strictly confidential and anonymous.

We will begin with completing some Demographic Information below. Please let me know if you have any questions completing this

1. Age group (years):			
2. Cluster:			
3. Gender (tick):	Male	Female	Other
4. Are you currently in a relationship? (tick)	Yes	No	decline to answer
5. Marital Status (tick):	Married	Single	Divorced
	Widowed	Separated	Unmarried (living with partner)
6. Residential status (tick)	With partner	With Parents	On own
7. Are you sexually active	Yes	No	decline to answer
7b. If yes, how many sexual partners:			
7. Education level achieved (tick)	Primary	Secondary	University/College
	None		

[***Read Introduction***]: Thank you for taking the time to speak with me today.

My name is _______________ and I am working with the CHIEDZA research project to learn more about sexual and reproductive health and HIV testing and treatment services for adolescents and young people aged 16-24 in Zimbabwe.

I would like to talk to you about your own experiences, ideas and opinions regarding COVID-19, HIV and sexual and reproductive health for adolescents and young people at CHIEDZA, in facilities and within the community that you live. Specifically, I would like to learn about your experiences accessing health services, and what kinds of services you have/are using. I am also interested in learning about the challenges that young people face trying to access health services, and how you think their access to, and use of these types of services can be improved. Additionally, I would like to also talk to you about your experience of Coronavirus, the lockdown and accessing health services during this time.

The interview will take about 30-45 minutes. I appreciate you spending this time with me.

I am going to audio record the interview to make sure that I capture all the valuable information that you share with me. I may also write things down while we're talking so that I don't forget anything. Participation is voluntary- you do not have to answer any question that you don't want to, and you can choose to stop the interview at any time.

Everything you say is confidential, so please feel free to talk about your experiences and ideas. We will not record your name anywhere, and no one else will hear the tape or see the notes besides the people who are working on this research project. We may use some of what you say in reports or publications, but will never use your name.

If you have any questions about this study, you can ask me now, or at any time during our conversation ***(RA: make sure you have collected signed consent form and answered any questions.)***

Start the ***tape recorder***.

Before we start, can you confirm for the recorder that you have already provided written informed consent to take part in this discussion? [*Wait for oral confirmation to begin*].

Thanks for taking the time for this interview. As you know, CHIEDZA is reopening, and I wanted to ask you a few questions about your thoughts about CHIEDZA before it closed as well as reopening, and also your feelings about coronavirus. Feel free to stop me at any time, and also to add in anything that you want to share.

Thanks for taking the time for this interview. As you know, CHIEDZA is reopening, and I wanted to ask you a few questions about your thoughts about CHIEDZA before it closed as well as reopening, and also your feelings about coronavirus. Feel free to stop me at any time, and also to add in anything that you want to share

COVID Experiences

1. **To begin with, can you tell me how your life has changed over the last few weeks/since COVID-19 happened?**

- Can you describe what has been going in your communities during this lockdown?

2. How have you felt during the lockdown?

3. What are your views about coronavirus? about the lockdown?
- How do people in your community feel about coronavirus, and about the lockdown?

CHIEDZA experiences

4. Can you tell me what you know about CHIEDZA? (*probe bullet points below*)
- Please describe how or where you heard about CHIEDZA? What made you come here?
- How many times have you come to CHIEDZA? If more than once, how has your experience changed over time? What did you think the first time you came and has that changed over time?
  - What services were you seeking when you came to CHIEDZA? Are there other additional services that you took up-why did you take them up? (and when did you take them up?)
- Can you describe what happens when you come to CHIEDZA?
  - How long do you wait before seeing a health provider? and how do you feel about the wait time?
  - What about in the health booth: How are your interactions with the health providers? What are your views on how you are treated? How do this compare to other clinics or hospitals you have gone to before?

Family Planning Questions ***ask Q1 to every participant male & female. Q2 onwards is for female clients & those who take on a FP method)***
1. Can you tell me what you know about FP? o Contraceptives? Pregnancy prevention?
2. Can you tell me about any family planning services you received at a facility or here at CHIEDZA? o Can you describe what happened during that visit? o Reasons for seeking FP services? Had you come to CHIEDZA for FP services or something else? o Why CHIEDZA (and not some other Health facility for example)? What did you like about this service? Has this changed with time?

(For those who use a FP method):
o Please describe the contraceptive method you currently use? How do you feel about your Family planning method? When did you start using it and why did you decide to use a FP method? Is this from CHIEDZA or elsewhere?
o Is this your choice of method? How did you decide on the method- alone, partner, parents? Is this method working for you?
o Influence of FP method and service on 1) knowledge, 2) use, partner relationships
o In your experience, how are you using/taking your contraceptive? *(adherence)*
  o How are you able (or not) to use it as described by the CHIEDZA providers?
  o are there any personal, community, religious, partner factors influencing adherence?
  o How does CHIEDZA influence your ability to take contraceptives?

○ Tell me about a time you stopped your contraception. ○ What was going on? Did you fix it, if so how? Did you seek assistance from anyone (CHIEDZA?)?
Since CHIEDZA, how has your knowledge or use of FP changed? ○ worries about FP & reasons for worry ○ behaviour changes, contraceptive method changes,

- What do you think has been working well in CHIEDZA? What do you think has not working well? Would you suggest doing anything differently?

CHIEDZA and COVID Experiences

5. How have you found it while CHIEDZA has been closed? (probe bullet points below)

- What are your views on CHIEDZA being closed for over a month due to COVID-19 and the lockdown?
- How where you accessing health services (HIV, FP, condoms, MHM, STI,) during the lockdown?
    - Can you tell me about any health services that you needed but could not access because of the lockdown/because CHIEDZA was closed?

6. How do you feel about CHIEDZA reopening, at this time?

- One of the justifications for reopening CHIEDZA is that it provides essential services for young people. What are your views about this?

Of course, CHIEDZA is reopening but had to make some changes because of COVID. Some of parts of CHIEDZA may no longer be possible.

7. What do you think are the parts of CHIEDZA that should not be changed/moved if it's going to keep working/being accessible to young people?

- What are the parts that you think even if we removed them, CHIEDZA would still be fine?
- In your opinion, what is the minimum that is needed for CHIEDZA to still be attractive to young people?

We have come to the end of the questions that I had for this interview. Do you have anything else you want to add or questions you would like to ask me?

Appendix 3: Phase 3 CHIEDZA Providers Interview Guide

<table>
<tr><td colspan="4">We have four main areas that we would like to investigate in these interviews:
1. Topic 1: Providers' experiences and perceptions of reopening CHIEDZA with the adaptations because of COVID-19
2. Topic 2: Broader experiences of being a provider in CHIEDZA
3. Topic 3: Experiences of providing family planning services
4. Topic 4: Experiences of providing STI services
The questions in this topic guide are not exhaustive and they are not prescriptive. This guide is to help you understand the primary areas of interest to pursue in the interviews. This guide should also give you some suggestions about how to word questions and approach the topics so that they may be likely to feel increasingly comfortable talking to you. They are just example questions. Ideally you should not take this guide into all your interviews, but make sure that you are familiar with it so that you can be responsive to what the participant is telling you through listening- but be confident that you are exploring the primary topics of interest. However, the most important point is to listen to what the young person is telling you and respond to that. Try to integrate pieces of information that they have told you into your questions at various points of the interview to demonstrate that you are concentrating and listening to what they are saying. You need to show that you have a compassionate curiosity to understand what it is that they are going through, what helps and what could be adapted to help them more.</td></tr>
<tr><th>Key areas of investigation</th><th>Rationale</th><th>Example questions</th><th>Explanatory notes</th></tr>
<tr><td colspan="4">Topic 1: Experiences and perceptions of re-opening CHIEDZA</td></tr>
<tr><td>How reopening CHIEDZA impacted them as providers?</td><td>We would like to understand their personal experience of reopening CHIEDZA. As we've already spoken with clients around reopening CHIEDZA, it's important to understand CHIEDZA reopening from the providers' point of view.</td><td>How did you feel about CHIEDZA reopening?
How did you feel about the process of reopening?
Was there any part of the reopening that you found particularly challenging?</td><td>It's important to recognise that they were interviewed during lockdown, and so shared their experiences and perceptions of CHIEDZA shutting down then.</td></tr>
<tr><td>Their perceptions of how the intervention has changed</td><td>We would like to understand their perceptions of how the intervention has changed now because of COVID-19. We would like to hear from</td><td>How has CHIEDZA changed since it has reopened?
How have these changes impacted your work?</td><td>It would be good to recognise that the process evaluation team have</td></tr>
</table>

	them what they think the impact of these changes have been on the intervention from their perspective as providers.	What are your perceptions of these changes? How do you thing the changes have impacted clients' interaction with and perceptions of CHIEDZA.	been conducting observation s in the CHIEDZA sites, and interviews with the mobilisers. The providers may have seen the team doing this data collection. So, it would be good to emphasise that we're really looking for their views, as providers on how CHIEDZA has changed for them, and the impact this has had.
Impact of change of CHIEDZA timings on providers' workload	The providers talked about how the change in timings of CHIEDZA (i.e. stopping at 3pm, rather than staying later in the afternoon/ evening), means that the clients are concentrated between 12-3pm. This leads to high workload and being very busy during this time. We want to find out more about this, because this may produce a tension between quantity of clients vs. quality of care. Additionally, if the very long hours (including early picking	Can you tell me about how the timings of CHIEDZA have changed? How has this impacted your work as providers? How do you feel about this change? How does it influence how you deliver services? How does it influence how you perceive CHIEDZA? How do you think it has changed clients' perception of CHIEDZA?	I think it would be good to really probe about this. How it impacts their work? How it makes them feel about their work? How it influences their motivation as providers? It would be good to really

	up and late dropping off to their homes) impacts their motivation, this may impact the work they do, and how youth-friendly/ caring they are with clients.		understand quite deeply the impact that this change has on the way they work, feel, and the sort of service provision they provide.
Topic 2: Broader experiences of being a provider in CHIEDZA			
Their perceptions on CHIEDZA as an intervention	We would like to understand how they perceive CHIEDZA, and what within the intervention works well, or doesn't work so well.	What do you think about the CHIEDZA intervention as a whole? How accessible do you think it is for young people? What do you think about the package of services provided through CHIEDZA? What challenges do you think the intervention holds? How do you think CHIEDZA is different from services in health facilities? How do you think CHIEDZA has changed since it first started?	It may be difficult for them to think about CHIEDZA outside of the changes because of COVID-19. So, it might be useful to as providers to think of a particular day before changes because of COVID-19, and ask them to describe their experience then.
How they feel about their work as providers for CHIEDZA	We would like to understand how they feel about their role and their work as providers within CHIEDZA. This is more to understand how it impact themselves and their life.	Can you describe your role in CHIEDZA? How do you find working as a provider for CHIEDZA? (nurses/CHWs) Describe what happens when a client comes to CHIEDZA and into your health booth (a consult).	Here I think we really want to understand their personal experience and interaction with CHIEDZA. It would be good to

		What challenges do you encounter within your work in CHIEDZA? Are you able to provide all the services or products that clients need? If not, why? How do you handle this situation? How do you feel your work affects you and your life? Do you have any stories of your experience as a provider in CHIEDZA that you would like to share? Are there any experiences with a client that you would like to share?	encourage them to share personal and sensitive stories.
Topic 3: Experiences of providing family planning services			
Knowledge of Family Planning	Part of the reason why there is low uptake of LARCS (nationally) for example, is that providers do not have enough information/knowledge about them to impart to clients. We would like to understand CHIEDZA providers' knowledge of Family Planning and how this knowledge is used in providing FP services to young people in CHIEDZA	Tell me what you know about FP? Describe any kind of FP training you have received Aspects of personal life, community, religion, culture (context) Since CHIEDZA, how has your knowledge or provision of FP changed? • worries about FP & reasons for worry • behaviour changes, contraceptive method changes	
Service Provision Experience (Acceptability)	We would like to understand the Family Planning service provision story from the provider's perspectives. We want to understand how they are implementing family planning services in this	Describe your experience of providing FP services CHIEDZA Describe what occurs when a young female client comes into the health booth seeking FP health services. From your experience, what is the most common FP issue/product that	

	integrated environment, as well as understanding whether this implementation model is acceptable to them.	young women seek in CHIEDZA? Why do you think this is? Are you able to provide all the FP services or products that clients need? If not, why? How do you handle this situation? (Further probe about Termination of pregnancy services) What approaches, if any, have you used to ensure young people get FP information/ services at CHIEDZA What challenges do you face in providing FP services? What sorts of questions or concerns do young women raise about FP the health booth? Are you able to address these questions or concerns? (Provide an example if possible?)	
Access to Family Planning	We would like to understand what providers perceive are the main issues in access to family planning,	In your opinion, what can be done to improve access to FP services for young people? In CHIEDZA, what can be done? What about generally? What do you think are the main issue affecting young people's access to SRH services? Are there any gaps? The opportunities? In your opinion, what challenges do young people face in accessing FP services? What about challenge in uptake and use of contraceptives?	

		In your opinion, are there any services that young people need in particular? Are any of these not being provided by CHIEDZA? What do you think that young people need to have in place in a service to want to access them? (Further probe around Termination of Pregnancy services)	
Contextual Influence	We want to understand, from the provider' perspectives, the context in which Family planning services are being provided	Can you describe any issues that have influenced your ability to provide FP services/products; or influenced clients ability to access and take up FP services/products • the national contraceptive shortage started in August 2019: how has CHIEDZA and CHIEDZA clients been affected by this? (Give examples if possible) • The doctors' & nurses' strike? • Laws, policies, religion, culture? • Partners/stakeholders in the community (give examples if possible) • client relationships/personal situations (give examples if possible)	
Topic 4: Experiences of providing STI services			
Reflections on offering STI services in the STI pilot last year	STI screening was piloted last year within CHIEDZA and is going to be re-introduced in September/ October this year. We would	What was your experience of offering STI screening in the pilot last year?	Here it would be good to get at both the operational side of the

	like to learn from providers' experiences of offering STI screening last year and understand their perceptions on providing this service last year.	How was STI screening integrated into the other CHIEDZA services? What challenges did you encounter with STI screening? How did you overcome these challenges? Testing uptake increased over the course of the pilot. How was that achieved? How do you think clients viewed STI screening? Do you have any particular stories or experiences of offering STI screening that you would like to share?	service, as well as their personal experiences as providers.
Reflections on offering STI testing for symptomatic clients in CHIEDZA	Currently, in CHIEDZA (outside of the pilot last year) STI testing is offered, but only for clients with symptoms (syndromic management). We would like to understand their experiences of providing this service.	How does offering STI testing only for those with symptoms differ from the STI screening? From your perspective, how have you found offering STI testing for symptomatic clients? How do you think clients perceive this service?	
Suggestions for the re-introduction of STI screening in CHIEZA	We would like to garner their ideas and suggestions of ways to improve STI services within CHIEDZA, in order to help us design STI screening services when they will be added to the CHIEDZA package of care.	What improvements would you suggest for better provision of STI screening within CHIEDZA? How do you think uptake of testing could be improved? How do you think linkage to treatment could be improved? How do you think the partner notification process could be improved?	We need to recognise here that they may not have all the answers of having solutions to improve the STI screening services.
Recommendations for feasibility, scalability, sustainability		In your opinion, what could be done to make CHIEDZA better? FP/SRH services better	
Topic 5: Experiences of using on-site GeneXpert testing at CHIEDZA sites (Bulawayo providers only)			

Use of the GeneXpert machine and impact on role	In Harare and Mashonaland East, the GeneXpert machine for STI testing was in a central lab. However, at CHIEDZA sites in Bulawayo, the GeneXpert machine was situated on-site in the community centres. CHIEDZA providers managed the GeneXpert machine, allowing for same day results for some clients. We would like to learn from providers' experiences in using the GeneXpert machine and incorporating it into their role at CHIEDZA.	Did your role change after STI screening was introduced at CHIEDZA? What proportion of your time at CHIEDZA was spent using the GeneXpert machine? How was your experience doing STI testing using the GeneXpert machine? Were there any aspects of using the GeneXpert machine that you found difficult? Did you feel adequately trained to use the GeneXpert machine? Are there any aspects that you would have liked to have received more training or support on?	
Reflections on the effect of using the GeneXpert machine on workload and flow	Providing on-site STI testing in community settings is currently a very unique situation in Zimbabwe. The experience in Bulawayo may help us learn how to incorporate point-of-care tests for STIs into healthcare services more generally as they become more widely available. We therefore want to understand from the providers' perspective the effect of using the GeneXpert machine on both workload and client flow.	How did incorporating GeneXpert testing affect your workload? How did it affect waiting times and flow of clients through CHIEDZA? What did you think about the space available to provide GeneXpert testing at the CHIEDZA sites? Has providing same day results for STI testing been successful at CHIEDZA?	
Perceptions on the effect of using the GeneXpert machine on clients	Potentially having same day results is also likely to be a novel experience for clients attending CHIEDZA. We would therefore like to explore how the providers perceive the	Did many clients receive their results on the same day? Did many clients wait for their results? What did clients think about getting same day STI results at CHIEDZA?	

	effect of on-site GeneXpert testing on clients.	Why do you think clients chose to wait for their STI results? Why do you think clients chose not to wait for their STI results?	
Thoughts of the providers on how the provision of STI testing at CHIEDZA sites in Bulawayo differs from that in Harare or Mashonaland East	As on-site testing is not provided in Harare or Mashonaland East but is provided in Bulawayo, we would like to hear the providers' opinions on if they feel provision of on-site testing has been a positive or negative experience.	Do you feel that providing results on the same day as testing is advantageous? How does it make you feel that same day STI results can be provided in Bulawayo but not at CHIEDZA sites in Harare or Mashonaland East? What are the main challenges to providing on-site STI testing at CHIEDZA? Would you change how STI testing has been implemented at CHIEDZA sites in Bulawayo?	

The interviewer should give space for the interviewee to add any further details that they want to add or ask any questions.
The interviewer should say that we've come to the end of the interview. They should thank the interviewee for their willingness to talk and participate in this discussion. They should explain how the interview will be used and reiterate that information that the interviewee has shared will inform CHIEDZA and wider research, and things they have said may be quoted, but that it will not be linked back to the particular interviewee.

Appendix 4: Phase 4 CHIEDZA Clients Interview Guide

We have four main areas that we would like to investigate in these interviews:

5. Topic 1: Young women's knowledge, experiences and perceptions about contraceptive side effects, myths, and misconceptions
6. Topic 2: Experiences of youth-friendliness in CHIEDZA in relation to Family planning service delivery
7. Topic 3: COVID-19 effects on family planning/contraceptive experiences
8. Topic 4: Young women living with HIV's experiences and use of family planning services in CHIEDZA

The questions in this topic guide are not exhaustive and they are not prescriptive. This guide is to help you understand the primary areas of interest to pursue in the interviews. This guide should also give you some suggestions about how to word questions and approach the topics so that they may be likely to feel increasingly comfortable talking to you. They are just example questions. Ideally you should not take this guide into all your interviews, but make sure that you are familiar with it so that you can be responsive to what the participant is telling you through listening- but be confident that you are exploring the primary topics of interest. However, the most important point is to listen to what the young person is telling you and respond to that. Try to integrate pieces of information that they have told you into your questions at various points of the interview to demonstrate that you are concentrating and listening to what they are saying. You need to show that you have a compassionate curiosity to understand what it is that they are going through, what helps and what could be adapted to help them more.

Initially, try to conduct these interviews entirely narratively and open-ended, without any topic guide. experiment with an entirely conversational method, where you go into the interview and know you want to address a) norms around young women & contraception b) determinants and experiences of contraceptive use c) experiences of CHIEDZA and d) changes due to COVID-19, both in needing and using contraception.

Key areas of investigation	**Rationale**	**Example questions**	**Explanatory notes**
Topic 1: conversation about existing and previous sexual relationships and young women's thoughts about becoming pregnant (and perhaps experiences of doing so), and how the young woman has developed her thoughts about when it is good to have a pregnancy (and who should, in what circumstances and how she will know if she is "ready") vs when it is undesirable to have a pregnancy (situation, age, relationship)			
Young women's knowledge, experiences, and perceptions about becoming pregnant (or not), and the use (or non-	We want to explore what young women think and know about methods/ ways of preventing pregnancies (including contraception) in different kinds of	Can you tell me what you know about relationships, sex and/or becoming pregnant? • what do you think are the right circumstances for a woman to become pregnant? • What do you know as the ways in which a woman can become pregnant or prevent herself from becoming pregnant?	It's important to set the tone; and get a general understanding of how young women situates pregnancy and contraception within their wider understanding of fertility and choices.

use) of contraceptives,	situations and also understand about what role partners/relationships play in wanting/ not wanting pregnancies. We also want to explore where they get this knowledge from; and how both the knowledge itself; and where they get if from contributes to their contraceptive care seeking behaviour.	• How do you think being in a relationship could contribute to wanting/not wanting to become pregnant? How knowledgeable do you feel about issues that have to do with sex and what should happen to become pregnant or not become pregnant? Can you tell me what you know? Can you tell me about relationships, sex and/or becoming pregnant when it comes to your own life and relationship (s)? • What are your thoughts (if any) about becoming pregnant? What do you think should happen for a woman to be ready to start having children? • Are you in a sexual relationship; and if so, o how do you feel about having a child with your partner? What/How do you and your partner talk about when it comes to becoming pregnant? o Can you describe what you do or would do to prevent getting pregnant before you are ready? *(If already has children)* Can you tell me about becoming pregnant with your children? Did you feel ready to become pregnant- why or why not? How do you prevent becoming pregnant before you are ready? *So, you have told me a lot about what you think and know about*	

		relationships, sex, and pregnancies, • Whom or what or where do you get information about these issues? • Whom or what are the most important sources of information to you? How did you determine the importance of each source? • Do you rely on these information sources as facts? Which source of information do you believe the most or always trust that what they are telling you is true? Why?	
Young women's knowledge and experiences of preventing pregnancies, and contraceptive use?	We would like to understand young women's experiences of using contraceptives. we would like to know and understand what young women know about family planning/preventing pregnancies/birth, including their fears or challenges, myths, and misconceptions around pregnancy, family planning and contraceptive use and need;	Which forms of birth control or ways of not becoming pregnancy have you used, or do you know about? (• what, why, when, and how, was the use (or non-use) of each of these ways? Have you ever heard about contraceptives/ 'birth controls'? - *'control':COC? 'Secure':POP? 'jadelle/implanon': implants? 'Depo': injectable? 'loop'/IUCD? Condoms?* Can you tell me everything you know about these? Can you tell me about any other methods or ways that you know of preventing or stopping a pregnancy from happening? • how do they work to prevent pregnancy? how long do they work to prevent pregnancy? • where do you/young women get their contraceptives from? • who can/should take contraceptives? (sexually active? married women/ sex workers? any woman?)	We want to get an understanding of what young women know or are doing around their 'birth control' aka not becoming pregnant until they are ready/want to. some of the previous findings in CHIEDZA, and other countries show that many of the young people (and some providers) in CHIEDZA, think (or speak of) contraceptive use: 1) as being for 'married' people only/situations sexual active status is implied/obvious 2) results in infertility and/or

		• who (if anyone) should know that you are taking contraceptives? • any side effects of contraceptives? • any fears or challenges you know about taking contraceptives Have you ever used any of these contraceptives or any way of stopping/preventing a pregnancy? **YES:** Can you describe to me your experience using contraceptives *(experience of each method if many have been used)* What made you start taking contraceptives? How did you decide to start taking contraceptives? what contraceptives do/did you use? Why where you using contraceptives? Did you experience any side effects or unexpected effects- tell me about that? Did you ever stop using them- can you tell me what made you stop? **NO:** Do you know anyone who's ever used contraceptives? YES: What do you know about their experiences/ did this change your understanding of family planning? How? Where do you/did you get all this information (above) that you gave me about contraceptives? if you have questions or want to know more about contraceptives, who told/tells you about contraceptives, their use and side effects (is it your parents? friends? health providers? CHIEDZA? church? school? other programs?)	difficulty in conceiving we want to interrogate further where young people get this kind of information from, why they believe these things as fact and how this belief contribute to their contraceptives care seeking behaviour.
Topic 1b: Young women's perceptions and beliefs about becoming pregnant (or not), contraceptives, myths and misconceptions, and side effects.			
Young women's perceptions	we would like to know and understand	Have you ever heard /seen that using contraceptives *(the ones that we talked about above for*	some of the previous findings in CHIEDZA, and

and beliefs around contraceptive use	what young women know about family planning, including side effects, fears/challenges, myths, and misconceptions around family planning and contraceptive use; where they get this knowledge from; and how both the knowledge itself; and where they get if from contributes to their contraceptive care seeking behaviour we would like to know how participants have ever taken measures to avoid, prevent or terminate a pregnancy or knows of different ways that her peers have done so. What kinds of things has she heard about and how does she think they work?	*example)* make it hard/difficult to have children/fall pregnant when you now want to? • **YES:** Can you tell me what you heard about this? where/how did you hear about this information? Do you think it is true- why or why not? Does this influence whether or not you use contraceptives? • **NO:** what do you think about this statement? Do you think it is true- why or why not? Have you ever heard that only married women can/should take contraceptives? • **YES:** Can you tell me what you this you heard about this? Do you remember when in your life and how you heard about this? Where did you hear of this information? Do you think it is true- why or why not? does this influence whether or not you use contraceptives? o Do you think unmarried women who are sexually active should take contraceptives? How do you think unmarried women should avoid or prevent pregnancies? • **NO**: what do you think about this statement? Do you think it is true- why or why not? o Do you think unmarried women who are sexually active should take contraceptives?	other countries show that many of the young people (and some providers) in CHIEDZA, think (or speak of) contraceptive use: 1) as being for 'married' people only/situations sexual active status is implied/obvious 2) results in infertility and/or difficulty in conceiving we want to interrogate further where young people get this kind of information from, why they believe these things as fact and how this belief contribute to their contraceptives care seeking behaviour

		How do you think unmarried women should avoid or prevent pregnancies? Can you describe how important you think it is for sexually active women to use contraceptives? Can you describe what impact using contraceptives can have on your life? your community?	
Topic 2: Experiences of youth-friendliness in CHIEDZA in relation to Family planning service delivery			
The experiences of young women who access family planning services at CHIEDZA	We would like to understand young women's experiences of accessing family planning services at CHIEDZA, particularly how they process and identify quality service delivery. We would like to hear from the young women, what they like or do not like about this service delivery model	Can you describe for me what happens when you come to access family planning services at CHIEDZA? • what makes/made you come for family planning services? • what happens from the moment you arrive at the CHIEDZA centre until you leave? • What happens in the consultation booth? Do you move from one booth to another? Do they change health providers who serve you? • Do you always receive all the information you need about family planning and the contraceptives available? can you give me an example of the kinds of information you have been given before? • Have you always been able to get the contraceptive choice you wanted? • **YES**: can you describe/tell me about what made you choose the contraceptive product you took up? Has this stayed the same or has	some of the previous findings in CHIEDZA, show that many of the young people at CHIEDZA think that CHIEDZA is providing quality youth-friendly services for young people. This makes the young peopl comfortable and open up about their personal and sexual lives when they come to seek services at CHIEDZA, particularly for family planning services. However, there is not enough understanding of which parts or components of quality youth-friendly care draw young people in to access family planning services.

		this changed- tell me about why that is? • **NO:** can you describe what happened when you were not able to get your contraceptive of choice? why were you not able to get it? Did you get something else? **For Young women who took up LARCS at CHIEDZA:** • can you tell me (how/why) what made you take up LARCS (implants, Depo, IUCD) instead of the short acting methods (oral contraceptives? • can you describe for me what happened on the day you came to get your family planning-LARCs? • Had you used oral contraceptives before? if so, • can you tell me when you switched to a XX (LARC) and what made you make the change? • From your experience, which do you prefer, the short-acting (pill) or the LARC you have now? why or why not? • **For implants/IUCDs**: • can you describe what happened when you got to the nurse (PsZ) who inserted your XX? Did you feel any different from when you talk to the CHIEDZA nurse/other providers? Was it the same? • What do you think about this process of moving from one booth/provider to another and back again to get your LARCs? How long	

		does it take? what did you do whilst you were waiting? What do you like about the whole family planning service delivery process at CHIEDZA? What don't you like? what don't you like?	
	we would like to understand the provider aspects of youth-friendliness for family planning services in CHIEDZA	Can you describe how the providers at CHIEDZA treat you? Do you think they are youth-friendly? do not have an attitude? • what does youth-friendliness mean to you? How are CHIEDZA providers youth-friendly (or not)? Can you give me an example of when a provider has been friendly in the way they provide family planning services for you? • when you say providers have/should not have an attitude- what does that look like for you when you are getting family planning services? Can you give a How do you feel about the way the CHIEDZA providers treat you when you are getting family planning services? How is this different	some of the previous findings in CHIEDZA, show that many of the young people at CHIEDZA think that the providers at CHIEDZA are non-judgemental and have no attitude. This makes the young people comfortable and open up about their personal and sexual lives when they come to seek services at CHIEDZA, particularly for family planning services. However, there is not enough understanding of what it means or looks like to be 'non-judgemental' and/or have 'no attitude'. We want examples of what this is from the young people, to better discern if this is something about the personal characters of the providers; or if it's relative to care they have received

			elsewhere and/or a combination with other factors
Topic 3: COVID-19 effects on family planning/contraceptive experiences			
COVID-19 impacts on family planning experiences of young women at CHIEDZA	young women and providers have talked about how the closure of CHIEDZA in April-May 2020 reduced access to free and readily available contraceptives, which resulted, among other things, in young women 1) looking for alternative less readily available options, 2) changing contraceptive methods? we want to further understand the impact of COVID-19 on family planning experiences of young people, one year into the pandemic	Can you tell me how COVID-19 impacted your family planning/contraceptive use? • How/where did you access contraceptives during the lockdown in 2020 (when CHIEDZA was closed and also when CHIEDZA reopened) and/or this year (when CHIEDZA remained open? • did you face any challenges? if so, can you tell me about them? • did you go and access your contraceptives elsewhere? can you tell me about where this is? How was it different or the same to CHIEDZA? • did you change your contraceptive method because of the lockdown? If so, how did you like your new methods? Did you remain on that method or you went back to the method you were using before COVID-19? • Did you just stop taking contraceptives during the lockdown? If so, how did you feel about this? • during the lockdowns: where you able to move about to go and get contraceptives from CHIEDZA or elsewhere? • In your opinion (or from what you saw in your community), how did young women access contraceptives during the lockdown?	we have initial findings on covid-19 impacts on family planning and want to continue to understand these impacts; including understanding if these impacts and/or contraceptive care choices made because of COVID-19 have continued, remained, or changed.

Topic 4: Young women living with HIV's experiences and use of family planning services in CHIEDZA			
The family planning experiences of young women living with HIV who access CHIEDZA services	We would like to understand contraceptive choice; use and experience of young women living with HIV who access family planning services at CHIEDZA.	In your opinion, do you think your HIV status, treatment and care influenced (s) your contraceptive choice? • if so, can you describe for me how? • if not, how might HIV status, treatment, and care influence contraceptive choice? Do you think your HIV status influences your contraceptive use? • if so, can you describe for me how? • if not, how might HIV status, treatment, and care influence contraceptive use. Do you think your HIV status influenced (s) your family planning service provision at CHIEDZA? If so, • If so, • can you describe how? • can you describe for me what happens when you come to access family planning and/or services at CHIEDZA? Do you get these services together or come separately for them? • if not, how might HIV status, treatment, and care influence contraceptive use.	we want to better understand the interactions, if any, in the care-seeking behaviours for HIV and family planning for young HIV+ women; and how the CHIEDZA service delivery model supports this (or not)

We've now reached the end of our discussion. We appreciate your willingness to talke and participate in this discussion with us. I will stop recording us now.
[Interviewer should answer any unanswered questions, and provide references as needed or clarify any misconceptions at this time]

Appendix 5: Phase 5 CHIEDZA Clients Interview Guide

CHIEDZA providers will help identify and recruit clients living with HIV and are in the CHIEDZA cohort who access both HIV services and other services within CHIEDZA. The aim is to find out how clients living with HIV have experienced CHIEDZA including CAPS sessions, HIV services offered and recommendations to improve CHIEDZA as a whole and CAPS sessions hosted.

The areas to be investigated on are:

Topic 1: Introduction, and experiences living with HIV and adhering to treatment
Topic 2: Perceptions of CHIEDZA as an intervention model
Topic 3: Experiences of attending CAPS sessions
Topic 4: Young women living with HIV's experiences and use of family planning services in CHIEDZA
Topic 5: Recommendations to improve CHIEDZA and CAPS sessions

The questions in this topic guide are not exhaustive and they are not prescriptive. This guide is to help you understand the primary areas of interest to pursue in the interviews. This guide should also give you some suggestions about how to word questions and approach the topics so that they may be likely to feel increasingly comfortable talking to you. They are just example questions. Ideally you should not take this guide into all your interviews, but make sure that you are familiar with it so that you can be responsive to what the participant is telling you through listening- but be confident that you are exploring the primary topics of interest. However, the most important point is to listen to what the young person is telling you and respond to that. Try to integrate pieces of information that they have told you into your questions at various points of the interview to demonstrate that you are concentrating and listening to what they are saying. You need to show that you have a compassionate curiosity to understand what it is that they are going through, what helps and what could be adapted to help them more.

Topic 1: Introduction, and experiences living with HIV and adhering to treatment			
Researcher providing introduction	To give the participant an overview of why we are doing the interview, and what the aim of the interview is.	My name is ________________ and I am working with the CHIEDZA research project to learn more about experiences different young people have at CHIEDZA. I would like to talk to you about your general experiences of CHIEDZA as an intervention focusing on HIV services	The interviewer should read this several times before starting interviews to familiarise themselves with this introduction, so that they can talk to the introduction easily, without reading it. The writing here is a

		offered and your experiences on other services offered. I would also like to understand your personal experiences, and how HIV is integrated in your wider life, including your family, society, and community at large. The interview will take about 60-90 minutes. I appreciate you spending this time with me. If it's ok with you, I will audio record the interview to make sure that I capture all the valuable information that you share with me. Is that, ok? I may also write things down while we're talking so that I don't forget anything. Participation is voluntary- you do not have to answer any question that you don't want to, and you can choose to stop the interview at any time. Everything you say is confidential, so please feel free to talk about your experiences and ideas. We will not record your name anywhere, and only the researchers on this project will hear the tape or see the notes. We may use some of what you say in reports or publications but will never use your name. If you have any questions about this study, you can ask me now, or at any	guide of some areas to cover, rather than having to be followed to the letter.

		time during our conversation. Do you want to ask anything now, before we start?	
Experience living with HIV	We would like to understand the client's journey living with HIV and their experience to date. In particular, we are keen to understand the factors outside of CHIEDZA that may be influencing clients, particularly related to adherence.	Can you tell me about your experience living with HIV? Have you told others about your HIV status? Who have you disclosed to? How did they react? Are you on ARVs? If so, how long have you been taking ARVs? How have you found taking them? Is there anything or anyone that helps you to take your medication? We know that young people find it hard to take their HIV treatment every day. I would like to understand how has it been for you? Have there been periods which have been more difficult for you? Can you tell me about them? Is that still going on? Has anything changed? Can you tell me about some of the things that have helped you (if there is a difference between the difficult times and now)? What factors have you found which make adherence difficult? What sort of support do you receive from your parents/ guardians, your friends, your sexual	This is an important section – to understand the factors outside of CHIEDZA that may be influencing clients, particularly related to adherence.

		partner (if you have one), and other people you feel close to? Many young people talk about how it is not easy disclosing their HIV status to an intimate partner. Can you tell me about what you have done in your relationships? How does your partner knowing about your HIV status or not impact how you seek care and take your treatment?	
Topic 2: Perceptions of CHIEDZA as an intervention model			
Experiences of CHIEDZA	The interview seeks to find out experiences of the client living with HIV at CHIEDZA. We are specifically interested in clients' experiences of service provision- both the interaction with providers, and the services themselves, within an integrated package	Can you tell me about when you first heard about CHIEDZA? How did you first come to CHIEDZA? What was that like for you? How easy/ difficult was it for you to come to CHIEDZA? After your first visit, has anything changed for you in how you feel about coming to CHIEDZA? Can you talk me through what normally happens when you come for a visit? Can you tell me what your experience is normally like when you come to CHIEDZA? Did you find out about your HIV status at CHIEDZA? Can you tell me about the experience of finding out? (*We would like to know if they found out at CHIEDZA or elsewhere*)	Probe as much as you can; following up on information given by client to get an in-depth understanding of their experience with CHIEDZA

		Do you access your ARVs at CHIEDZA? What do you think about the HIV services provided by CHIEDZA?	
Experiences of other HIV services		Have you used any other services for HIV care? How has been your experience of CHIEDZA in comparison to other HIV care services? (If they have any prior or alternative experience) How long have you received care from there?	
Viral load and Viral suppression	We want to understand how much the concept of U=U or undetectable= untransmittable is understood by young people. We are trying to understand whether young people know that if they adhere to ART treatment they will become virally suppressed and not transmit HIV virus sexually to their partners? Also, we are interested in the benefits for their own self-esteem.	Can you tell me what you understand by the term viral load? Can you tell me what you think having a low/ high viral load is? What do you think are the benefits of having a low viral load? What do you think the worries of having a high viral load are? Do you understand what the difference between CD4 count and viral load is? Can you take me through the process of viral loading testing when you visit CHIEDZA? *What do the nurses talk about?* Have you received viral load results? Could you tell me about these results? How did you feel receiving these results? How did the result impact	Spend as much time on this topic since CHIEDZA is aiming to reach the 90-90-90 target Probe more and gain an in-depth understanding on what the client is saying

		your engagement in care and taking treatment? What do you understand by the concept of U=U? *(Say it in simpler terms: being on treatment lowers the viral load, and when levels are low, below 200 copies per mils, this is referred to as having an undetectable viral load, and HIV cannot be passed on sexually)*	
Impact of CHIEDZA's closure and lockdown on ARV supplies		Can you tell me about how CHIEDZA's closure during the first lockdown impacted you? Did it affect your access to ARVs? Have you experienced any impact of the shortages of ARVs?	
Views on the closure of CHIEDZA	We would like to understand how clients living with HIV are feeling about CHIEDZA's closure, and how this will impact them.	As you may know, CHIEDZA will stop running in (*September 2020 for Harare – December 2020 for Bulawayo and March 2022 for Mash East*). How do you feel about the CHIEDZA intervention ending? How do you feel about transitioning your HIV care to the clinic? How do you think this will impact your HIV care? How do you think you could be best supported through this process?	

Topic 3: Experiences of attending CAPS sessions			
Experience of how they view the CAPS sessions; how they impact their lives	We would like to find out how the CHIEDZA client living with HIV views the CAPS sessions conducted and if and how they impacted their lives and experience with HIV	Have you ever attended CAPS sessions hosted by CHIEDZA? *If yes*, why do you choose to attend the CAPS sessions? *If no*, why do you choose not to attend the CAPS sessions? What was your experience of the CAPS sessions? Has this changed over time? How do you find being in a group with other young people living with HIV? What do you think about the facilitation of the groups? What did you learn during these CAPS sessions? *(Probe: adherence issues, treatment buddies)* What's the impact of CAPS sessions on your life as a client living with HIV? What would you like to get out of/ learn from the CAPS sessions that you are currently attending? Are there challenges in your own lived experience that the CAPS sessions don't or are not able to address? Does it make any difference knowing that there are other young	Use more probing techniques and allow the client to express themselves freely

		people living with HIV in the groups? How? How has the lockdown restriction impacted your attendance or engagement in CAPS sessions? What other support did you get outside CAPS sessions when they were stopped because of the lockdown? How has the lockdown restrictions affected your access to ART treatment? *(Adherence behaviour and well-being with HIV)*	
Impact of COVID on CAPS sessions and the moving onto a WhatsApp group	We wish to find out how the client got educated or what additional information they got through these sessions and the shift to a WhatsApp group when COVID happened	How have you found the shift from attending CAPS sessions and moving to a WhatsApp group?	
Experience of CAPS session at CHIEDZA versus experience from other educational sessions attended (*at other health facilities or programs)*		Have you received any other educational sessions outside of CHIEDZA? If yes: Can you describe your experience at these other health services? How does/ did your experience there compare to your experience at CHIEDZA? Can you tell me a story of a particular experience or	

		interaction at these other health services? If no: What has prevented you from attending other health services? Why did you choose to come to CHIEDZA?	
Topic 4: Young women living with HIV's experiences and use of family planning services in CHIEDZA			
The family planning experiences of young women living with HIV who access CHIEDZA services	We would like to understand contraceptive choice; use and experience of young women living with HIV who access family planning services at CHIEDZA.	In your opinion, do you think your HIV status, treatment and care influenced (s) your contraceptive choice? • if so, can you describe for me how? • if not, how might HIV status, treatment, and care influence contraceptive choice? Do you think your HIV status influences your contraceptive use? • if so, can you describe for me how? • if not, how might HIV status, treatment, and care influence contraceptive use. Do you think your HIV status influenced (s) your family planning service provision at CHIEDZA? If so, • If so, ○ can you describe how?	

		○ can you describe for me what happens when you come to access family planning and/or services at CHIEDZA? Do you get these services together or come separately for them? if not, how might HIV status, treatment, and care influence contraceptive use.	
Topic 5: Recommendations to improve CHIEDZA, and CAPS sessions			
Recommendations on what will improve CHIEDZA as an intervention and CAPS sessions as educational talks	The idea is to find out what is working best on the current CAPS sessions hosted and if there is room for improvement to make CHIEDZA continue providing better services at large	Do you have any suggestions on how the CAPS sessions could be improved? Do you have any suggestions on how CHIEDZA could offer a better service to you?	Ideas given here will also assist in policy review and process evaluation

We have come to the end of our interview. Thank you very much for your time!!!!

Appendix 6: Phase 6 CHIEDZA providers Interview Guide

3rd round of interviews with CHIEDZA providers

This topic guide is for the third and final round of interviews with CHIEDZA providers. We have already done two rounds of interviews with CHIEDZA providers, plus an extra mini-round focusing on discussions around HIV viral suppression. The aim of this interview is to understand providers' overall experience of working as a provider at CHIEDZA, to understand how they feel about CHIEDZA ending, and their own next steps after CHIEDZA, to understand their provision of particular services (STIs and FP), and finally to understand how they have felt enabled to offer non-judgemental services.

We want to interview 15 providers, including 5 from the Harare team, 5 from the Bulawayo team, and 5 from the Mashonaland East team. We would like a mix of one nurse, one CHW, one counsellor, one youth worker, and one other provider, and a mix between those who we have previously interviewed (in either round 1 or 2 of interviews), and if there are any providers who we have not interviewed. Many of the providers will work conducting the prevalence survey. It would be good to include several who are working on the prevalence survey, but also some who are not (if there are any who are not).

These interviews should take place within around 1-3 weeks of CHIEDZA stopping service provision in each province.

The areas to be investigated are:

Topic 1: Experiences as a provider at CHIEDZA over the course of CHIEDZA
Topic 2: Feelings about CHIEDZA ending and their next steps
Topic 3: Experiences offering STI services
Topic 4: Experiences offering FP services
Topic 5: The factors they feel enable them to offer non-judgemental services

Please use this interview guide as a guide, and feel free to probe on particular topics, to follow the participants' flow, and to use the questions as guidance, rather than having to ask all of them exactly as they are written, or in the order they are written. Please do familiarise yourself with the guide before using it, so you are confident with what we are trying to understand from the interviews, and the rationale for investigating particular topics.

Topic	Rationale	Example questions
Introduction	To open the interview, explain why we are doing this follow up interview, and what the aim of the interview is. Note – prior to each interview,	It was wonderful to speak with you before [*adapt as necessary, depending on whether the provider has taken part in a previous interview*], and I was so grateful to you for sharing your experiences as a CHIEDZA provider and perceptions of CHIEDZA. Thank you for agreeing to do another interview with me. The aim of this interview is to understand your experiences as a provider at CHIEDZA over the course of the intervention, to learn about your

	the interviewer needs to check whether the provider has taken part in a previous interview or not, and tailor the introduction, and subsequent questions accordingly. If they have taken part in a previous interview, it is important to read the previous interview with the particular provider before starting this interview, in order to know and build on what they have shared before.	feelings about CHIEDZA ending, to understand more about particular services provided at CHIEDZA, namely STI and family planning services, and lastly to understand more about the factors you feel enable you to offer a high-quality non-judgemental youth-focused service at CHIEDZA. The interview will take around 45 to 60 minutes, and I really appreciate you sharing with me. If it's ok with you, I will audio record the interview to make sure that I capture all the valuable information that you share with me. Is that, ok? I may also write things down while we're talking so that I don't forget anything. Participation is voluntary- you do not have to answer any question that you don't want to, and you can choose to stop the interview at any time. As with the last interview, everything you say is confidential, so please feel free to talk about your experiences and ideas. We will not record your name anywhere, and only the researchers on this project will hear the tape or see the notes. We may use some of what you say in reports or publications but will never use your name. If you have any questions about this study, you can ask me now, or at any time during our conversation. Do you want to ask anything now, before we start?
Topic 1: Experiences as a provider at CHIEDZA over the course of CHIEDZA		
Experience as a provider over the course of CHIEDZA	To understand overall how they have felt about CHIEDZA and working at CHIEDZA, over the course of the intervention.	It would be great to hear from you about your experience working as a provider at CHIEDZA from when CHIEDZA started up until now when CHIEDZA has ended. Can you tell me about your experience? *(For the Harare team that was there at the beginning of CHIEDZA):* in the first year of CHIEDZA, there was a shift in staff, with many team members leaving and having to work with new team members? • can you tell me what that experience was like? • if you are comfortable sharing, what were some of the challenges during that time and how do you think that affected your or the team's ability to implement CHIEDZA? Had you previously worked as a health provider in a health facility or with another organisation? If so,

		can you tell me how your experience at CHIEDZA compares? Can you tell me a story about what you found most rewarding about working with CHIEDZA? Can you tell me a story about what you found most challenging about working with CHIEDZA? How do you feel that your experience as a provider has changed over the course of CHIEDZA?
Perceptions of CHIEDZA as a service	We want to gather the providers' perceptions of how they view CHIEDZA, including what worked, what didn't work, and what could have been improved?	What are your views on CHIEDZA as an intervention for young people? What aspects of CHIEDZA do you feel really worked for you as a provider? What aspects of CHIEDZA do you feel really worked for the young people as clients? What aspects of CHIEDZA do you feel didn't work well from your perspective as a provider? What aspects of CHIEDZA do you feel didn't work well for the clients? What were your experiences and perceptions of offering an integrated package of services? What did you think about the fact that the services were offered in a community setting? How do you think your perception of CHIEDZA changed over the course of the intervention?
Topic 2: Feelings about CHIEDZA ending and their next steps		
CHIEDZA ending	We want to understand their perceptions of CHIEDZA ending, thinking about it from a sustainability viewpoint	How do you feel about CHIEDZA coming to an end? What did you do to prepare for CHIEDZA coming to end? How was it telling the clients that CHIEDZA was ending? Was there anything/ any client in particular that you felt worried about with regards to CHIEDZA ending?

		Is there anything that you are/ will continue to do related to CHIEDZA even after CHIEDZA has ended?
HIV cohort	We want to understand their perceptions on how CHIEDZA ending might particularly impact the HIV cohort, who were receiving treatment and care at CHIEDZA	How do you feel about the HIV cohort in relation to CHIEDZA ending? What have you as providers done to ease the transition from CHIEDZA to health facilities for the HIV cohort? What impact do you feel that CHIEDZA ending will have on the HIV cohort? *Including in terms of their treatment adherence* What about those clients living with HIV who continued to receive care at the health facility, how do you think CHIEDZA ending will impact them? What would you like to have been done differently around CHIEDZA ending and support for the clients living with HIV? Can you tell me about the CAPS sessions? How did you put them together? What happened when the COVID-19 pandemic hit? How did you manage to continue supporting the HIV cohort when CAPS were no longer feasible?
Next steps after CHIEDZA	To get a picture of what the providers	From your own personal point of view as a CHIEDZA provider, how do you feel about CHIEDZA ending? How do you feel about your job as a CHIEDZA provider ending? For you personally, what are your next steps now that CHIEDZA has ended? *Professionally? Personally?* Do you think you've learnt anything from your time working at CHIEDZA that you will take going forward? If so, what do you feel are your main learning points?
Topic 3: Experiences offering STI services (*Note only ask these questions to the Harare and Bulawayo providers*)		
Overall reflections of offering STI testing and treatment as part of STICH	We have previously asked the providers about their opinions of offering STI	In the last interview, we asked about your experiences offering STI services in the pilot in 2019 (*Note – only say this for providers who were previously interviewed*). In this interview, we want to ask about your experiences offering STI services once STICH had started. Can you tell me about

	testing as part of the STI pilot. Now we really want to understand their perceptions and experiences of offering STI testing as part of STICH. Need to tailor questions based on whether the provider took part in the previous interview.	your experience of offering STI testing and treatment in CHIEDZA? How was STI screening integrated into the other CHIEDZA services? Did you encounter any challenges with offering STI testing? *If so*, how did you overcome these challenges? Did you have stock outs that impacted delivery of STI services? *If so*, can you tell me about these. *How long they lasted? To what degree you feel they impacted service provision?* Was there anything that you think could have been improved within offering STI testing within CHIEDZA? How do you think the clients perceived the STI service? What did you think about offering HIV testing for all clients compared to syndromic management?
Perceptions of STICH across the STI care cascade	We want to understand what influenced the uptake and decisions at each stage of the STI care cascade – from the providers' perspective.	There was incredibly high uptake of STI testing. Why do you think the uptake of STI testing was so high? What do you think was done differently, compared with the pilot that led to this high uptake? How much do you think previously offering STI testing led to the subsequent high uptake? How much do you think the health talks while clients were waiting led to the high uptake? What other factors do you think were important? From the provider side, what do you think you did that led to such high uptake? From the client side, why do you think so many decided to take up testing? For those clients who didn't take up STI testing, what do you think influenced their decision? What was your experience of providing the STI results back to clients? Did you have challenges in reaching some clients? Why do you think some clients didn't receive their results? How did you deal with these clients/ this particular challenge? Did you apply any learnings from the STI pilot to improve the process of giving results to clients?

<table>
<tr><td></td><td></td><td>What was your experience of clients who tested positive coming back for STI treatment?
Did you have any challenges with clients not coming back for treatment? Why do you think some clients didn't come back for treatment? How did you deal with these clients/ this particular challenge?
Did you apply any learnings from the STI pilot to improve the process of clients receiving treatment?

What was your experience of partner notification among clients who tested positive for STIs?
Can you tell me about the conversations you had with clients about partner notification?
Did you face any challenges with partner notification by clients? Why do you think some clients didn't tell their partners, or if they did, their partners didn't come back for treatment? How did you deal with these clients/ this particular challenge?
Did you apply any learnings from the STI pilot to improve the process of discussing partner notification with clients?</td></tr>
<tr><td colspan="3">Topic 4: Experiences offering FP services</td></tr>
<tr><td>Experiences and acceptability of the family planning service delivery model offered within CHIEDZA</td><td>We want to understand the real on the ground experiences of implementing the CHIEDZA-PSZ family planning service delivery model?</td><td>Can you describe for me what the implementation relationship with PSZ was like from when CHIEDZA started to when it ended?
• What worked? What didn't work? What were the challenges? The facilitators?
• How did this CHIEDZA-PSZ model affect CHIEDZA service delivery overall? (
    o from observations in the field, wait time for clients who needed LARCs + CHIEDZA services seemed longer than those coming just for CHIEDZA- did you experience this? How do you think this affected quality of CHIEDZA service delivery?
• How did COVID-19 impact this implementation relationship?

I understand that not all clusters received PSZ LARC support, can you tell me about this situation? How did it come about that some clusters PSZ comes, and others it didn't?
• What would happen for the young people in non-PSZ clusters who would want LARC that CHIEDZA did not offer?</td></tr>
</table>

		• What about for young people who would only want implant removals, can you describe what would happen in those situations?
Provider perceptions of different components of the family planning service delivery model	The CHIEDZA family planning service delivery model was multi-component to include free, mixed-methods, integrated family planning services offered by trained, youth-friendly non-judgmental providers. We want to understand provider perceptions of these different components and how these perceptions may have influenced fidelity to the implementation model	Can you describe for me the process of offering family planning services in CHIEDZA? • How, if at all did the national shortage in 2019 affect your ability to provide family planning services? what do you think were the barriers or challenges of offering free, mixed-methods, integrated family planning services within CHIEDZA? • Barriers/challenges to you a provider? To the clients? To other services' uptake within CHIEDZA? what do you think were some of the benefits about offering free, mixed-methods, integrated family planning services within CHIEDZA? What worked? • What worked for you as the provider? For the clients? For other services' uptake? *(For providers working in the booths)* From your experiences offering family planning services in the booth, can you rank the family planning methods by popularity/most asked for? which family planning methods where the most popular? Which one where the least popular? • Why were oral pills taken up or not? • Why was Depo taken up or not? • Why were implants taken up or not? What about IUCDs? If you have experienced this, • can you tell me about a time when a young woman came wanting one contraceptive method, and ended up taking up another one? What were some of the reasons for the switch? • Can you tell me about a time that a young woman came with a family planning need that you could not meet/address? How did you address/manage that situation?
Perceptions of the family planning training that the nurses	We want to understand the quality of the training and whether it	***(For nurses)*** You received LARC/FP Training in 2019, • can you walk me through the training process, what were you meant to be trained on? Which

received for them to be able to offer LARCS in CHIEDZA	capacitated them to be able to offer the full range of family planning methods within CHIEDZA	parts of the training did you cover? Which parts did you not cover?
		• You able to cover/experience some of the practical trainings (inserting implants and IUCDs), with the PSZ nurses?
		  o Can you tell me about this part?
		  o Do you feel fully capable and qualified to do insertions independently at this point? If so, can you tell me about some of the reasons you have not been able to do this within CHIEDZA?
		• how did receiving only part of the training influence your ability to offer mixed-methods contraceptives to young people?

The family planning service delivery model overall	We want to understand what they think of the model of delivery that was implemented in CHIEDZA and whether this model worked from the supply/ implementation side	What do you think of the overall family planning service delivery model that was implemented in CHIEDZA? • Do you think it would have been better for all mixed-methods to be offered by the CHIEDZA nurses vs. the CHIEDZA-PSZ split? Why?
Topic 5: The factors they feel enable them to offer non-judgemental services		
Non-judgemental service provision	To understand from the provider perspective what they think constitutes high quality non-judgmental youth service provision.	One thing about CHIEDZA that we have heard time and time again from clients is how much they value the CHIEDZA providers, and how they offer such an amazingly supportive and non-judgemental service. What do you think it is that clients value so much from you as the CHIEDZA providers? What does be non-judgemental mean to you? To what extent do you feel that you are non-judgemental in your service provision? Are they any services of CHIEDZA that counteract (are at tension?) with your personal beliefs? If so, how do you handle this when a young person comes and seeks that service from you? What are the particular aspects about your service provision which you feel are non-judgemental? For young people in particular, what do you think is needed for a health service to be high quality and non-judgmental?

		What aspects of your service provision are you most proud of? Do you think the providers at CHIEDZA are different from the health facilities? *If so*, in what way? Why do you think there is this difference?
The factors enabling non-judgemental service provision	We want to break down what they feel enables them to provide a non-judgmental service, in part to understand how to translate this high quality non-judgemental service provision to other youth-centred health services.	Have you previously worked in a health facility as a provider? *If yes*, do you think you were able to offer the same high quality service to clients? *If yes,* tell me more about this? *If no*, why not? What aspects of CHIEDZA do you feel have enabled you to provide a non-judgemental service? What do you feel you require in order to provide a high quality, non-judgmental service? *Probes: salary? Time? A good team? Mentorship? Regular meetings? Training? Availability of services to offer?* Within CHIEDZA, what do you think has enabled you to provide such a high quality, non-judgemental service, as valued by the clients? What makes you feel valued as a provider?
Ending	Offer space to add anything extra, and then close the interview	I have come to the end of the questions and topics that I had wanted to discuss. Is there anything that I haven't asked you about that you would like to share? Do you have any questions that you would like to ask me? I really appreciate you taking the time to answer all these questions, and to have taken part in the process evaluation interviews. We really value your perspective and your stories: thank you for sharing them in so much detail.