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Family planning services in rural southern Tanzania for women who would
like to delay their first birth: a mixed method study

YOVITHA SEDEKIA

Thesis submitted in accordance with the requirements for the degree of

Doctor of Philosophy of the

University of London

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Department of Disease Control,

Faculty of Infectious and Tropical Diseases,

London School of Hygiene and Tropical Medicine

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Research group affiliation(s): The EQUIP Consortium

Declaration

London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
www.lshtm.ac.uk



Registry

T: +44(0)20 7299 4646

F: +44(0)20 7299 4656

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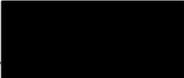
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“...for I know the plans I have for you,” declares the LORD, “plans to prosper you and not to harm you, plans to give you hope and a future...” Jeremiah 29:11. New International Version

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Abstract

Background

Family planning metrics categorise women as those desiring to space or to limit future births, or according to their age. In Tanzania, we extended this categorisation to explore the family planning needs of women who want to delay their first birth.

Aim

To investigate the characteristics, needs, sources of modern contraception and quality of care for women who want to delay their first birth; and to explore community and health provider's perceptions about using modern contraception to delay first birth in Tanzania.

Methods

In 2014, a mixed methods study was implemented in southern Tanzania. Methods included analysis of household survey interviews with women aged 13-49 years to determine practice, health facility data to assess provision of services, and in-depth interviews and focus group discussions for evidence of perceptions and acceptability.

Results

From the survey, 4% of 2128 women aged 13-49 years were categorised as 'delayers of first birth'. The majority were teenagers (82%) and unmarried (88%). About half were currently using modern contraception, predominantly injectables, accessed from public facilities. Forty one percent of the delayers had unmet need for modern contraception. Indicators of quality service provision were low for all women. From qualitative interviews, the majority of community members and health care providers said that the use of modern contraception to delay first birth was widely acceptable for students, young, unmarried and women in unstable marriage, but implants and intra-uterine devices and systems were perceived as inappropriate

methods. A lack of consistency on the definition of 'young' had direct implications for access, autonomy, confidentiality and consent for young people.

Conclusions

A small but important group of sexually active women desire to delay their first birth. These women have very high unmet needs for modern contraception. Routinely categorising and measuring delayers of first birth acknowledges their unique needs and could help to catalyse a policy and programmatic response.

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List of Acronyms

DHS:	Demographic and Health Survey
DRCHco:	District Reproductive and Child Health care Coordinator
EQUIP:	<u>Expanded Quality Management Using Information Power</u>
RRCHco:	Regional Reproductive and Child Health care Coordinator
FP:	Family Planning
FP2020:	Family Planning 2020
ICPD:	International Conference on Population and Development
IEC:	Information Education and Communication
IUDs:	Intra-uterine Devices and systems
LSHTM:	London School of Hygiene & Tropical Medicine
mCPR:	Contraceptive Prevalence Rate, modern methods
MDGs:	Millennium Development Goals
MICs:	Multiple Indicator Cluster surveys
SDGs:	Sustainable Development Goals
WHO:	World Health Organisation

1 Chapter 1: Introduction

This chapter introduces global initiatives for family planning services, summarises the evolution of rights-based family planning services, the World Health Organisation's recommendations on family planning information and services, and provides a critical review of evidence around how metrics for family planning indicators are reported in large scale surveys. It also provides evidence of how factors that influence or inhibit use of contraception are reported in qualitative studies.

1.1 Global Initiatives for Family Planning Services

The Sustainable Development Goals (SDGs) targets 3.7 and 3.8 and 5.6 (1) and the United Nations Global Strategy 2.0 for Women's, Children's and Adolescents' Health, 2016-2030 (2, 3) initiatives call for ensuring universal access to sexual and reproductive health-care services and health rights, including family planning by 2030. Prior to these initiatives, during the 2012 London summit on family planning, commitment and additional funding for 69 poorest countries was generated with a goal of having an additional 120 million women and adolescent girls become users of modern contraceptives by 2020 (4, 5). In 2005, Millennium Development Goal (MDG) 5, target 5B "to achieve universal access to reproductive health by 2015", included indicators on the contraceptive prevalence rate (indicator 5.3) and unmet need for family planning (indicator 5.6) (6). The initiatives and recent movements to invest in and increase access to family planning services (7-10) are based on both evidence that family planning has demonstrable impact on maternal and child health (11-16), economy and development (17), and also on an increased focus on the rights of individuals and couples to have equitable access to a full range of contraceptives, to decide freely and responsibly the number and spacing of their children, free of discrimination, and to have the means to do so (18, 19).

1.2 Evolution of Rights-based Voluntary Family Planning Services

The roots of “reproductive health and rights” go back to family planning and population issues that were first raised in the 1950s to 1980s during world population conferences in Rome (1954) (20), Belgrade 1965 (21), Bucharest (1974) (22) and in Mexico City (1984) (23). By 1993, international human rights treaties were being increasingly applied to expose how laws that obstructed women’s access to their reproductive health services violated their basic rights (24). The paradigmatic shift from a demographic driven approach that focused on reducing high fertility to the recognition of reproductive rights as fundamental human rights was marked by the Programme of Action arising from the International Conference on Population and Development (ICPD) in 1994 (25). Affirmed by 179 countries, the ICPD recognised contraceptive information and services as essential to ensuring reproductive health and rights (26). The international community has reaffirmed the rights of women and adolescents to voluntary family planning since the ICPD and adopted the Millennium Development Goal 5B in 2005 and SDGs 3 and 5 (targets 3.7, 3.8 and 5.6) in 2015 and updated the United Nations Global Strategy 2.0 for Women's, Children's and Adolescents' Health, 2016-2030 on health and universal access to sexual and reproductive health care including family planning (1-4) (Box 1.1). However, disparities in access and use of family planning services have been reported to be large and common in sub-Saharan Africa (27-29)

Box 1.1: List of Core Indicators for Monitoring Global Progress in Family Planning Services

Sustainable Development Goals and The United Nations Global Strategy 2.0 for Women's, Children's and Adolescents' Health (2016–2030)

1. Indicator 3.7.1: Proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods
2. Indicator 3.7.2: Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group
3. Indicator 3.8.1: Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)
4. Indicator 5.6.1*: Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care
5. Indicator 5.6.2: Number of countries with laws and regulations that guarantee women aged 15-49 years access to sexual and reproductive health care, information and education

Family Planning 2020[¥]

1. Number of additional users of modern methods of contraception
2. Contraceptive Prevalence Rate, Modern Methods (mCPR)
3. Percentage of women with an unmet need for modern methods of contraception
4. Percentage of women whose demand is satisfied with a modern method of contraception

Millennium Development Goals 5B (2005)

1. Contraceptive prevalence rate
2. Unmet need for family planning

**Indicator not covered in the Global Strategy for Women's, Children's and Adolescents' Health (2016–2030)*

¥Indicators are reported annually for 69 Family Planning 2020 focus countries

Sources: (1-4)

1.3 Family Planning Information and Services: WHO

Recommendations

In 2014, the World Health Organisation (WHO) developed a guideline to accelerate progress towards attainment of the international development goals and targets in sexual and reproductive health, and particularly contribute to meeting unmet need for contraceptive information and services (30). The document intended to provide guidance on actions needed to ensure that different human rights dimensions are systematically and clearly integrated into the provision of contraceptive information and services. The guideline targeted policy-makers, managers, providers and other stakeholders in the health sector at national and international levels and it required specific elaboration and adaptation to particular country contexts. The recommendations included non-discrimination, availability, accessibility, acceptability and quality of family planning information and services. Other recommendations included informed decision-making, privacy and confidentiality, participation and accountability (30). The following principles summarised in Table 1.1 were defined.

Table 1.1: WHO summary recommendations

<p>Non-discrimination in provision of contraceptive information and services</p> <ul style="list-style-type: none"> ▪ Access to comprehensive contraceptive information should be provided equally to everyone voluntarily, free of discrimination, coercion or violence (based on individual choice). ▪ Laws and policies should support programmes to ensure that comprehensive contraceptive information and services are provided to all segments of the population. Disadvantaged and marginalised populations should be given special attention in their access to these services.
<p>Availability of contraceptive information and services</p> <ul style="list-style-type: none"> ▪ Integration of contraceptive commodities, supplies and equipment, covering a range of methods, including emergency contraception, within the essential medicine supply chain to increase availability. Invest in strengthening the supply chain where necessary in order to help to ensure availability.
<p>Accessibility of contraceptive information and services</p> <ul style="list-style-type: none"> ▪ Provision of scientifically accurate and comprehensive sexuality education programmes within and outside of schools that include information on contraceptive use and acquisition. ▪ Eliminating financial barriers to contraceptive use by marginalised populations including adolescents and the poor, and make contraceptives affordable to all. ▪ Interventions to improve access to comprehensive contraceptive information and services for users and potential users with difficulties in accessing services (e.g. rural residents, urban poor, adolescents). ▪ Special efforts to be made to provide comprehensive contraceptive information and services to displaced populations, those in crisis settings, and survivors of sexual violence, who particularly need access to emergency contraception. ▪ Contraceptive information and services, as a part of sexual and reproductive health services, to be offered within HIV testing, treatment and care provided in the health-care setting. ▪ Comprehensive contraceptive information and services be provided during antenatal and postpartum care.

Table 1.1 [Contn...]

<ul style="list-style-type: none">▪ Comprehensive contraceptive information and services be routinely integrated with abortion and post-abortion care.
<ul style="list-style-type: none">▪ Mobile outreach services to be used to improve access to contraceptive information and services for populations who face geographical barriers to access.
<ul style="list-style-type: none">▪ Elimination of third-party authorisation requirements, including spousal authorisation for individuals/women accessing contraceptive and related information and services.
<ul style="list-style-type: none">▪ Provision of sexual and reproductive health services, including contraceptive information and services, for adolescents without mandatory parental and guardian authorisation/notification, in order to meet the educational and service needs of adolescents.
Acceptability of contraceptive information and services
<ul style="list-style-type: none">▪ Gender-sensitive counselling and educational interventions on family planning and contraceptives that are based on accurate information, that include skills building (i.e. communications and negotiations), and that are tailored to meet communities' and individuals' specific needs.
<ul style="list-style-type: none">▪ Follow-up services for management of contraceptive side-effects be prioritised as an essential component of all contraceptive service delivery. Appropriate referrals for methods not available on site should be offered and available.
Quality of contraceptive information and services
<ul style="list-style-type: none">▪ Quality assurance processes, including medical standards of care and client feedback, to be incorporated routinely into contraceptive programmes.
<ul style="list-style-type: none">▪ Provision of long-acting reversible contraception (LARC) methods to include insertion and removal services, and counselling on side-effects, in the same locality.
<ul style="list-style-type: none">▪ Ongoing competency-based training and supervision of health-care personnel on the delivery of contraceptive education, information and services. It also recommends that competency-based training should be provided according to existing WHO guidelines.

Table 1.1 [Contn...]

Informed decision-making of contraceptive information and services
<ul style="list-style-type: none">▪ The offer of evidence-based, comprehensive contraceptive information, education and counselling to ensure informed choice.
<ul style="list-style-type: none">▪ Every individual is ensured the opportunity to make an informed choice for their own use of modern contraception (including a range of emergency, short-acting, long-acting and permanent methods) without discrimination.
Privacy and Confidentiality
<ul style="list-style-type: none">▪ Privacy of individuals is respected throughout the provision of contraceptive information and services, including confidentiality of medical and other personal information.
Participation
<ul style="list-style-type: none">▪ Communities, particularly people directly affected, have the opportunity to be meaningfully engaged in all aspects of contraceptive programme and policy design, implementation and monitoring.
Accountability
<ul style="list-style-type: none">▪ Effective accountability mechanisms are in place and are accessible in the delivery of contraceptive information and services, including monitoring and evaluation, and remedies and redress, at the individual and systems levels.
<ul style="list-style-type: none">▪ Evaluation and monitoring of all programmes to ensure the highest quality of services and respect for human rights must occur. In settings where performance-based financing occurs, a system of checks and balances should be in place, including assurance of non-coercion and protection of human rights. If performance-based financing occurs, research should be conducted to evaluate its effectiveness and its impact on clients in terms of increasing contraceptive availability.

Source: World Health Organisation (30)

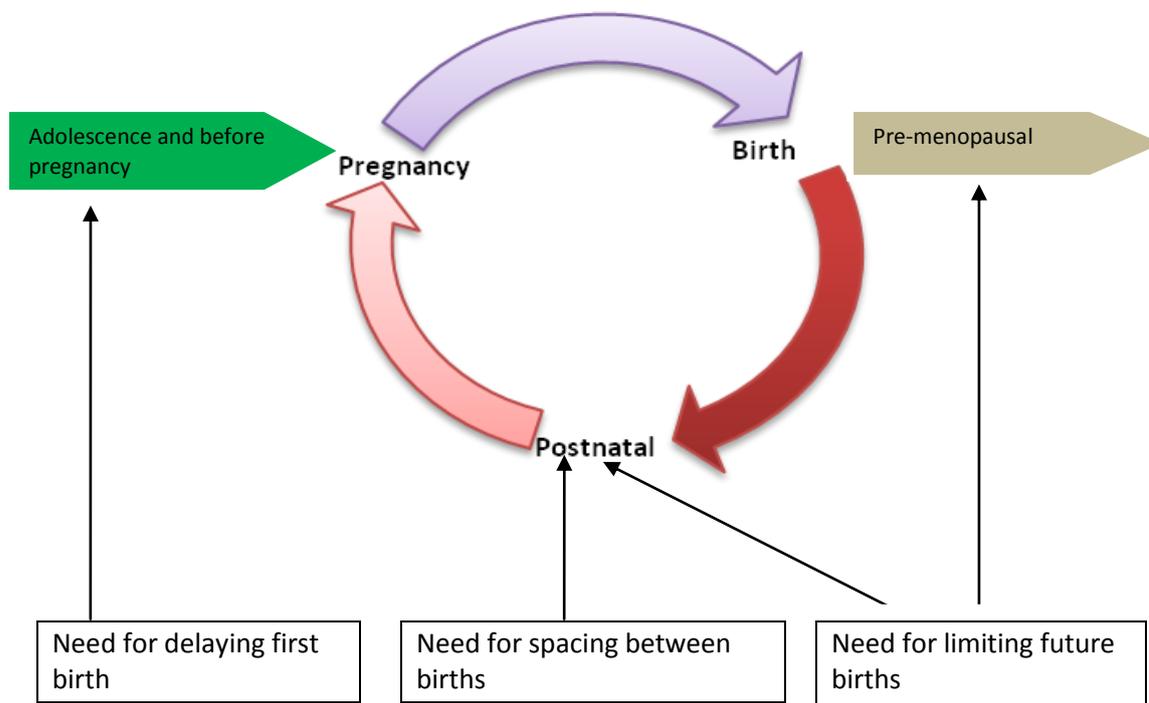
1.4 Scope and Composition of the Thesis

The growing focus on adolescent's need for family planning (31-36) has led to purposively including young people into global initiatives (2, 3), but in my view, fertility intention or motive is of critical importance in addition to age. Timaeus et al., 2008 (37) reported that the demographic literature predominantly classifies fertility motives to use birth control into exclusive and exhaustive theoretical categories:- limiting family size and spacing future birth. The report suggested postponement or delaying birth as a third motive of using contraception (37). According to the author, this motive differs from birth spacing because women delay or postpone their next birth for indefinite periods for reasons unrelated to the age of their youngest child, but without deciding to limit their future birth (37). This conceptualisation of delaying or postponement however, is applied to women of different parities and does not focus exclusively on postponing or delaying a first birth.

This PhD thesis hypothesised that, perception, demand and service provision of family planning varies according to the life stage of reproduction women are at: whether they would like to delay a first birth, space (or delay) subsequent births, or limit future birth. Conceptually these different reproductive stages informed the thesis enquiry and design (Figure 1.1). While it is reasonable to expect that the first life stage of reproduction:- (delaying first birth), overlaps with adolescent age (10-19 years), it can also go beyond the adolescent age (38) as education opportunities and the right to determine timing of pregnancy becomes more prevalent (18, 39) as well as increased women's age at first marriage (40). In addition, despite the stigma around sexual intercourse among young adolescents and unmarried women in low and middle income countries including Tanzania (41, 42), some adolescent girls are sexually active even before the age of 15 years (43, 44) and sexual intercourse among unmarried women is common (45-47). Despite this context, young adolescents, unmarried women and nulliparous face individual, socio-cultural and

health systems challenges in accessing family planning services (42, 48-52). In some societies, even married women have been reported to be pressured to prove their fertility as soon as they get married (53, 54). These pressures might make it harder for women to delay their first birth even if they wanted to do so. The thesis therefore, sought to understand the extent to which women who would like to delay their first birth have their family planning needs met and to explore individual, community and providers perceptions about use of modern contraception to delay first birth. It also sought to describe sources of modern contraception among the delayers of first birth and to assess the quality of family planning services provided to the delayers of first birth. Since women who want to delay their first birth do not exist in isolation, they were contrasted to women who would like to space their subsequent pregnancies or limit (permanently stop) their future births, in order to contextualise the results.

Figure 1.1: Family planning need across women's life stages of reproduction



Source: Adapted and modified from continuum of care for newborn and maternal health by Kerber K et al, 2007 (55)

Subsequent sections and chapters in this thesis will address the following areas:

- Section 1.5: A literature review section that provides a summary of how metrics on family planning indicators are categorised in large scale surveys. The section also summarises information on current use, unmet need, demand, sources of contraception and determinants of use of family planning in East Africa and reviews the national policies and guidelines for provision of family planning services in Tanzania.
- Section 1.6: Provides a rationale for this thesis
- Chapter 2: Provides aims and objectives
- Chapter 3: Describes the conceptual framework for this thesis
- Chapter 4: Summarises methods for individual studies
- Chapter 5: Provides an overview of results
- Chapters 6: Results giving contextual background on facility readiness to provide family planning services in the study setting
- Chapter 7-9: Constitute results for this thesis published or submitted to a journal for publication
- Chapter 10: Synthesises all findings from each objective and discusses these findings based on existing knowledge identified in the literature review. Finally, it presents implications for policy and practice, and for research and general conclusions

1.5 Literature Review

1.5.1 Reporting of Family Planning Indicators in Large Scale Surveys

In 1999, a special session to review progress towards the implementation of the Programme of Action of the 1994 International Conference on Population and Development was held by the United Nations General Assembly. During the session, the international community agreed that:

"Where there is a gap between contraceptive use and the proportion of individuals expressing a desire to space or limit their families, countries should attempt to close this gap by at least 50 per cent by 2005, 75 per cent by 2010 and 100 per cent by 2015" (56).

Researchers have since then continued to estimate and report on family planning indicators by analysing data from population-based surveys such as Demographic and Health Surveys (DHS) (57), Multiple Indicator Cluster surveys (MICs)(58) and specific national representative surveys. DHS and MICs are considered as a gold standard large-scale surveys for population, health and nutrition data in low and middle income countries. Indicators on family planning are among those included in the two surveys (DHS and MICs) under reproductive health modules. Though DHS includes more indicators on family planning than MICs does, the following indicators are included in both types of survey: contraceptive prevalence rate, unmet need for, demand and demand for family planning satisfied. A list of the indicators, their definitions and how they are estimated is provided in table 1.2.

Table 1.2: Family planning indicators included in both DHS and MICS: Definitions, Numerators and Denominators

Demographic and Health Survey (59)				Multiple Indicator Cluster surveys (58)		
Indicators	Definition	Numerator	Denominator	Definition	Numerator	Denominator
Contraceptive prevalence rate [#]	Percentage of all women, of currently married women and of sexually active unmarried women by contraceptive method currently used, according to age.	Number of currently married/in-union or sexually active unmarried women aged 15-49 who are using (modern or traditional) a contraceptive method.	Number of currently married/in-union or sexually active unmarried women aged 15-49 interviewed.	Proportion of currently married women or in-union aged 15-49 years that are using (or whose partner is using) a contraceptive method (either modern or traditional).	Number of currently married women or in-union aged 15-49 years who are using (or whose partner is using) a (modern or traditional) contraceptive method.	Total number of women aged 15-49 years that are currently married or in-union.
Unmet need [¥]	The percentage of women who do not want to become pregnant but are not using contraception.	Number of women (currently married or in-union) who are not using contraception, are fecund and desire to either stop child bearing or postpone their next birth for at least two years plus pregnant women whose current pregnancy was unwanted or mistimed plus women in post-partum amenorrhea who are not using contraception and at the time they became pregnant had wanted to delay or prevent the pregnancy.	Number of women of reproductive age (15-49 who are married or in a union interviewed.	Proportion of women that are currently married or in-union that have an unmet need for contraception.	Number of women that are currently married or in-union aged 15-49 years that are fecund and want to space their birth or limit the number of children they have and that are not currently using contraception.	Total number of women aged 15-49 years interviewed that are currently married or in-union.

Table 1.2 [Contn...]

Demographic and Health Survey (59)				Multiple Indicator Cluster surveys (58)		
Indicators	Definition	Numerator	Denominator	Definition	Numerator	Denominator
Demand	The sum of unmet need plus total contraceptive use.	-	-	Current use of contraception, plus unmet need for contraception.	-	-
Demand satisfied	Total contraceptive use divided by the sum of unmet need plus total contraceptive use.	Number of women currently married or in-union aged 15-49 who are currently using contraception.	Number of currently married women or in-union interviewed aged 15-49.	Proportion of total demand for contraception (defined as current use of contraception, plus unmet need for contraception) currently satisfied.	Number of women currently married or in-union that are currently using contraception.	Number of women currently married or in-union that have an unmet need for contraception or that are currently using contraception.

#DHS term it as Current use of contraception, [‡]DHS's revised definition-calendar data removed from the calculation and a question on ever-use of contraception has been added to the MICS questionnaire to harmonise the algorithm for calculating infecundity with MICS and DHS surveys (60)

While the two types of surveys have commonalities in measurements in family planning indicators, they differ in some aspects; for example, unlike DHS, MICS does not include sexually active unmarried women in the contraceptive prevalence indicator. Estimates from DHS on the other hand are commonly reported for married or in-union women aged 15-49 years - a similar limitation reported by Gray et al (61) and for spacing and limiting future birth. In addition, researchers accessing these data also adapt the definitions sometimes making comparisons problematic between time and place (62-64).

1.5.2 Family Planning Indicators since ICPD in 1994: Success for sub-Saharan Africa

By 2015, contraceptive use had increased among almost all countries where prevalence was less than 25 per cent among married or in-union women in 1994, but only three sub-Saharan African countries (Malawi, Rwanda and Zambia) had substantial increases averaging at least 1.5 percentage points per year (65). In addition, of the 17 countries that experienced either no increase or slow increase of less than 0.5 percentage point per year, 15 were from sub-Saharan Africa (65). sub-Saharan Africa countries also experienced small or no reduction in unmet need for family planning since ICPD in 1994 except Swaziland that reduced unmet need by at least 50 per cent (65).

In 2015, contraceptive prevalence (any method) and unmet need among married or in-union women aged 15-49 years in sub-Saharan African countries were 28% and 24%, respectively and varied between regions (65). Contraceptive prevalence rate ranged from 17% in Western Africa to 64% in Southern Africa, whereas, unmet need ranged between 13% in Southern Africa and 26% in Middle Africa (65).

An analysis tracking changes in states of contraceptive use over time in 22 sub-Saharan Africa countries using DHS data collected between 1990 and 2011 found that contraceptive

prevalence rate increased by 13 percentage points (from about 17% to 30%) across all 22 countries between each country's baseline and most recent survey (66). The largest increase in contraceptive use was among women aged 20-44 years, whereas, 15-19 years and 45-49 years old women experienced smaller increases (66). Unmet need decreased by an average of 4 percentage points (from 28% to 24%) and the proportion of women with no need decreased by an average of 5 percentage points (from 39% to about 34%) over the same period (66). Decline in unmet need was concentrated in middle age groups between 25 and 39 years and each experienced decreases of 4-6 percentage points, whereas a decline in no need was concentrated among younger women aged 15-29 years, by 5-9 percentage points (66). According to the analysis, the large proportion of increase in contraception use was mainly attributed to decreases in the percentage of women with no need, especially among young women, than to decreases in the proportion with unmet need (66).

1.5.3 Family Planning Indicators in the MDG Era: Measurements and Success for sub-Saharan Africa

As listed in Box 1.1, global progress for family planning during the MDG era was measured through contraceptive prevalence rate and unmet need for family planning indicators (67). Between 2000 and 2015- the MDGs era, globally, use of contraceptives among married or in-union women aged 15-49 years increased by 3.4% as compared to 11% between 1990 to 2000 (68). However, sub-Saharan African regions that had relatively low levels of use experienced faster increases between 2000 and 2015 (61% in East and Southern Africa region and 29% in West and Central Africa region). These regions also had a higher annual rate of increase of 1% or more in the contraceptive prevalence rate (3.2% in East and Southern Africa region and 1.7% in West and central Africa region), compared to the global average of 0.2% (68).

Unmet need for family planning among women aged 15-49 years, married or in-union was reported to have declined globally and in all regions since 2000 except in West and Central Africa regions where the rate remained relatively stable (68). Globally the unmet need for family planning among women aged 15-49 years, married or in-union was 13% in 2000 and 12% in 2015. East and Southern Africa region was reported to experience the fastest decline in unmet need. While unmet need for family planning in West and Central Africa region among women aged 15-49 years, married or in-union remained at 24% since 2000, in East and Southern Africa region it decreased from 28% in 2000 to 23% in 2015 (68).

1.5.4 Family planning indicators post-MDG era: Measurements and projections for sub-Saharan Africa

Global progress for family planning during the post- MDG era is measured or will be measured through using global indicators as listed in Box 1.1. During the time period of the 2030 Agenda for Sustainable Development (2015 to 2030), contraceptive use among current married or in-union women in sub-Saharan Africa is projected to increase from 17% to 27% in Western Africa, 23% to 34% in Middle Africa and 40% to 55% in Eastern Africa (65). However, the unmet need of family planning among current married or in-union women will remain high, above 20% in all regions of sub-Saharan Africa except in East Africa where the unmet need is projected to decrease from 24% to 18% (65). Of concern, measurement of some family planning indicators such as “additional new users” and unmet need is challenging (62-64).

Of note, while disaggregation of family planning indicators for the adolescent age-group is now strongly promoted, measurement approaches still do not focus on women who would like to delay their first birth, as such missing the information on the success on family planning programmes to support women who are sexually active but do not want to start childbearing.

1.5.5 Current use, Unmet need and Demand for Family Planning in East Africa

In order to find out whether there was an evidence gap on estimating family planning indicators for women who would like to delay their first birth beyond Tanzania, I carried out a critical review of available evidence on how family planning metrics derived from nationally-representative household surveys are categorised. An evidence synthesis was also carried out on who qualitative research on family planning has focused on. Details of this review are documented in Appendix 11.1. Medline, PubMed and Google scholar were searched for peer reviewed reports. Grey sources and Google were searched for relevant grey literature and theses. There are a lot of reports and peer reviewed publications on family planning originating from low and middle income countries using DHS datasets or any other population or facility-based surveys as well as qualitative studies. For example, Tanzania so far has eight DHS reports apart from peer reviewed papers published from other population-based surveys or secondary data analysis of the Tanzania DHS data sets. Therefore, in order to limit my search to a manageable literature, inclusion and exclusion criteria that included location, year of publication, aim of the research, study design and language were set and are listed in table 1.3.

Table 1.3: Literature search: Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Date published	From 2000 onwards	Before 2000
Location	Five East Africa community member countries* (Tanzania, Kenya, Uganda, Rwanda and Burundi)	High income countries and low income countries that did not include or specifically mention any of the 5 East Africa community members country
Research/report focus	<ol style="list-style-type: none"> 1. Use of, or unmet need or demand for, or sources of contraception 2. Determinants or factors influencing or inhibiting service provision and use of contraception 3. Quality of family planning services 4. Mixed focuses (1-3 above) 	Any other research focus
Study design	Quantitative, qualitative, reviews of existing literature or mixed methods	-
Language	English	Any other language

*Limited to the five East African member countries because of shared cultural norms and close interaction of people from the member countries.

Overall, 84 peer reviewed and grey reports about family planning services and information were reviewed (Appendix 11.1). The reports were published or reported between March 2000 and May 2017. Thirteen reports were from Kenya (69-81), 10 from Rwanda (82-91), 13 from Tanzania (92-104), 24 from Uganda (42, 50-52, 54, 105-123) and 24 from low and middle income countries that included any of the five East African community members country (48, 60, 124-145). Most of the reports were between 2005 and 2015-the MDG 5B

era with a total of 56 reports reviewed. Burundi was not included because all reports were in French.

Of the reports listed in Appendix 11.1, only four (one qualitative study (54), one mixed method study (50), one review of published qualitative reports (48), and one survey (133) included people younger than 15 years in their analysis.

Of the reports listed in Appendix 11.1, only two reports from surveys (133, 140) had their estimates for the family planning indicators (current use, unmet need and demand) categorised for women who would like to delay their first birth as a separate group from spacers' category or from all women. In addition, while most of the qualitative studies included young people aged 15-24 years and unmarried women, only six (50-52, 54, 77, 122) reported factors that influence or inhibit use of modern contraception for nulliparous women.

1.5.5.1 Current use, Unmet need and Demand for Delaying First Birth

Currently there is little attempt to disaggregate evidence for this group of women. Many large scale surveys report about demand, use and unmet need for family planning for spacing subsequent births and limiting future births (60, 70, 71, 73, 74, 80, 82-86, 88-90, 92, 96, 98, 101, 104-107, 109, 123, 125, 127, 129, 131, 144) (Appendix 11.1) or they use the term delaying birth without specifying whether it is delaying first or subsequent births (65). In addition, whenever the indicators are disaggregated according to age of women, the cut-off in most large surveys has been 15-49 years, a conventional description of women's reproductive age, excluding years below 15.

Evidence from one East African study suggested that use of family planning methods among married girls aged 12-17 was 21% in Tanzania (31% of whom had never given birth) and 26% in Uganda (20% of whom had never given birth (133).

Furthermore, according to the recent analysis of DHS data in 52 countries including five from East Africa, married women rarely had unmet need for delaying first birth:-none for Tanzania, Rwanda and Burundi and one percent each for Uganda and Kenya (140).

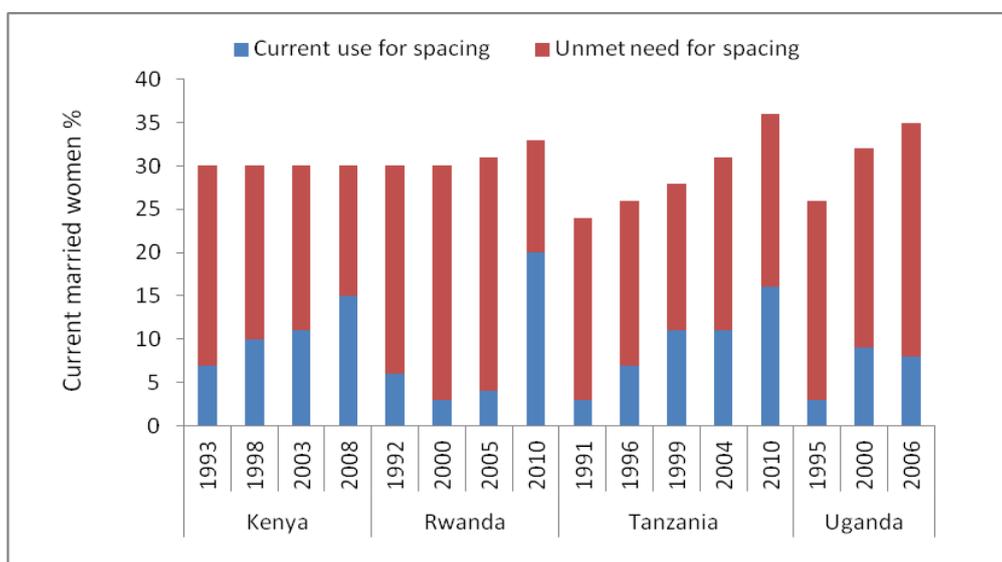
However, sexually active never-married women were most likely to have unmet need for delaying first birth. Twenty nine percent of sexually active never-married women aged 15-49 years in Tanzania, 34% in Kenya, 36% in Uganda and 37% in Rwanda were reported to have unmet need for delaying their first birth (140).

Despite the evidence that 22% of adolescents in Kenya, 15% in Rwanda and 8% in Tanzania reported having sexual intercourse before the age of 15 years (43), little is known in East Africa about current use, unmet need and demand for all sexually active including younger adolescents (below 15 years) who would like to delay their first birth.

1.5.5.2 Current use, Unmet need and Demand for Spacing and Limiting Births

Figure 1.2 and 1.3 show time trends data for spacing and limiting future births in four East African countries. The data suggest that the proportion of women who would like to increase intervals between pregnancies and limit future child bearing increased steadily between 1992 and 2010 (130). In some countries like Kenya, demand for limiting was consistently higher than for spacing and there was a sharp increase in demand for limiting in Rwanda in 2010. Unmet need for spacing and for limiting child bearing decreased slightly but was still high in both countries. With the exception of Tanzania, the data show greater use for limiting than spacing (130).

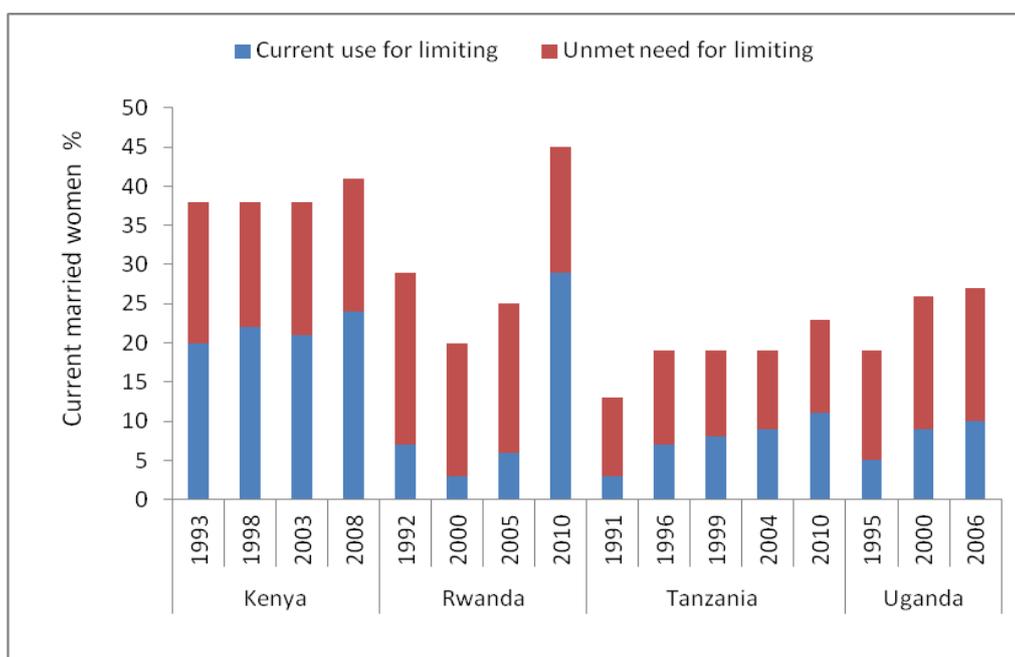
Figure 1.2: Percentage of currently married women in need or using modern methods for spacing



Demand: the total of the unmet need and current use

Source: DHS analytical Studies No 28 (130)

Figure 1.3: Percentage of currently married women in need or using modern methods for limiting



Demand: the total of the unmet need and current use

Source: DHS analytical Studies No 28 (130)

According to each country's recent DHS report, demand for spacing and limiting was almost the same among married women in Rwanda (90) whereas, women in Tanzania had more demand for spacing than limiting (104) and women in Kenya had more demand for limiting than for spacing (80). (Uganda 2016 DHS final report not available at time of writing).

1.5.6 Sources of Modern Contraception in East Africa

According to each country's recent DHS, government or parastatal health facilities were the main source for contraception for 91% of users in Rwanda (90), 60% in Tanzania (104), 60% in Kenya (80) and 57% in Uganda (106). Of note, none of the reporting of source of contraception focuses on women delaying first birth in particular, or spacing or limiting future births. The metrics are reported for all current users disaggregated by method types or social and socio-economic status.

1.5.7 Underlying Demand and Supply-side Determinants for Use of Family Planning in East Africa

The ability of women, men and young people to access family planning services when they want to prevent or delay pregnancy at different stages of their lives is influenced by individual, social and cultural, and health systems determinants (146). Although the impact of each underlying determinant depends on the context, these determinants are often interlinked and modify each other. For instance, higher education is associated with higher income and both are strongly associated with use of contraceptives (95, 111, 112, 130, 131) whereas, less education is associated with more unmet need for family planning.

Furthermore, health systems in sub-Saharan countries struggle to provide health services in rural areas. Therefore, use of family planning has been reported to be higher among women in urban areas than their counterparts in rural areas (84, 111, 112, 115, 116, 118, 125). However, research of the determinants is not often reported to distinguish between different life stages of reproduction (delayers of first birth, spacers or limiters of future

birth) and when it does make this distinction it focuses least on women who would like to delay their first birth. A summary of the direction of effect for individual, socio-cultural and health systems level determinants is provided below, followed by a comment on evidence about key determinants for the adolescent age-group.

Individual determinants

Individual determinants for using modern contraception include wealth (quintiles), area of residence, years of schooling, marital status, age, exposure to media message about family planning, number of children desired, parity, number of living children and desired timing of the next child, (69, 70, 74, 75, 84, 87, 89, 95, 100, 101, 107, 110-112, 114-118, 124, 125, 129-131, 138, 141, 142) (Appendix 11.1).

Household wealth: Women in higher wealth quintiles are more likely to access health care services or afford contraceptive costs (135), as such, they are more likely to use modern contraceptive methods than women from poor households (75, 95, 100, 110, 112, 118, 125, 130, 138). For example, in Kenya, Tanzania and Uganda, women from the poorest wealth quintile were twice as likely as women in the richest quintile to use non-modern contraceptive methods or no method at all (138). Wealth is also highly correlated with place of residence, with urban areas having more positive family planning outcomes than rural areas (84, 111, 112, 115, 116, 118, 125).

Maternal education level: Higher education level is associated with better income, better access to information, exposure to information and more independence in decision making about reproduction, both associated with high utilisation of health care services. As such, use of modern contraception at all stages has been reported to be higher among women with more education than those with less or no education (69, 70, 75, 84, 95, 100, 110, 112, 116-118, 125, 131, 138).

Marital status: Most DHS data are reported for married women aged 15-49 years thus provide limited evidence for unmarried women. However, unmarried women have been reported in some studies to be more likely to adopt contraceptive methods as a precaution for sexually transmitted diseases and pregnancies than married women (69, 124). Linked to marital status however, is the reported frequency of sexual intercourse. Infrequent sex has also been reported to lead to lack of intent to use modern contraception at all women's life stages of reproduction (131, 134, 137, 140), and it is one of the reasons cited by a large percentage of women from low and middle income countries for not using modern contraception (140).

Age: Age influences family planning practices at different stages of women's life. Younger adolescents are less likely than older women to have ever-used or currently be using modern contraceptive methods (69, 75, 115, 118, 124, 125), and as expected, the probability of using long-term methods increases with age, whereas, the probability of using short term methods decreases with age (70).

Exposure to family planning media: Exposure to media such as radio, newspaper and television provides awareness of family planning services, method choice and where the services are provided. It has been reported to be positively associated with high utilisation of any modern contraceptive method among women (70, 75, 116, 130, 138). Beyond exposure, there is a positive link between knowledge of and perceptions about family planning methods and positive family planning outcomes. The fear of side effects has commonly been reported to lead to a lack of intent to use modern contraception at all women's life stages of reproduction (42, 48, 54, 77, 87, 88, 95, 99, 115, 126, 131, 134, 137, 140, 142, 147) (Appendix 11.1). Indeed, the DHS analysis from 18 sub-Saharan countries found that the majority of contraceptive users had not been informed about potential side effects for their method, or told about other potential methods that could be used (131).

As such, some users have been reported to have learnt about both true and perceived side effects of contraception from their social networks (77).

Number of children desired: Having attained a desired number of children or more is associated with high utilisation of family planning services and method choice (89, 116, 130, 131, 138). For example, in the analysis of DHS data from 18 sub-Saharan African countries, many women who were using permanent contraceptive methods to limit their future births had more than their ideal number of children (131).

Parity: Parity is related to the number of desired children. Higher number of live births has been reported to be associated with increased use of modern contraception (84, 95, 125). Regarding parity and women's life stages of reproduction, in the analysis of DHS data from Rwanda and Madagascar, women with met need for spacing in Rwanda were more likely to have six or more children (125).

Timing of the next child: Timing of the next child is related to intent to use modern contraceptive methods. For example, women with mistimed pregnancy history have been reported to be less likely to use a non-modern contraceptive method or no method at all during their most recent sexual encounter as compared to women who had a wanted pregnancy history (138).

Social and cultural determinants

Social and cultural determinants include opposition and disapproval (or support) from male partners and parents or peers, religious belief, and cultural norms and expectations like wishing to have a big family (42, 51, 54, 81, 85, 87-89, 99, 100, 103, 105, 119, 122, 125, 130, 140-142, 147) (Appendix 11.1).

Opposition and disapproval (or support) from male partners, parents or peers: As expected, the opposition or disapproval from family members or peers can hamper the use

of modern contraception at all women's life stages of reproduction (42, 54, 87, 99, 100, 130, 140-142). Beyond having a negative effect on uptake, some women have reported using the methods in secret without their husbands or relatives' awareness (42, 99).

Religious and traditional beliefs: Societal morals and values often embedded in religion, impact on the decision making of sexual activities, contraceptive practices and method choice at all women's life stages of reproduction. Silence of some religious leaders about use of modern contraceptive methods, religious beliefs that couples ought to produce children, and use of modern contraceptive methods being perceived as a sin has been reported as an opposition to the use of modern contraception (42, 89, 100, 103, 119, 141). However, despite the opposition, there are examples from East Africa of studies reporting no impact of religion on contraceptive use among women aged 15-49 years (70, 81).

Cultural norms and expectations: Cultural norms and expectations impact on the decision making on sexual activities, family planning practices and method choice. Cultural norms such as stigma around sexual activities and contraceptive use among young and unmarried women, the value of large families, male dominance, couples being expected to start childbearing as soon as they get married have all been reported to inhibit family planning practices and method choice (54, 88, 103, 119, 142, 147). For example, Adams et al., 2013 reported that approximately half of newly married adolescents were pressured to start child bearing in Uganda (54), which might make it harder to adopt modern contraceptive to delay first birth even if they wanted to do so.

Health systems determinants

Health systems determinants include health providers attitude; long distances to health facilities; and limited method choice due to stock out or work-force constraints (42, 50, 51, 69, 75, 79, 87, 88, 94, 97, 102, 103, 114, 126, 145) (Appendix 11.1).

Provider attitudes: The attitude of health care providers can either demoralise clients from or motivate clients to seek and use health services, including family planning services. Examples of reported provider attitudes that negatively affect family planning outcomes at all women's life stages of reproduction are a reluctance to promote contraceptive use by persons younger than 18 years old, unmarried, still in school and those without children; and misconception that contraceptive methods can lead to infertility among the women (51, 79, 94, 103).

Distance from health facility: Long distance (more than five kilometres) to the health facility has been reported to limit accessibility of modern contraception among women, whereas short distance is associated with high utilisation of family planning services (75, 97, 114).

Limited choice: Availability of a range of contraceptive methods facilitates method choice. However, stock-outs of contraceptive methods at health facilities makes it difficult for clients to choose and have confidence in relying on specific contraceptive methods (42, 51, 88, 102). In many low and middle income countries including those in East Africa, demand for contraceptives exceeds supplies (148).

Training and trained staff: Linked to the availability of methods, providers' skills and competency in providing short term, long-acting reversible and permanent contraceptive methods can facilitate method choice. Conversely, a limited number of trained staff and lack of routine staff training for family planning providers has been reported to limit the provision of a range of method mix at all levels of women's life stages of reproduction (51, 122, 145).

Adolescents

For logical and pragmatic reasons, adolescents are considered as a special group in reproductive matters. In 1989 the United Nations Convention on the Rights of the Child (149) and the 1979 United Nations Convention on Elimination of Discrimination against Women (150) recognised that adolescents have the right to contraceptive information and services, and have an 'evolving capacity' to do so, but often encounter significant access barriers. Adolescents may be susceptible to the same **individual, social and cultural, and health systems determinants** as all women, but young people are likely to also be particularly affected by the costs associated with accessing methods, stigma around sexual activities and use of contraception for young women, and unfriendly health service provision.

Cost: Transport cost and cost for contraceptive method can be a major barrier for adolescents because they frequently lack their own source of income or control over their finances to be able to afford contraceptives (50, 51)

Stigma: Societal norms prohibit or condemn pre-marital sexual activity and pre-marital pregnancy. For example, the stigma around pre-marital sexual activities as well as stigma around use of family planning services among young women, single and divorced women can limit confidence to access modern contraceptive methods from public health facilities due to fear of being labelled as prostitutes (41, 42, 88, 122).

Unfriendly health services: Adolescents favour friendly settings that provide their desired services and maintain privacy and confidentiality. However, many public health facilities require parental or spousal consent for family planning uptake, or lack the privacy and confidentiality protocols needed to reassure not demoralise adolescents from seeking and using modern contraceptive methods (42, 50-52).

1.5.8 Family Planning Services in Tanzania

1.5.8.1 National Policy, Strategies and Guidelines for Family Planning in Tanzania

Tanzania is a Family Planning 2020 focus country (151) but prior to this initiative it already had political commitment to provide family planning services. It has the WHO recommended global handbook for providers of family planning services translated into Swahili, a national language understood and spoken by the majority of Tanzanians (152). The country also has a national family planning guideline and standards (153). The national guideline covers the WHO recommendations outlined under section 1.3 and listed in table 1.4, and several strategic documents and national health policy also include family planning (154-157).

Table 1.4: List of voluntary human rights-based family planning information and services recommended by WHO and included in Tanzania national family planning guideline

Voluntary human rights-based family planning information and services	Recommended in the WHO guideline	Included in Tanzania national family planning guideline
Non-discrimination	√	√
Availability	√	√
Accessibility	√	√
Acceptability	√	√
Quality of services	√	√
Informed decision making	√	√
Privacy and confidentiality	√	√
Community participation	√	√
Accountability	√	√

Source: WHO 2014, ensuring human rights in the provision of contraceptive information and services: guidance and recommendations (30) and Tanzania national family planning guideline and standards, 2013 (153)

In Tanzania, men and women in the country including young people (10-24 years of age) regardless of parity, marital status, creed, race, or sexual preference are eligible to access accurate and complete family planning information, education and services (153). There is no parental or spousal or guardian consent required except for people with mental illness or for the use of permanent methods (153). In addition, the government encourages integration and/or linkage with other reproductive and child health services and commits to making family planning services accessible, safe, acceptable, affordable (153). Regardless of sources of contraception clients also have, among other rights, a right to be counselled of a range of available options and be provided with accurate and complete information to enable them make an informed decision (153). An operation target has been set to achieve modern contraceptive prevalence rate of 45% among all women of reproductive age (15-49 years) and to reduce the adolescent fertility rate from 116 per 1,000 births to 90 per 1,000 births by 2020 (157).

1.5.8.2 Approved Family Planning Methods in Tanzania

The WHO fact sheet number 351 on family planning lists thirteen modern and two traditional family planning methods (158). The methods differ in terms of effectiveness and failure rates with female sterilisation and long-acting hormonal contraceptives (implant) reported to be most effective, whereas, barrier and traditional methods were the least effective (159). Table 1.5 lists the family planning methods recommended by WHO and indicates methods approved or supported by health policy and guideline and standards and are registered for public use in Tanzania.

Table 1.5: List of family planning methods recommended by World Health Organisation versus methods approved and registered for public use in Tanzania

Contraceptive Methods		Methods supported by health policies in Tanzania	Most to least effective methods
		√=Supported X=not supported	1=most effective; 4=least effective ¥=not in the review
Modern methods	1. Implants	√	1
	2. Female sterilisation (tubal ligation)	√	1
	3. Intrauterine device (IUD) levonorgestrel	×	2
	4. Progestogen-only pills or “the minipill”	√	3
	5. Low-dose combined oral contraceptives or “the pill”	√	3
	6. Progestogen-only injectables	√	3
	7. Monthly injectables or Combined injectable contraceptives	×	3
	8. Intrauterine device (IUD): Copper containing	√	3
	9. Male condoms	√	4
	10. Female condoms	√	4
	11. Male sterilisation (Vasectomy)	√	¥
	12. [§] Lactational Amenorrhoea Method	√	¥
	13. Emergency contraception (levonorgestrel 1,5mg)	√	¥
Traditional methods	1. Fertility awareness-based methods, (natural family planning or periodic abstinence)	√	4
	2. Withdrawal (Coitus Interruptus)	×	4

Source: Tanzania National guideline for family planning services (153), World Health Organisation factsheet number 351 (158) and Mansour et al 2010 (159)

[§] Lactational Amenorrhoea Method: categorised under tradition methods by Hubacher et al, 2015 (160)

1.5.8.3 Levels of Provision and Delivery Mechanism for Family Planning Methods in Tanzania

Multiple levels of provision for family planning information and services are recommended (153). According to the 2016 Tanzania Service Provision Assessment survey, 80% of Tanzanian health facilities offer some type of modern contraception but government facilities are more likely to offer modern contraception than faith-based, private-for-profit and parastatal facilities (161). Nearly all hospitals, health centres, dispensaries, and clinics that offer family planning services were reported to offer at least two temporary modern contraception and progestin-only injectables, combined oral contraceptive pills, and male condoms were the most commonly offered temporary methods (161). Of note, as indicated in table 1.6 below, the listed levels of provision of family planning services are supposed to provide Information Education and Communication (IEC) to women, men and adolescents and communities about the health benefits of delaying first pregnancy, spacing and limiting births.

Table 1.6: Levels of provision of family planning services in Tanzania

Trained health care provider at;	
1. Community	<p>1.1 Provide Information Education and Communication to women, men and adolescents and communities about the health benefits of delaying first pregnancy, spacing and limiting births</p> <p>1.2 Counsel clients for family planning including all methods</p> <p>1.3 Provide contraceptive pills, emergency contraceptives and barrier methods</p> <p>1.4 Refer clients for other family planning services as necessary</p> <p>1.5 Record community-based health information (e.g. number of clients recruited for family planning)</p>
2 Accredited Drug Dispensing Outlet	<p>2.1 Screen client for family planning using relevant history and examination, as per guideline</p> <p>2.2 Provide counselling on informed choice for all methods and once client makes a choice, in-depth method-specific counselling on oral contraceptives (including emergency contraceptives) and condoms and where to get more information about other methods</p> <p>2.3 Initiate and re-supply oral contraceptives including emergency contraceptives and condoms</p> <p>2.4 Instruct client on the use of condoms and oral contraceptives</p> <p>2.5 Refer clients for other family planning methods and services</p> <p>2.6 Maintain client records and submit reports to the respective District Reproductive and Child Health care Coordinator (DRCHCo)</p>
3 Pharmacies	<p>3.1 As at accredited drug dispensing outlet, plus:</p> <p>3.2 Dispensing injectable vials</p> <p>3.3 Refer client for other family planning methods and services</p> <p>3.4 Maintain client records and submit reports to the respective DRCHCo and Regional Reproductive and Child Health care Coordinator (RRCHCos)</p>

Table 1.6 [Contn...]

4 Dispensary	4.1 As at community level, plus: 4.2 Obtaining targeted history, perform physical examination 4.3 Screen for sexually transmitted infections, treat as necessary 4.4 HIV counselling and testing 4.5 Provide method of choice, including IUD and injectables (where skills and supplies are available) 4.6 Counsel clients for long acting and permanent methods when applicable 4.7 Maintain clinic records and submit reports to the district 4.8 Refer as needed
5. Health centre	5.1 As at dispensary level, plus: 5.2 Provide implant insertion and removal 5.3 Perform voluntary surgical sterilisation (where skills and supplies are available) 5.4 Refer clients who desire surgical sterilisation 5.5 Provide technical support to community health workers as appropriate
6. Hospital	6.1 As at Health centre level, plus: 6.2 Perform surgical sterilisation (permanent methods)

Source: Tanzania National Family Planning Guidelines and Standards (153)

1.5.8.4 Monitoring and Evaluation of Family Planning Program in Tanzania

The Tanzania national guideline and standards states that the family planning program is monitored through the health management information system and is evaluated as part of the Demographic and Health Survey every five years (153).

1.6 Rationale and Importance of this Thesis

1.6.1 Rationale

There is evidence to suggest that the demand for and use of family planning methods across East Africa is increasing. The Sustainable Development Goals targets 3.7 and 3.8 and 5.6, the United Nations Global Strategy 2.0 for Women's, Children's and Adolescents' Health, 2016-2030 and Family Planning 2020 initiatives also include indicators for monitoring family planning. Tanzania is a Family Planning 2020 focus country. The Tanzanian government has set two key targets for 2020: to increase the modern contraception prevalence rate among all women of reproductive age (15-49 years) from 27% to 45% and to reduce the adolescent fertility rate from 116 per 1,000 births to 90 per 1,000 births. However, currently categorisation of metrics about demand for, use, unmet need and source of contraception derived from many large scale surveys focuses more on spacing and limiting (permanent stop) future births, but there is less focus on delaying first birth. There is also less focus on reporting factors that influence or inhibit use of modern contraception for women who would like to delay their first birth.

1.6.2 Importance

In the context of (a) increasing demand for family planning, (b) population growth and a high proportion of adolescents (12% of the Tanzania population is comprised of females aged 10-19 (162), (c) initiation of sexual activities before the age of 15 years (32, 43) and (d) increasing age at first marriage (40), this thesis provides insights into levels of family planning needs of women who would like to delay their first birth, contrasting them with women who would like to space or limit future births and the extent to which these needs are met within existing structures. It also provides information on the sources of modern contraception amongst women who are using the methods to delay their first births and

whether they received information about side-effects of the methods, what to do if they experienced side-effects and alternative methods available that they could have used.

1.7 References

1. United Nations, Department of Economic and Social Affairs: Sustainable Development Goals, 2015. Available from:
<https://sustainabledevelopment.un.org/?menu=1300>.
2. Kuruvilla S, Bustreo F, Kuo T, Mishra C, Taylor K, Fogstad H, et al. The Global strategy for women's, children's and adolescents' health (2016–2030): a roadmap based on evidence and country experience. *Bull World Health Organ.* 2016;94(5):398-400.
3. World Health Organisation: The Global Strategy for Women's, Children's and Adolescents' Health (2016-2030)- Survive, Thrive, Transform. Available from:
<http://www.who.int/life-course/partners/global-strategy/ewec-globalstrategyreport-200915.pdf?ua=1>.
4. Melinda Gates Foundation. London Summit on Family Planning: Landmark Summit Puts Women at Heart of Global Health Agenda 2012 [updated December 2013]. Available from: <http://www.londonfamilyplanningsummit.co.uk/>.
5. 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.
6. WHO. Millenium Development Goal 5, Target 5B: achieve, by 2015, universal access to reproductive health 2010. Available from:
<https://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>.
7. Horton R, Peterson HB. The rebirth of family planning. *The Lancet.* 2012;380(9837):77.
8. Peterson HB, Darmstadt GL, Bongaarts J. Meeting the unmet need for family planning: now is the time. *The Lancet.* 2013;381(9879):1696-9.
9. Osotimehin B. Family planning save lives, yet investments falter. *The Lancet.* 2012;380(9837):82-3.

10. 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.
11. Miller G, Babiarz KS. Grant Miller and Kimberly Singer Babiarz. 2016. "Family Planning Program Effects: A Review of Evidence from Microdata." CGD Working Paper 422. Washington, DC: Center for Global Development 2055 L Street NW, Washington, DC 20036: The Centre for Global Development; 2016. Available from: https://www.cgdev.org/sites/default/files/CGD-WP422-Miller_Babiarz-family-planning-effects1.pdf.
12. Alkema L, Chou D, Hogan D, Zhang S, Moller A-B, Gemmill A, et al. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *The Lancet*. 2016;387(10017):462-74.
13. Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. *The Lancet*. 2012;380(9837):149-56.
14. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet*. 2012 Jul 14;380(9837):111-25. PubMed PMID: 22784531. Epub 2012/07/13. eng.
15. Stover J, Ross J. How increased contraceptive use has reduced maternal mortality. *Maternal and Child Health Journal*. 2010;14(5):687-95.
16. Rutstein, Shea, and Rebecca Winter. 2015. Contraception Needed to Avoid High-Fertility-Risk Births, and Maternal and Child Deaths That Would Be Averted. DHS Analytical Studies No. 50. Rockville, Maryland, USA: ICF International. 2015.
17. Canning D, Schultz TP. The economic consequences of reproductive health and family planning. *The Lancet*. 2012;380(9837):165-71.

18. Cottingham J, Germain A, Hunt P. Use of human rights to meet the unmet need for family planning. *The Lancet*. 2012;380(9837):172-80.
19. Hardee K, Kumar J, Newman K, Bakamjian L, Harris S, Rodríguez M, et al. Voluntary, Human Rights–Based Family Planning: A Conceptual Framework. *Stud Fam Plann*. 2014;45(1):1-18.
20. BB, PRC, FAAM. The World Population Conference, ROME, 1954. *Journal of the Institute of Actuaries*. 1955:186-9.
21. Cox PR, Peel J, Thomas CJ. The world population conference, Belgrade, 1965. *The Eugenics Review*. 1966;58(1):7.
22. Mauldin WP, Choucri N, Notestein FW, Teitelbaum M. A report on Bucharest. The World Population Conference and the Population Tribune, August 1974. *Stud Fam Plann*. 1974;5(12):357.
23. Brown GF. United Nations International Conference on Population, Mexico City, 6-13 August 1984. *Stud Fam Plann*. 1984;15(6):296-302.
24. Cook RJ. International human rights and women's reproductive health. *Stud Fam Plann*. 1993:73-86.
25. United Nations Population Information Network. Report of the International Conference on Population and Development (Cairo, 5-13 September 1994) chapter VII, supra notes, paragraphs 7.2 & 7.3, : United Nations Population Information Network (POPIN) Gopher of the Population Division, Department for Economic and Social Information and Policy Analysis.; 1994 [updated December 2015; cited 2013 July]. Available from: <http://www.un.org/popin/icpd/conference/offeng/poa.html>.
26. Centre for Reproductive rights and UNFPA. The rights to contraceptive information and services for women and adolescents New York: Center for Reproductive Rights2010. Available from:

<http://www.unfpa.org/webdav/site/global/shared/documents/publications/2011/contraception.pdf>.

27. Alam N, Hajizadeh M, Dumont A, Fournier P. Inequalities in maternal health care utilization in sub-Saharan African countries: a multiyear and multi-country analysis. *PloS one*. 2015;10(4):e0120922.
28. Creanga AA, Gillespie D, Karklins S, Tsui AO. Low use of contraception among poor women in Africa: an equity issue. *Bull World Health Organ*. 2011 Apr 1;89(4):258-66. PubMed PMID: 21479090. Pubmed Central PMCID: PMC3066524. English.
29. Ortayli N, Malarcher S. Equity analysis: identifying who benefits from family planning programs. *Stud Fam Plann*. 2010;41(2):101-8.
30. World Health Organization. Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations: World Health Organization; 2014.
31. McCurdy R, Schnatz P, Weinbaum P, Zhu J. Contraceptive use in adolescents in Sub-Saharan Africa: evidence from Demographic and Health Surveys. *Connecticut medicine*. 2014;78(5):261-72.
32. Chandra-Mouli V, McCarraher DR, Phillips SJ, Williamson NE, Hainsworth G. Contraception for adolescents in low and middle income countries: needs, barriers, and access. *Reprod Health*. 2014;11(1):1.
33. Bankole A, Malarcher S. Removing barriers to adolescents' access to contraceptive information and services. *Stud Fam Plann*. 2010;41(2):117-24.
34. Blanc AK, Tsui AO, Croft TN, Trevitt JL. Patterns and trends in adolescents' contraceptive use and discontinuation in developing countries and comparisons with adult women. *International Perspectives on Sexual and Reproductive Health*. 2009:63-71.

35. Gebreselassie, Tesfayi, and Pav Govindasamy. 2013. Levels and Trends in Unmet Need for Family Planning among Adolescents and Young Women in Ethiopia. Calverton, Maryland, USA: ICF Internationa.
36. Hounton S, Barros AJ, Amouzou A, Shiferaw S, Maïga A, Akinyemi A, et al. Patterns and trends of contraceptive use among sexually active adolescents in Burkina Faso, Ethiopia, and Nigeria: evidence from cross-sectional studies. *Global health action*. 2015;8.
37. Timæus IM, Moultrie TA. On postponement and birth intervals. *Population and Development Review*. 2008;34(3):483-510.
38. Mathews T, Hamilton BE. First births to older women continue to rise. NCHS Data Brief 152. Hyattsville MD: National Center for Health Statistics 2014 2014 [152]. Available from: <https://www.cdc.gov/nchs/data/databriefs/db152.pdf>.
39. You D, Hug L, Anthony D. UNICEF report Generation 2030 Africa calls upon investing in and empowering girls and young women. *Reprod Health*. 2015;12(1):18.
40. Shapiro D, Gebreselassie T. Marriage in sub-Saharan Africa: Trends, determinants, and consequences. *Population Research and Policy Review*. 2014;33(2):229-55.
41. Nyblade L, Stockton M, Nyato D, Wamoyi J. Perceived, anticipated and experienced stigma: exploring manifestations and implications for young people's sexual and reproductive health and access to care in North-Western Tanzania. *Culture, Health & Sexuality*. 2017 2017/10/03;19(10):1092-107.
42. Nalwadda G, Mirembe F, Byamugisha J, Faxelid E. Persistent high fertility in Uganda: young people recount obstacles and enabling factors to use of contraceptives. *BMC Public Health*. 2010;10(1):530.

43. Doyle AM, Mavedzenge SN, Plummer ML, Ross DA. The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. *Trop Med Int Health*. 2012;17(7):796-807.
44. Kothari, Monica T., Shanxiao Wang, Sara K. Head, and Nouredine Abderrahim. 2012. Trends in Adolescent Reproductive and Sexual Behaviors. DHS Comparative Reports No. 29. Calverton, Maryland, USA: ICF International. Available from: <https://www.dhsprogram.com/pubs/pdf/CR29/CR29.pdf>.
45. Kazaura MR, Masatu MC. Sexual practices among unmarried adolescents in Tanzania. *BMC Public Health*. 2009;9(1):373.
46. Zulkifli SN, Low WY. Sexual practices in Malaysia: determinants of sexual intercourse among unmarried youths. *J Adolesc Health*. 2000 Oct;27(4):276-80.
47. Salih NA, Metaferia H, Reda AA, Biadgilign S. Premarital sexual activity among unmarried adolescents in northern Ethiopia: a cross-sectional study. *Sexual & Reproductive Healthcare*. 2015;6(1):9-13.
48. 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. *Reprod Health*. 2009;6(1):1.
49. Miller K, Miller R, Fassihian G, Jones H. How providers restrict access to family planning methods: results from five African countries. New York, Population Council, 1998. 159-79. New York: Population Council, 1998 Contract No.: 138493.
50. Nalwadda G, Mirembe F, Byamugisha J, Tumwesigye NM, Fanelid E. Young peoples' interface with providers of contraceptive care: a simulated client study in two Ugandan districts. *Contraception and Reproductive Medicine*. 2016;1(1):15.
51. Nalwadda G, Mirembe F, Tumwesigye NM, Byamugisha J, Fanelid E. Constraints and prospects for contraceptive service provision to young people in Uganda: providers' perspectives. *BMC Health Serv Res*. 2011;11(1):220.

52. Nalwadda G, Tumwesigye NM, Faxelid E, Byamugisha J, Mirembe F. Quality of care in contraceptive services provided to young people in two Ugandan districts: a simulated client study. *PLoS One*. 2011;6(11):e27908.
53. Jejeebhoy SJ, Santhya KG, Zavier AJF. Demand for Contraception to Delay First Pregnancy among Young Married Women in India. *Stud Fam Plann*. 2014;45(2):183-201.
54. Adams MK, Salazar E, Lundgren R. Tell them you are planning for the future: gender norms and family planning among adolescents in northern Uganda. *Int J Gynaecol Obstet*. 2013 Nov;123 Suppl 1:e7-10. PubMed PMID: 23992625. English.
55. Kerber KJ, de Graft-Johnson JE, Bhutta ZA, Okong P, Starrs A, Lawn JE. Continuum of care for maternal, newborn, and child health: from slogan to service delivery. *The Lancet*. 2007;370(9595):1358-69.
56. 21st Special Session of the UN General Assembly: Population and Development (30 June-2 July 1999, New York). Available from: www.un.org/en/events/pastevents/GA_ICPD+5.shtml.
57. Measure DHS. Measure DHS website: Survey Types. Available from: <http://www.measuredhs.com/What-We-Do/Survey-Types/index.cfm>.
58. UNICEF. MICs COMPILER: Access to Multiple Cluster Indicator Surveys Data [updated 2014; cited 2013]. Available from: <http://www.micscompiler.org/mics.html?lang=en>.
59. Demographic and Health Surveys (DHS): Family planning indicators Available from: <http://dhsprogram.com/data/DHS-Survey-Indicators-Family-Planning.cfm>.
60. Bradley S, Croft TN, Fishel JD, Westoff CF. Revising Unmet Need for Family Planning. DHS Analytical Studies No. 25. Calverton, Maryland, USA: ICF International. 2012.

61. Gray N, Azzopardi P, Kennedy E, Creati M, Willersdorf E. (2010) Achieving MDG 5 for adolescents in Asia and the Pacific: lessons for the delivery of reproductive health services. Part 1: A review of available data in nine countries. Burnet Institute on behalf of Compass, the Women's and Children's Health Knowledge Hub. Melbourne, Australia.
62. Bradley SEK, Casterline JB. Understanding Unmet Need: History, Theory, and Measurement. *Stud Fam Plann.* 2014;45(2):123-50.
63. Cleland J, Harbison S, Shah IH. Unmet Need for Contraception: Issues and Challenges. *Stud Fam Plann.* 2014;45(2):105-22.
64. Dasgupta A, Weinberger M, Bellows B, Brown W. "New Users" Are Confusing Our Counting: Reaching Consensus on How to Measure "Additional Users" of Family Planning. *Global Health: Science and Practice.* 2017;5(1):6-14.
65. United Nations, Department of Economic and Social Affairs, Population Division (2015). Trends in Contraceptive Use Worldwide 2015 (ST/ESA/SER.A/349). 2015. Available from:
<http://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf>.
66. Madsen EL, Kuang B, Ross J. Tracking changes in states of contraceptive use over time in sub-Saharan Africa through cohort and period analyses. *J Biosoc Sci.* 2015;47(03):329-44.
67. United Nations, Statistics Division, Department of Economic and Social Affairs: Millenium Development Goals Indicators. Available from:
<https://mdgs.un.org/unsd/mdg/Resources/Attach/Indicators/OfficialList2008.pdf>.
68. United Nations Population Fund 2016, Universal Access to Reproductive Health: Progress and Challenges 2016. Available from:

https://www.unfpa.org/sites/default/files/pub-pdf/UNFPA_Reproductive_Paper_20160120_online.pdf.

69. Oindo Missie L. Contraception and sexuality among the youth in Kisumu, Kenya. *Afr Health Sci.* 2002;2.
70. Magadi MA, Curtis SL. Trends and determinants of contraceptive method choice in Kenya. *Stud Fam Plann.* 2003;34(3):149-59.
71. Central Bureau of Statistics (CBS) [Kenya], Ministry of Health (MOH) [Kenya], and ORC Macro. 2004. Kenya Demographic and Health Survey 2003. Calverton, Maryland: CBS, MOH, and ORC Macro 2004. Available from: <http://dhsprogram.com/pubs/pdf/FR151/FR151.pdf>.
72. Agha S, Do M. The quality of family planning services and client satisfaction in the public and private sectors in Kenya. *International Journal for Quality in Health Care.* 2009;21(2):87-96.
73. Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. Kenya Demographic and Health Survey 2008-09. Calverton, Maryland: KNBS and ICF Macro Calverton, Maryland: KNBS and ICF Macro; 2010. Available from: <https://dhsprogram.com/pubs/pdf/fr229/fr229.pdf>.
74. Obare F, Birungi H, Undie C, Wanjiru M, Liambila W, Askew I. Obare F., Birungi H., Undie C., Wanjiru W., Liambila W., Askew I., (2011) Levels, trends and determinants of contraceptive use among adolescent girls in Kenya; APHIA II OR Project in Kenya/ Population Council: Nairobi, Kenya 2011. Available from: http://www.popcouncil.org/uploads/pdfs/2011RH_APHIAII_ContraUseAdolGirls.pdf.
75. Remare E, Catherine K. Physical access to health facilities and contraceptive use in Kenya: Evidence from the 2008–2009 Kenya Demographic and Health Survey. *Afr J Reprod Health.* 2012;16.

76. Fotso JC, Speizer IS, Mukiira C, Kizito P, Lumumba V. Closing the poor-rich gap in contraceptive use in urban Kenya: are family planning programs increasingly reaching the urban poor? *International journal for equity in health*. 2013;12(1):71.
77. Ochako R, Mbondo M, Aloo S, Kaimenyi S, Thompson R, Temmerman M, et al. Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study. *BMC Public Health*. 2015;15(1):1-9.
78. Tumlinson K, Pence BW, Curtis SL, Marshall SW, Speizer IS. Quality of Care and Contraceptive Use in Urban Kenya. *Int Perspect Sex Reprod Health*. 2015 Jun;41(2):69-79. doi: 10.1363/4106915.
79. Tumlinson K, Okigbo CC, Speizer IS. Provider barriers to family planning access in urban Kenya. *Contraception*. 2015;92(2):143-51.
80. Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2015. Kenya Demographic and Health Survey 2014. Calverton, Maryland: KNBS and ICF Macro
Calverton, Maryland: KNBS and ICF Macro; 2015. Available from:
<https://dhsprogram.com/pubs/pdf/fr308/fr308.pdf>.
81. Bakibinga P, Mutombo N, Mukiira C, Kamande E, Ezeh A, Muga R. The Influence of Religion and Ethnicity on Family Planning Approval: A Case for Women in Rural Western Kenya. *Journal of religion and health*. 2016;55(1):192-205.
82. Institut National de la Statistique du Rwanda (INSR) and ORC Macro. 2006. Rwanda Demographic and Health Survey 2005. Calverton, Maryland, U.S.A.: INSR and ORC Macro 2006.
83. Ministry of Health (MOH) [Rwanda], National Institute of Statistics of Rwanda (NISR), and ICF Macro. 2009. Rwanda Interim Demographic and Health Survey 2007-08. Calverton, Maryland, U.S.A.: MOH, NISR, and ICF Macro 2009.
84. Ayad M, Hong R. Ayad, Mohamed, and Rathavuth Hong. 2009. Levels and Trends of Contraceptive Prevalence and Estimate of Unmet Need for Family Planning in

- Rwanda: Further Analysis of the Rwanda Demographic and Health Surveys, 2000–2007/08. DHS Further Analysis Reports No. 67. Calverton, Maryland, USA: ICF Macro. 2009.
85. Ndaruhuye DM, Broekhuis A, Hooimeijer P. Demand and unmet need for means of family limitation in Rwanda. *International perspectives on sexual and reproductive health*. 2009;122-30.
 86. National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda], and ICF International. 2012. Rwanda Demographic and Health Survey 2010. Calverton, Maryland, USA: NISR, MOH, and ICF International 2012.
 87. Brunie A, Tolley EE, Ngabo F, Wesson J, Chen M. Getting to 70%: barriers to modern contraceptive use for women in Rwanda. *International Journal of Gynecology & Obstetrics*. 2013;123(S1).
 88. Farmer DB, Berman L, Ryan G, Habumugisha L, Basinga P, Nutt C, et al. Motivations and Constraints to Family Planning: A Qualitative Study in Rwanda's Southern Kayonza District. *Global Health: Science and Practice*. 2015;3(2):242-54.
 89. Muhoza DN, Broekhuis A, Hooimeijer P. Demand and Unmet Need to Space Births in Rwanda: A Two-Step Analysis of Determinants. *Journal of Population and Social Studies*. 2015;23(1).
 90. National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda], and ICF International. 2015. Rwanda Demographic and Health Survey 2014-15. Rockville, Maryland, USA: NISR, MOH, and ICF International. 2016.
 91. Muhoza DN, Rutayisire PC, Umubyeyi A. Measuring the success of family planning initiatives in Rwanda: a multivariate decomposition analysis. *Journal of Population Research*. 2016;33(4):361-77.
 92. National Bureau of Statistics [Tanzania] and Macro International Inc. 2000. Tanzania Reproductive and Child Health Survey 1999. Calverton, Maryland:

- National Bureau of Statistics and Macro International Inc 2000. Available from:
<http://dhsprogram.com/pubs/pdf/FR112/FR112.pdf>.
93. Speizer IS, Bollen KA. How well do perceptions of family planning service quality correspond to objective measures? Evidence from Tanzania. *Stud Fam Plann.* 2000;31(2):163-77.
 94. Speizer IS, Hotchkiss DR, Magnani RJ, Hubbard B, Nelson K. Do service providers in Tanzania unnecessarily restrict clients' access to contraceptive methods? *Int Fam Plann Perspect.* 2000:13-42.
 95. Marchant T, Mushi A, Nathan R, Mukasa O, Abdulla S, Lengeler C, et al. Planning a family: priorities and concerns in rural Tanzania. *Afr J Reprod Health.* 2004;8(2):111-23.
 96. National Bureau of Statistics (NBS) [Tanzania] and ORC Macro. 2005. Tanzania Demographic and Health Survey 2004-05. Dar es Salaam, Tanzania: National Bureau of Statistics and ORC Macro 2005. Available from:
<http://dhsprogram.com/pubs/pdf/FR173/FR173-TZ04-05.pdf>.
 97. Arends-Kuenning M, Kessy FL. The impact of demand factors, quality of care and access to facilities on contraceptive use in Tanzania. *J Biosoc Sci.* 2007 Jan;39(1):1-26. PubMed PMID: 16359581. English.
 98. National Bureau of Statistics. National Bureau of Statistics (NBS) [Tanzania] and ICF Macro. 2011. Tanzania Demographic and Health Survey 2010. Dar es Salaam, Tanzania: NBS and ICF Macro 2011 [Last accessed 08 August 2015]. Available from:
[http://dhsprogram.com/pubs/pdf/FR243/FR243\[24June2011\].pdf](http://dhsprogram.com/pubs/pdf/FR243/FR243[24June2011].pdf).
 99. Mosha I, Ruben R, Kakoko D. Family planning decisions, perceptions and gender dynamics among couples in Mwanza, Tanzania: a qualitative study. *BMC Public Health.* 2013;13(1):523.

100. Anasel MG, Mlinga UJ. Determinants of contraceptive use among married women in Tanzania: Policy implication. *Etude de la Population Africaine*. 2014;28(2):976.
101. Kidayi PL, Msuya S, Todd J, Mtuya CC, Mtuy T, Mahande MJ. Determinants of Modern Contraceptive Use among Women of Reproductive Age in Tanzania: Evidence from Tanzania Demographic and Health Survey Data. *Advances in Sexual Medicine*. 2015;5(03):43.
102. KESSY F. Access to Family Planning services in Rural Tanzania: Special Paper 16/3, REPOA-Dar es Salaam, 2016 2016. Available from:
http://www.repoa.or.tz/documents/REPOA_SP_16_1.pdf.
103. Rusibamayila A, Phillips J, Kalollela A, Jackson E, Baynes C. Factors influencing pregnancy intentions and contraceptive use: an exploration of the 'unmet need for family planning' in Tanzania. *Culture, health & sexuality*. 2016:1-16.
104. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF Available from:
<https://www.dhsprogram.com/pubs/pdf/FR321/FR321.pdf>
105. Wolff B, Blanc AK, Ssekamatte-Ssebuliba J. The role of couple negotiation in unmet need for contraception and the decision to stop childbearing in Uganda. *Stud Fam Plann*. 2000;31(2):124-37.
106. Uganda Bureau of Statistics (UBOS) and Macro International Inc. 2007. *Uganda Demographic and Health Survey 2006*. Calverton, Maryland, USA: UBOS and Macro International Inc 2007. Available from:
<http://dhsprogram.com/pubs/pdf/FR194/FR194.pdf>.

107. Khan, Shane, Sarah E.K. Bradley, Joy Fishel, and Vinod Mishra. 2008. Unmet Need and the Demand for Family Planning in Uganda: Further Analysis of the Uganda Demographic and Health Surveys, 1995-2006. Calverton, Maryland, USA: Macro International Inc 2008.
108. Mugisha JF, Reynolds H. Provider perspectives on barriers to family planning quality in Uganda: a qualitative study. *Journal of Family Planning and Reproductive Health Care*. 2008;34(1):37-41.
109. Uganda Bureau of Statistics (UBOS) and ICF International Inc. 2012. Uganda Demographic and Health Survey 2011. Kampala, Uganda: UBOS and Calverton, Maryland: ICF International Inc. 2012.
110. Asiimwe JB, Ndugga P, Mushomi J. Socio-demographic factors associated with contraceptive use among young women in comparison with older women in Uganda. 2013.
111. Wablembo SM, Doctor HV. Intergenerational differences in current contraceptive use among married women in Uganda. *International Journal of Population Research*. 2013;2013.
112. Andi JR, Wamala R, Ocaya B, Kabagenyi A. Modern contraceptive use among women in Uganda: An analysis of trend and patterns (1995-2011). *Etude de la population africaine= African population studies*. 2014;28(2):1009.
113. Anguzu R, Tweheyo R, Sekandi JN, Zalwango V, Muhumuza C, Tusiime S, et al. Knowledge and attitudes towards use of long acting reversible contraceptives among women of reproductive age in Lubaga division, Kampala district, Uganda. *BMC research notes*. 2014;7(1):153.
114. Asiimwe JB, Ndugga P, Mushomi J, Ntozi JPM. Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis. *BMC Public Health*. 2014;14(1):926.

115. Orach CG, Otim G, Apomomon JF, Amone R, Okello SA, Odongkara B, et al. Perceptions, attitude and use of family planning services in post conflict Gulu district, northern Uganda. *Conflict and health*. 2015;9(1):24.
116. Paul B, Ayo AS, Ayiga N. Rural-Urban Contraceptive Use in Uganda: Evidence from UDHS 2011. *J Hum Ecol*. 2015;52(3):168-82.
117. Sileo KM, Wanyenze RK, Lule H, Kiene SM. Determinants of family planning service uptake and use of contraceptives among postpartum women in rural Uganda. *International journal of public health*. 2015;60(8):987-97.
118. Kabagenyi A, Habaasa G, Rutaremwa G. Low Contraceptive Use among Young Females in Uganda: Does Birth History and Age at Birth have an Influence? Analysis of 2011 Demographic and Health Survey. *Journal of Contraceptive Studies*. 2016.
119. Kabagenyi A, Reid A, Ntozi J, Atuyambe L. Socio-cultural inhibitors to use of modern contraceptive techniques in rural Uganda: a qualitative study. *The Pan African Medical Journal*. 2016;25.
120. Clark E, Goodhart C. Family planning in a rural setting in Uganda, the USHAPE initiative. *London Journal of Primary Care*. 2016;8(6):105-8.
121. Alege SG, Matovu JK, Ssensalire S, Nabiwemba E. Knowledge, sources and use of family planning methods among women aged 15-49 years in Uganda: a cross-sectional study. *Pan African Medical Journal*. 2016;24(39).
122. Paul M, Näsström SB, Klingberg-Allvin M, Kiggundu C, Larsson EC. Healthcare providers balancing norms and practice: challenges and opportunities in providing contraceptive counselling to young people in Uganda—a qualitative study. *Global health action*. 2016;9.
123. Uganda Bureau of Statistics (UBOS) and ICF. 2017. Uganda Demographic and Health Survey 2016: Key Indicators Report. Kampala, Uganda: UBOS, and Rockville, Maryland, USA: UBOS and ICF 2017.

124. Clements S, Madise N. Who is being served least by family planning providers? A study of modern contraceptive use in Ghana, Tanzania And Zimbabwe. *Afr J Reprod Health*. 2004 Aug;8(2):124-36. PubMed PMID: 15623127. English.
125. Nyangara F, Hart C, Spizer I, Moreland S. Unmet Need for Family Planning in Rwanda and Madagascar: An Analysis Report for the Repositioning of Family Planning Initiatives: MEASURE Evaluation Project; 2007. Available from: <https://www.measureevaluation.org/resources/publications/wp-07-93>.
126. Sedgh G, Hussain R, Bankole A, Singh S. Women with an unmet need for contraception in developing countries and their reasons for not using a method: Alan Guttmacher Institute; 2007.
127. Westoff Charles F, Dawn Koffman. Westoff, Charles F. and Dawn Koffman. 2010. Birth Spacing and Limiting Connections. DHS Analytical Studies No. 21. Calverton, Maryland, USA: ICF Macro Calverton, Maryland, USA: ICF Macro; 2010. Available from: <http://measuredhs.com/pubs/pdf/AS21/AS21.pdf>.
128. Hutchinson PL, Do M, Agha S. Measuring client satisfaction and the quality of family planning services: a comparative analysis of public and private health facilities in Tanzania, Kenya and Ghana. *BMC Health Serv Res*. 2011;11(1):1.
129. Do M, Kurimoto N. Women's empowerment and choice of contraceptive methods in selected African countries. *International perspectives on sexual and reproductive health*. 2012:23-33.
130. Westoff CF. Westoff, Charles F. 2012. Unmet Need for Modern Contraceptive Methods. DHS Analytical Studies No. 28. Calverton, Maryland, USA: ICF International 2012. Available from: <https://dhsprogram.com/pubs/pdf/AS28/AS28.pdf>.

131. Van Lith LM, Yahner M, Bakamjian L. Women's growing desire to limit births in sub-Saharan Africa: meeting the challenge. *Global Health: Science and Practice*. 2013;1(1):97-107.
132. Wang, Wenjuan, Soumya Alva, Rebecca Winter, and Clara Burgert. 2013. Contextual Influences of Modern Contraceptive Use among Rural Women in Rwanda and Nepal. DHS Analytical Studies No. 41. Calverton, Maryland, USA: ICF International 2013.
133. Annabel Erulkar. Family Planning Use Among Married Adolescents in Three East African Countries. International Conference on Family Planning; Addis Ababa, Ethiopia 2013.
134. Sedgh G, Hussain R. Reasons for Contraceptive Nonuse among Women Having Unmet Need for Contraception in Developing Countries. *Stud Fam Plann*. 2014;45(2):151-69.
135. Campbell OM, Benova L, Macleod D, Goodman C, Footman K, Pereira AL, et al. Who, What, Where: an analysis of private sector family planning provision in 57 low-and middle-income countries. *Trop Med Int Health*. 2015;20(12):1639-56.
136. Ugaz JI, Chatterji M, Gribble JN, Mitchell S. Regional trends in the use of short-acting and long-acting contraception accessed through the private and public sectors. *International Journal of Gynecology & Obstetrics*. 2015;130:E3-E7.
137. Woog V, Singh S, Browne A, Philbin J. Adolescent Women's Need for and Use of Sexual and Reproductive Health Services in Developing Countries. New York: Guttmacher Institute; 2015.
138. Bakibinga P, Matanda DJ, Ayiko R, Rujumba J, Muiruri C, Amendah D, et al. Pregnancy history and current use of contraception among women of reproductive age in Burundi, Kenya, Rwanda, Tanzania and Uganda: analysis of demographic and health survey data. *BMJ open*. 2016;6(3):e009991.

139. Corroon M, Kebede E, Spektor G, Speizer I. Key Role of Drug Shops and Pharmacies for Family Planning in Urban Nigeria and Kenya. *Global Health: Science and Practice*. 2016;GHSP-D-16-00197.
140. Sedgh G, Ashoford LS, Hussain R. Unmet need for contraception in developing countries: examine women's reasons for not using a method. The Guttmacher Institute, 2016.
141. Wulifan JK, Brenner S, Jahn A, De Allegri M. A scoping review on determinants of unmet need for family planning among women of reproductive age in low and middle income countries. *BMC Womens Health*. 2016;16(1):1.
142. Blackstone SR, Nwaozuru U, Iwelunmor J. Factors Influencing Contraceptive Use in Sub-Saharan Africa: A Systematic Review. *International Quarterly of Community Health Education*. 2017:0272684X16685254.
143. Michellea D, Robb S, Marcie R, Doris B. The influence of perceptions of community norms on current contraceptive use among men and women in Ethiopia and Kenya. *Health Place*. 2012;18.
144. Singh S, Darroch J, Ashford L. Adding it up: costs and benefits of Investing in Sexual and Reproductive Health 2014. UNFPA). Available: <http://www.guttmacher.org/pubs/AIU-2012-estimates.pdf>. Accessed; 2014.
145. Wang W, Wang S, Pullum T. Wang, Wenjuan, Shanxiao Wang, Thomas Pullum, and Paul Ametepi. 2012. How Family Planning Supply and the Service Environment Affect Contraceptive Use: Findings from Four East African Countries. *DHS Analytical Studies No. 26*. Calverton, Maryland, USA: ICF International 2012. Available from: <https://dhsprogram.com/pubs/pdf/AS26/AS26.pdf>.
146. UNFPA State of World Population. BY CHOICE, NOT BY CHANCE, FAMILY PLANNING, HUMAN RIGHTS AND DEVELOPMENT 2012. Available from:

- http://www.unfpa.org/webdav/site/global/shared/swp/2012/EN_SWOP2012_Report.pdf.
147. Morse JE, Rowen TS, Steinauer J, Byamugisha J, Kakaire O. A qualitative assessment of Ugandan women's perceptions and knowledge of contraception. *International Journal of Gynecology & Obstetrics*. 2014;124(1):30-3.
148. UNFPA. Reproductive Health Essentials: Securing the supply: Global Strategy for Reproductive health Commodity Security; 2002 [cited 2013 October]. [cited 2013]. Available from:
http://www.unfpa.org/upload/lib_pub_file/39_filename_securing_supply_eng.pdf.
149. United Nations Convention on the Rights of the Child, 1989. Available from:
<http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx>.
150. CEDAW. Convention on Elimination of Discrimination Against women (CEDAW) supra notes, Article 10 (h), 16 (1) ; supra notes 21, para 1 & 17 and Supra note 24 para 22 1979. Available from:
<http://www.ohchr.org/EN/ProfessionalInterest/Pages/CEDAW.aspx>.
151. Family Planning 2020. Family Planning 2020: 2016 FP2020 Annual commitment update questionnaire response 2015 [cited 2016 22nd March 2016]. Available from: http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2016/10/FP2020_2016_Annual_Commitment_Update_Questionnaire-Tanzania_DLC.pdf.
152. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), INFO Project. Family Planning: A Global Handbook for Providers. Baltimore and Geneva: CCP and WHO, 2007 (Swahili translation). Available from: <https://www.fphandbook.org/sites/default/files/sw005-handbook.pdf>.

153. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Family Planning Guidelines and Standards, 2013: Ministry of Health and Social Welfare; 2013 [cited 2013 April]. Available from: <https://sites.google.com/a/ihi.or.tz/ihi-main-site/announ/ministryofhealthreleasesnewfamilyplanningguidelines>.
154. United Republic of Tanzania, Ministry of Health and Social Welfare: The National Road Map Strategic Plan to accelerate the Reduction of Maternal Newborn and Child death in Tanzania 2008-2015 (One Plan), 2008. Dar es Salaam, Tanzania: Reproduction section.
155. Ministry of Finance and Economic Affairs. The United Republic of Tanzania, Ministry of Finance and Economic Affairs: National Strategy for Growth and Reduction of Poverty II Dar es Salaam-Tanzania: MKUKUTA Secretariat, Poverty Eradication and Economic Empowerment Department, ; 2010. Available from: www.unpei.org/sites/default/files/PDF/TZ-MKUKUTA-Nat-Strategy.pdf.
156. Ministry of health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: The National Family Planning Costed Implementation Programm 2010-2015, updated July 2013 Dar es Salaam: Government/MoHSW; 2010. Available from: <http://www.fhi360.org/sites/default/files/media/documents/national-fp-costed-implementation-plan-tanzania-main-text.pdf>.
157. United Republic of Tanzania, Ministry of Health and Social Welfare: The National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & adolescent health in Tanzania (2016-2020) (One Plan II), 2016. Available from: http://globalfinancingfacility.org/sites/gff_new/files/documents/Tanzania_One_Plan_II.pdf.

158. World Health Organisation. Fact sheet No.351 on Family Planning [updated December 2013; cited 2013 April]. Available from:
<http://www.who.int/mediacentre/factsheets/fs351/en/index.html>.
159. Mansour D, Inki P, Gemzell-Danielsson K. Efficacy of contraceptive methods: a review of the literature. *The European Journal of Contraception and Reproductive Health Care*. 2010;15(1):4-16.
160. Hubacher D, Trussell J. A definition of modern contraceptive methods. *Contraception*. 2015;92(5):420-1.
161. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International 2015. *Tanzania Service Provision Assessment Survey (TSPA) 2014-2015*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International. Available from: <http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>.
162. National Bureau of Statistics. National Bureau of Statistics: *2012 Tanzania Population and Housing Census. Population Distribution by Age and Sex*. Ministry of Finance Dar es Salaam and Office of Chief Government Statistician President's Office, Finance, Economy and Development Planning Zanzibar; 2013. Available from: http://ihi.eprints.org/2169/1/Age_Sex_Distribution.pdf.

2 Chapter 2: Thesis Aim and Objectives

2.1 Overall Aim

Women at all stages of reproduction in Tanzania have unmet need for family planning services. This unmet need is driven by different factors depending on whether the woman would like to delay first birth, space subsequent pregnancies or limit future births, and is least well described for women who want to delay their first birth. Therefore, this thesis aimed to investigate the extent to which women in southern Tanzania who would like to delay their first birth have their family planning needs met, contrasting them to women who would like to space or limit their future births.

2.2 Specific Objectives

The specific objectives were to:

1. Assess family planning service provision in the study area in the context of Tanzania national family planning guidelines and standards
2. Describe and analyse demand, current use and unmet need for modern contraception among delayers of first birth contrasting them to women who would like to space or limit future births
3. Explore individual, community and health provider's perception about provision and use of modern contraceptives for women who would like to delay their first birth
4. Describe sources of modern contraception among delayers of first birth and assess whether they were informed about side-effects of the methods, what to do if they experienced any side effect, and other available methods they could have used, contrasting them to women who would like to space or limit future births
5. Synthesise and interpret the results in the light of voluntary, human rights-based family planning to provide recommendations for health policy and planning

While the focus of the thesis is on generating new learning about the use of family planning by delayers of first birth in Tanzania, it is relevant to reflect on their experiences in the context of other family planning users. The major aim of comparative research or analysis is to identify similarities or differences within social entities such as societies, institutions, cultures and nations (1). The utility for contrasting contraception outcomes of delayers of first birth to spacers and limiters of future births in this PhD thesis was to understand whether and how the delayer's experience of unmet need or quality of care was different to that of other women.

2.3 References

1. Mills M, Van de Bunt GG, De Bruijn J. Comparative research: Persistent problems and promising solutions. *International Sociology*. 2006;21(5):619-31.

3 Chapter 3: Conceptual Framework

This chapter describes the conceptual framework that was used to analyse this study and variables that were analysed.

This thesis applied a voluntary rights-based family planning framework to analyse and understand how family planning services can best address the reproductive health requirements of women of reproductive age in Tanzania. The conceptual framework describes accessibility, availability, acceptability and quality of sexual and reproductive health goods, services and information (1). This adapted framework builds on work carried out by the United Nations High Commission for Human Rights' technical guidance on a rights based approach for reducing maternal morbidity and mortality (2), and on a framework for voluntary family planning programs that respect, protect, and fulfil human rights (3).

Human rights laws require that functioning public health facilities, reproductive health goods, services, information and programmes are **available, accessible** to everyone including women who would like to delay their first birth without discrimination (including affordability, physical accessibility and information accessibility), **acceptable** by being respectful of medical ethics and culturally appropriate, sensitive to gender as well as respecting confidentiality, and be scientifically and medically appropriate and be of good **quality** (4). It means that, within health systems, claims for sexual and reproductive health goods, services and information should be understood as rights, not as commodities or matters of charity (2).

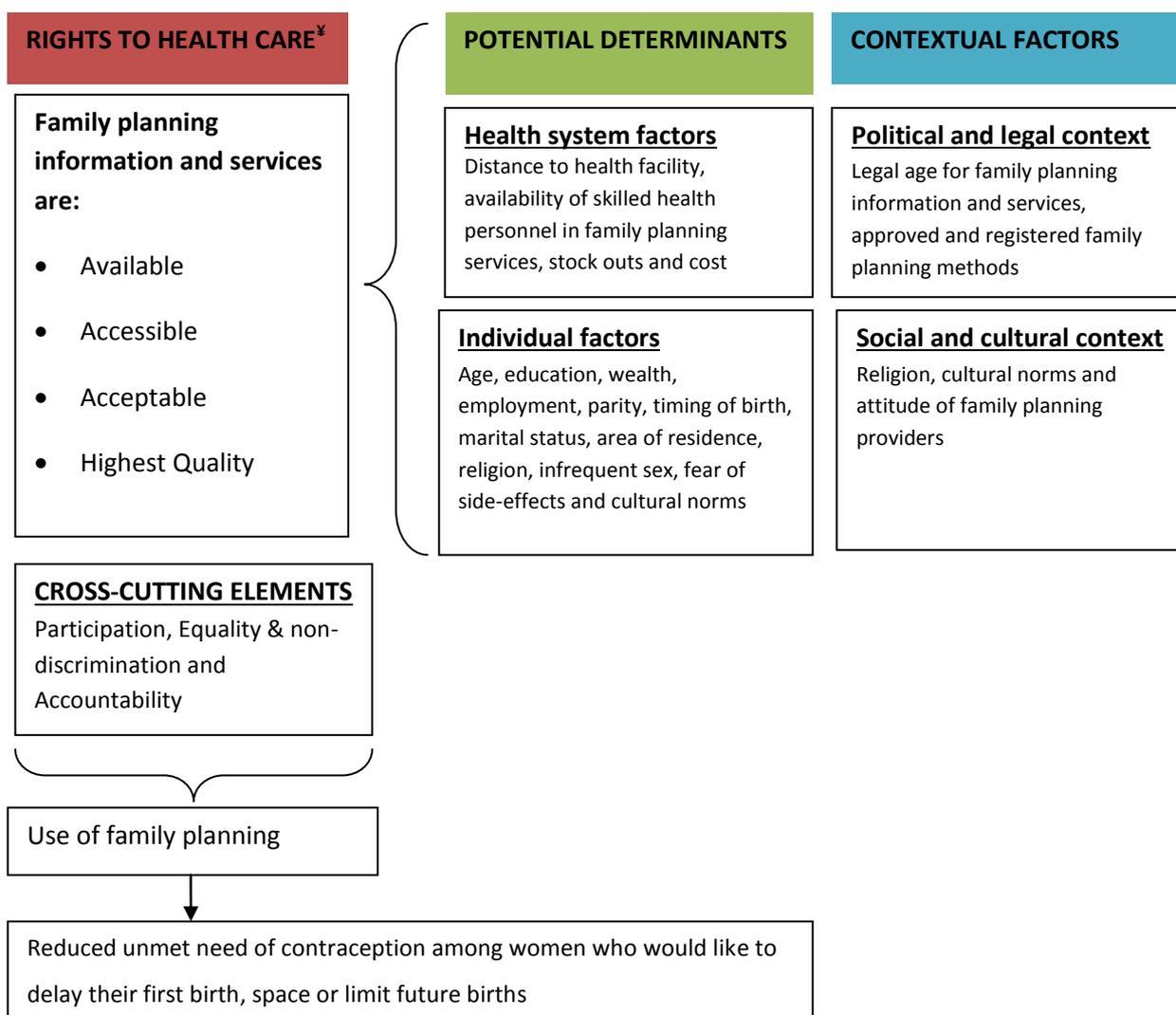
Human rights framework is concerned with the principle of **equality and non-discrimination** as well as special concerns for marginalised groups which requires investment in addressing and redressing historic confluences of discrimination and

exclusion. It also states that women (including women who would like to delay their first birth) are not passive targets of public health programming rather active agents who are entitled to **participate** meaningfully in decisions that affect their sexual and reproductive health and in turn their lives (2). While the reproductive rights tend to focus on women, men's needs and rights in regards to family planning are also acknowledged (3).

A thread that runs through human rights framework is **accountability**. Individual (including women who would like to delay their first birth), civil society community and state can change the decision making process in all levels from planning, implementation of programmes, monitoring and evaluation to remedies.

Social determinants such as **age, education, access to employment, area of residence, religion, cultural norms and laws** that can perpetuate discrimination against women and exacerbate inequality across many spheres of life are underscored by human rights frameworks (2, 3). On the other hand, they can be key factors in supporting the availability, accessibility, acceptability and quality of family planning services hence high usage of the services and reduced unmet needs.

Figure 3.1: Conceptual framework for demand and supply side determinants of use of contraception among women



Source: Adapted from WHO factsheet no 323 (1), United Nations High commissioner for Human Rights' technical guidance on a rights based approach for reducing maternal morbidity and mortality (2) and framework for voluntary family planning programs that respect, protect, and fulfil human rights (3)

[‡]The General Comment No: 14 of the Committee on Economic, Social and Cultural Rights, the right to health contains four elements

- ❖ **AVAILABILITY:** A sufficient quantity of functioning public health and health care facilities, goods and services, as well as programmes.
- ❖ **ACCESSIBILITY:** Health facilities, goods and services accessible to everyone. Accessibility has four overlapping dimensions: (non-discrimination, physical accessibility, economical accessibility (affordability), and information accessibility).
- ❖ **ACCEPTABILITY:** All health facilities, goods and services must be respectful of medical ethics and culturally appropriate as well as sensitive to gender and life-cycle requirements.
- ❖ **QUALITY:** Health facilities, goods and services must be scientifically and medically appropriate and of good quality

3.1 References

1. The World Health Organisation factsheet- Joint fact sheet WHO/OHCHR/323 August 2007: The Right to Health [updated December 2013; cited 2012 November].
Available from: <http://www.who.int/mediacentre/factsheets/fs323/en/index.html>.
2. Yamin AE. Applying human rights to maternal health: UN Technical Guidance on rights-based approaches. *International Journal of Gynecology & Obstetrics*. 2013.
3. Hardee K, Kumar J, Newman K, Bakamjian L, Harris S, Rodríguez M, et al. Voluntary, Human Rights–Based Family Planning: A Conceptual Framework. *Stud Fam Plann*. 2014;45(1):1-18.
4. CESCR. The Committee on Economic, Social and Cultural Rights, 1976, Article 12, general Comment 14, supra note 27, para 12 & 34: The right to maternal, child and reproductive health 1976. Available from: <http://www.escr-net.org/docs/i/425238>

4 Chapter 4: Methods

This chapter provides additional information about the methodologies adopted and used in this thesis including: a detailed description of the study setting, study design, data collection method, sampling and sample size, quality control, data handling and ethics, and data analysis. An overview of methods is also described in results chapters 6, 7, 8 and 9.

4.1 An Overview of Methods

The thesis applied a mixed-methods study design using both quantitative and qualitative methods. An overview of the methods is outlined in table 4.1.

Table 4.1: An Overview of Methods

Objective(s)	Study Design/Data Collection Methods and Sample	Setting	Links to Conceptual Framework, Analysis and Output
<p>1. To assess family planning service provision in the study area in the context of Tanzania national family planning guidelines and standards</p>	<p><u>Quantitative methods</u></p> <p>Health facility census (N=63) ; Described in method section 4.6</p>	<p><u>Southern Tanzania</u></p> <p>Tandahimba and Newala districts</p>	<p><u>Links to conceptual framework:</u> Availability, accessibility, acceptability and quality</p> <p><u>Analysis:</u> STATA 13; frequency of availability of equipment, guideline, medicines and trained staff; median numbers and their 25th and 75th inter-quartile ranges of clients received FP services</p> <p><u>Output:</u> Health facility readiness to provide modern contraceptives (See chapter 6)</p>
<p>2. To describe and analyse demand, current use and unmet need for modern contraception among delayers of first birth contrasting them to women who would like to space or limit future births</p>	<p><u>Quantitative methods</u></p> <p>Continuous household survey (N=2128); Described in method section 4.6</p>	<p><u>Southern Tanzania</u></p> <p>Tandahimba and Newala districts</p>	<p><u>Links to conceptual framework:</u> Accessibility</p> <p><u>Analysis:</u> STATA13; Descriptive analysis of women’s socio-demographic characteristics; The association was assessed using the point estimates and 95% confidence intervals for each indicator, adjusted for the survey design.</p> <p><u>Output:</u> Proportion of women expressed desire to delay their first birth, their characteristics and contraception outcome (See chapter 7)</p>
<p>3. To explore individual, community and health provider’s perception about provision and use of modern contraceptives for women who would like to delay their first birth</p>	<p><u>Qualitative methods</u></p> <p>Focus group discussion (N=8) and in-depth interviews (25); Described in method section 4.7</p>	<p><u>Southern Tanzania</u></p> <p>Tandahimba district</p>	<p><u>Links to conceptual framework:</u> Acceptability, Accessibility and quality</p> <p><u>Analysis:</u> Thematic framework analysis</p> <p><u>Output:</u> Women, men and FP providers’ perception on provision and use of contraception to delay first birth (see chapter 8)</p>

Table 4.1 [Contn..]

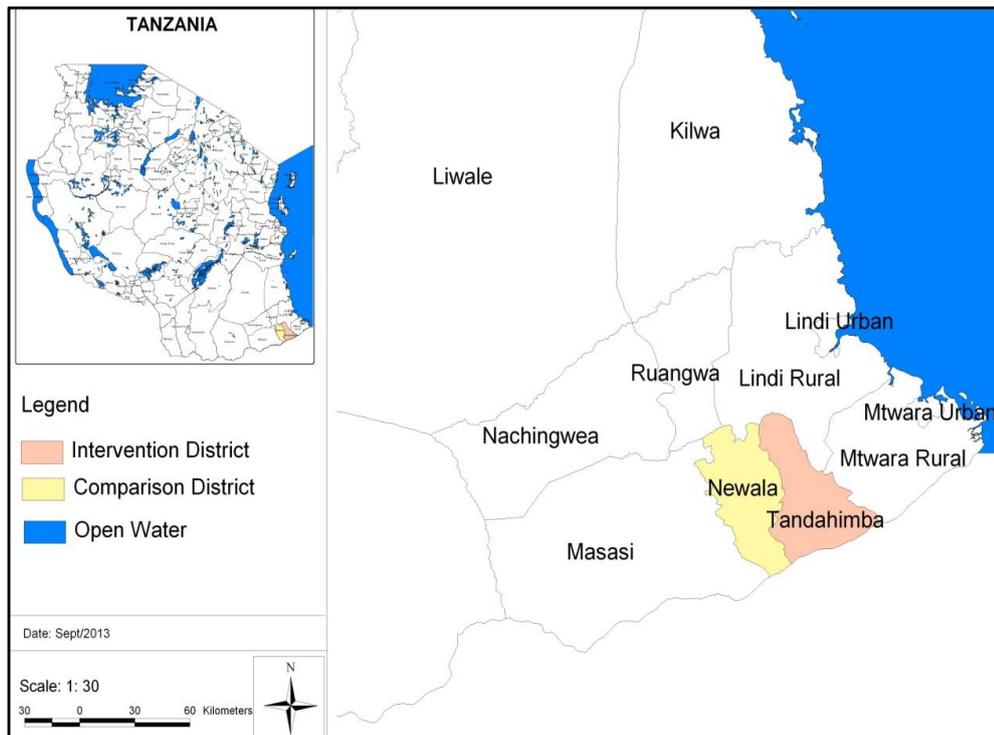
Objective(s)	Study Design/Data Collection Methods and Sample	Setting	Links to Conceptual Framework, Analysis and Output
<p>4. To describe sources of modern contraception among delayers of first birth and assess whether they were informed about side-effects of the methods, what to do if experienced any side effect and other available methods they could have used, contrasting them to women who would like to space or limit future births</p>	<p><u>Quantitative methods</u></p> <p>Continuous household survey (N=779); Described in method section 4.6</p>	<p><u>Southern Tanzania</u></p> <p>Tandahimba and Newala districts</p>	<p><u>Links to conceptual framework:</u> Availability, accessibility and quality</p> <p><u>Analysis:</u> STATA13; Descriptive analysis of women’s socio-demographic characteristics; The association was assessed using the point estimates and 95% confidence intervals for each indicator, adjusted for the survey design.</p> <p><u>Output:</u> Proportion of delayers accessed contraception from public health facilities or informal sources and the quality of services they received (See chapter 9)</p>
<p>5. To synthesise and interpret the results in light of voluntary, human rights–based family planning to provide recommendations for health policy and planning</p>	<p><u>Synthesis and interpretation</u></p> <p>Based on findings from quantitative and qualitative data in the above objectives; Described in method section 4.8</p>	<p>Southern Tanzania and Tanzania at large</p>	<p><u>Links to conceptual framework:</u> Availability, accessibility, acceptability and quality</p> <p><u>Analysis:</u> narrative synthesis of what WHO FP global handbook for providers (1) and voluntary, human rights–based family planning conceptual framework recommend, what do Tanzania health policy and FP guideline for provider (2, 3) say, what do quantitative and qualitative data from objective 1-4 above say and what is the implication on policy on family planning services</p> <p><u>Output:</u> Overall discussion of the findings, recommendations and conclusions (Chapter 10)</p>

4.2 Study Setting

This research was carried out in two rural districts in Mtwara region, southern Tanzania:

Tandahimba and Newala (Figure 4.1).

Figure 4.1: Tandahimba and Newala in Mtwara region-Southern Tanzania



Source: EQUIP study team

The study area covers an estimated population of over 400,000 people (227, 514 in Tandahimba and 205,492 in Newala) served by 63 health facilities (4-6). Tandahimba district is divided into three administrative divisions (Namikupa, Litehu and Newala) with 22 wards and 157 villages whereas Newala is divided into five divisions (Mkunya, Newala, Mkwedu, Kitangari and Chilangala) with a total number of 29 wards and 155 villages (4). Both districts are characterised as predominantly rural and having limited infrastructure (7). Makonde is the dominant ethnic group in the study area among other ethnic groups including Yao, Ngindo, Mwera and Makua; and over 90% of the population depends on agricultural activities which include cash and food crops (7).

4.3 The Expanded Quality Management Using Information Power (EQUIP) Project

This PhD was nested within the EQUIP project, a collaborative project between Karolinska Institutet (Sweden), LSHTM (UK), Ifakara Health Institute (Tanzania), and Makerere University (Uganda). In Tanzania, EQUIP operated in Tandahimba and Newala districts, as described above. The overall EQUIP project aimed to increase demand for, and improve supply of, services for mothers and newborns along the continuum of care in rural Tanzania and Uganda. To achieve this aim, between 2011 and 2014, EQUIP implemented a quality improvement intervention that was supported by locally generated, high quality data in two districts of both Tanzania and Uganda (6). A protocol describing the intervention was published by the study team (8), followed by results manuscript (9). Results showed that the intervention was associated with improvements on one of four primary outcomes (9). The study team observed a 26 percentage-point increase in the proportion of live births where mothers received uterotonics within one minute after birth in the intervention compared to the comparison district in Tanzania and an eight percentage-point increase in Uganda (9). The other three primary indicators (the percentage of women delivering in a health facility, proportion of women who knew danger signs both in pregnancy and for newborns, and breastfeeding within one hour after delivery) showed no evidence of improvement (9). The study team also observed that in Tanzania, there were positive changes for two other outcomes reflecting locally identified improvement topics (preparation of clean birth kits for home delivery and supervision topics) (9). The intervention was associated with 31 percentage-point increase in preparation of clean birth kits for home deliveries and 14 percentage-point increase in health facility supervision by district staff in Tanzania (9).

4.4 Research for this PhD Thesis

The author (YS) was the EQUIP project coordinator for the Tanzania site and oversaw all project activities including leading the household surveys and health facility census team. The EQUIP project did not include research about family planning services for women and the work presented here was conceptualised, designed and implemented by the author (YS). The formulation of research objectives/questions for this PhD thesis was inspired by my local knowledge as a Tanzanian citizen. I have observed increasing secondary education opportunities, promotion of family planning in the country focusing more on women who have already started childbearing, stigma around pre-marital sexual activities and among young people partly due to cultural norms and religious beliefs, and stigma around seeking family planning services for unmarried and young people. In addition, during the implementation of EQUIP project in the study area, counselling on modern family planning methods was not accepted as one of the change topics for community level quality improvement. The EQUIP community quality improvement leaders felt that the change topic was not appropriate in a Muslim dominated area despite family planning services (including modern contraception) being offered in the study area. I then followed up this local knowledge with a critical review of literature (chapter 1) that provided sufficient evidence of (i) a lack of focus on women who want to delay their first birth and (ii) important potential limitations experienced by this group when accessing family planning for me to develop the topic as an independent piece of research.

Key family planning indicators for the study setting are shown in table 4.2 below. Mtwara region, where Tandahimba and Newala districts are found, has a low total fertility rate (10), high maternal (11) and newborn mortality rates, high estimates for use of modern family planning methods among currently married women and sexually active unmarried women in comparison to the rest of Tanzania mainland (10). Median age at first birth in Mtwara

region is 19 years (10). Implementation of family planning services in the study area is guided by the same health policy, strategies and guideline available in the country as explained under 1.5.8 of the literature review section. Marie Stopes and Engenderhealth in Tanzania support family planning services in the study settings (source: personal communication).

Table 4.2: Key family planning services indicators for Mtwara Region, southern Tanzania as compared to the national estimates (Tanzania mainland)

Indicators	Tanzania mainland	Mtwara region
Household size (persons)	4.8 ⁵	3.7
Total fertility rate	5.2	3.8
Median age at first birth	20	19
Maternal Mortality Ratio (per 100,000 live birth)	556	712 [‡]
Neonatal death (per 1,000 live birth)	29	47
Contraception outcome among current married women		
Current use of any modern contraceptives	32%	50%
Current use of any family planning methods	39%	52%
For delaying 1 st birth	#	#
For spacing	24%	36%
For limiting	15%	15%
Unmet need for any family planning methods	22%	11%
For delaying 1 st birth	#	#
For spacing	15%	8%
For limiting	7%	3%
Total demand for any family planning method	61%	62%
For delaying 1 st birth	#	#
For spacing	39%	44%
For limiting	22%	18%
Contraception outcome among sexually active unmarried women		
Current use of any modern contraception	46%	70%
Current use of any family planning method	54%	70%
For delaying 1 st birth	#	#
For spacing	42%	59%
For limiting	12%	11%
Unmet need for any family planning methods	24%	17%
For delaying 1 st birth	#	#
For spacing	19%	17%
For limiting	5%	0
Total demand for any family planning method	79%	87%
For delaying 1 st birth	#	#
For spacing	61%	76%
For limiting	18%	11%

Source: Tanzania Demographic and Health Survey and Malaria Indicators Survey 2015/16 (10)

#Not available in the report; ‡Source: Hanson et al, 2015 (11)

⁵Source: National Bureau of Statistics: 2012 Tanzania Population and Housing Census (4)

4.5 Study Design and Data Collection

To address the PhD research objectives, the thesis applied mixed-methods research (12):-, which is the procedure of collecting, analysing and interpreting both quantitative and qualitative data at some stage of the research process within a single study (12-14).

However, not everyone agrees on the use of mixed methods research. There are two distinct stances on the design:-paradigmatic and pragmatic (15). The paradigmatic stance emphasises that quantitative and qualitative research methods are different paradigms, meaning that the research methods cannot be compatible and combined. Conversely, the pragmatic stance emphasises the use of whichever research method is most appropriate for answering research questions regardless of the supposed epistemological location (15).

Three main limitations of mixed methods research have been discussed as being:-

(1) unsuitable for exercises like triangulation of findings. This is due to the arguments that because quantitative and qualitative research methods represent different paradigms and cannot be compared, mixed methods research can only be employed to study complementary issues (15, 16);

(2) *“positivism dressed in a drag”* (15, 17). This is due to the claims that “the thinking” in positivism continues in “the thinking” of the mixed methods research and that it rarely reflects a constructionist or subjectivist view of the world (17); and

(3) inability to understand the deeper epistemological roots of qualitative methods (18).

Howe, 2004 argued that, qualitative methods are founded on the same epistemological principles as quantitative research and he called for mixed methods research that draws explicitly on interpretivism (15, 18).

Despite these differing views, mixed methods research has continued to be applied, in part because of its pragmatism to explore research questions with many available tools as possible (15, 19).

This PhD study employed an explanatory sequential design consisting of two distinct phases of quantitative and qualitative methods implementation (12, 13). Quantitative data collection and preliminary analysis of the data were implemented first. Quantitative data from the household survey and health facility census were collected parallel to each other and analysed separately. The rationale for mixing quantitative and qualitative data is that neither data type was sufficient to address the PhD research objectives by itself. The quantitative data provided estimates of use and provision of family planning services for women at different life stages of reproduction, and qualitative data offered information about perceptions and practices that were not amenable to quantitative methods. Therefore, data from quantitative and qualitative methods when used in combination complemented each other (12) and provided comprehensive evidence on the subject of delaying first birth in the study area. The priority (12, 20) in the study was given to quantitative methods because these first provided the evidence of facility readiness to provide family planning services in the study setting and whether there were any sexually active women desiring to delay their first birth as well as their family planning practices. The quantitative and qualitative phases were connected (12, 20) when the preliminary results from quantitative data were used to refine the topic guides for qualitative data collection. The results from quantitative studies and qualitative investigations were integrated (12) during the overall discussion of the outcome of the entire study.

4.6 Quantitative Data

The EQUIP project implemented continuous household and health facility surveys in the study area between November 2011 and April 2014 (5, 6). In summary, the project aimed to conduct cross-sectional household and health facility surveys using 24 independent probability samples of household clusters to represent each district each month, and to conduct repeat censuses of all government health facilities in each district. Each month, in each district, 10 household clusters (including 300 households) and 5 to 10 health facilities were surveyed. At the end of each 4-month round, in each district, the survey included 40 household clusters (1200 households) and a census of health facilities (22 to 38 facilities, depending on the district). To allow for holidays, retraining, and data processing intervals, these 24 monthly household and facility surveys were planned for implementation over the 30 month EQUIP intervention period (November 2011 –April 2014). Field work was organised into six rounds of data collection, each round included four monthly household samples and one complete health facility census and used that data both for the purpose of the quality improvement intervention and for evaluation.

To address objectives 1, 2 and 4 of this PhD study, additional questions about family planning services provision, use and medicines, equipment and supplies were added (by YS) to the continuous survey and health facility census tools in September 2013.

4.6.1 Continuous Household Survey for this Thesis

In both Tandahimba and Newala districts, household survey data for this PhD were collected by the EQUIP survey team (managed by YS) through two rounds of continuous household survey over eight months from September 2013 to April 2014 (Details in chapter 7 and 9). The structured, modular household questionnaire was substantially revised by the author (YS) in September 2013 to include questions on family planning knowledge, use, source of modern contraception, and information on side effects of the methods used,

what to do if experienced any side effects and other available contraceptive methods they could have used.

4.6.2 Sampling and Sample Size for Continuous Household Surveys for this Thesis

While the sample size of the EQUIP continuous survey was pre-determined, table 4.3 presents sample size calculation of the number of interviews that were required by this study to compare difference in proportions between women at different stages of reproduction, after adjusting for the cluster sampling approach. The calculation was based on a study by Annabel Erulkar that estimated that 21% of currently married Tanzanian teenagers were current users of family planning and 31% of them had no children (21). We had estimated to have around 600 women aged 13-49 years in our sample defined as women who had not started child bearing, more for the women at other stages.

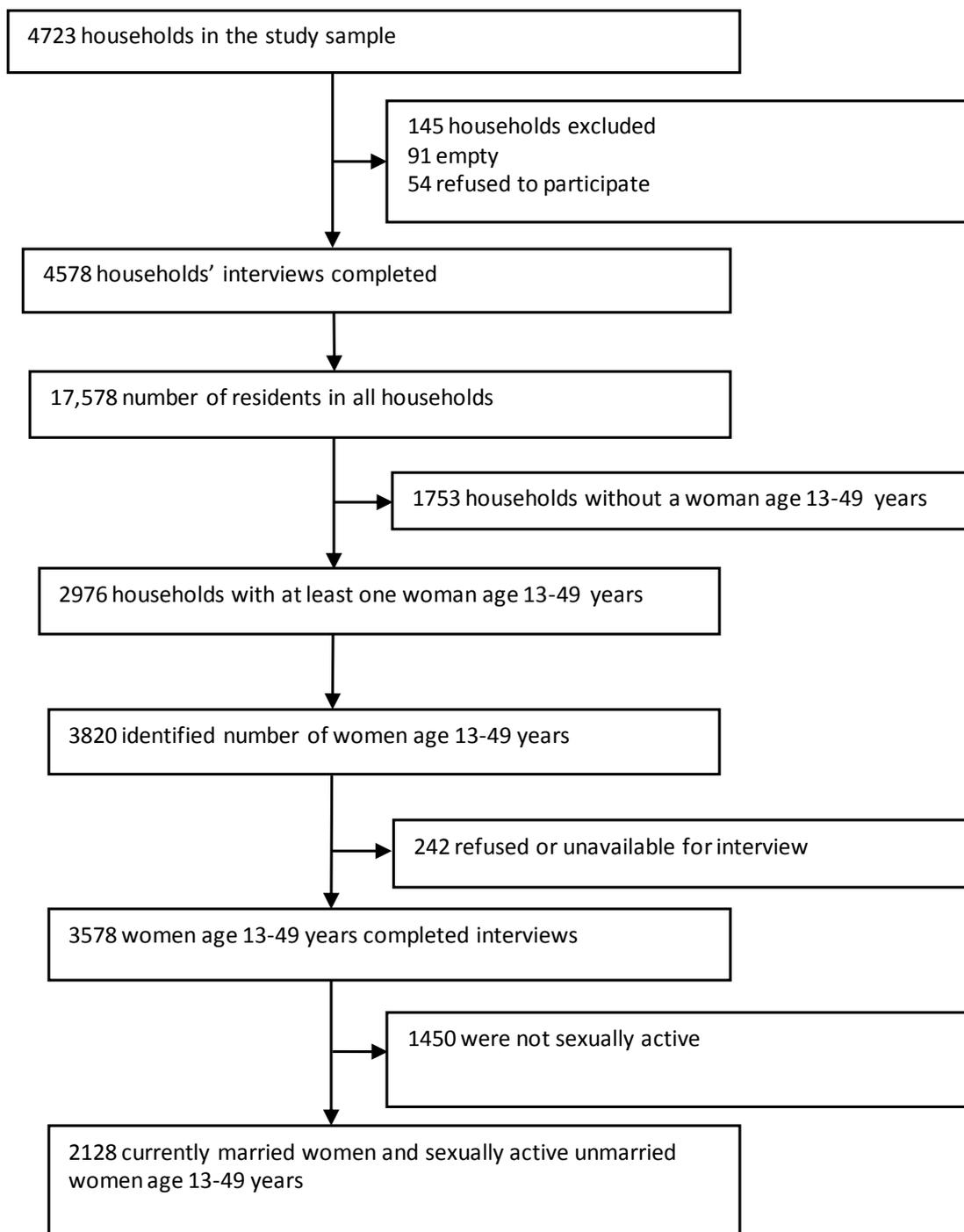
Table 4.3: Sample size calculation to detect a given percentage point difference between delayers, spacers, or limiters in current use of family planning

	z1	z2	p1	p2	N per group	N per group adjusted for clustering (1.4)
10 percentage point difference	1.96	0.84	0.21	0.31	302	422
15 percentage point difference	1.96	0.84	0.21	0.36	142	199
20 percentage point difference	1.96	0.84	0.21	0.41	84	129

Where: *z1* represents 95% significance; *z2* represents 80% power; *p1* represents estimated prevalence amongst delayers; *P2* represents estimated prevalence amongst spacers or limiters Formula: Kirkwood and Sterne, *Essentials in Medical Statistics: comparison of 2 proportions*

Throughout the duration of this PhD study the EQUIP continuous survey collected data from 160 clusters comprising of 4578 households and 3578 women aged 13-49 years, of whom 2128 were sexually active women (Figure 4.2). Reflecting on table 4.3 above, this size of sample was sufficient for the purpose of this PhD.

Figure 4.2: Continuous Surveys Study Population



4.6.3 Health Facility Census for this Thesis

The EQUIP repeat district-wide census of all 63 reproductive and child health facilities was completed once every four months. The facility census tool was revised by the author (YS) in September 2013 to include information on family planning services. One census round was accessed for this research - January 2014 to April 2014. It collected data on readiness

to provide family planning services (supply side indicators) at reproductive and child health care clinics. It collected specific information about family planning on: 1) availability of equipment and their functionality; 2) availability of family planning guideline; 3) family planning medicines and commodities that were in stock; 3) employed staff, staff trained in family planning services and providing the services; and 4) reviewed records on volume of clients who received the services in the past four months preceding the interview day.

4.6.4 Data Quality Control

Details on quality control for the quantitative surveys are summarised elsewhere (6), and included pre-testing, training, piloting, supervision, and checking mechanisms as data collection proceeded.

4.6.5 Data Handling and Ethics

Each day of survey, data were downloaded from the personal digital assistants to the supervisor's laptop and from the laptop to CD, but remained on all three media until transferred to the secure hard drive in the project office and backed up. Data were anonymised as soon as all expected interviews had been transferred and confirmed by the data manager.

4.7 Qualitative Data

Primary qualitative data were collected (by YS) from December 2014 to March 2015 to complement the quantitative data findings.

4.7.1 Data Collection Methods

The qualitative data were collected through focus group discussions (FGDs) and in-depth interviews (IDIs) (22). The strengths of FGDs are well established including a discussion among participants and to get an idea of commonly held 'publicly acceptable views' and community agreed or shared norms (22, 23). The strengths of IDIs among others include exploring peoples experience and attitudes especially around sensitive issues and topics that can be emotional for interviewee (22).

4.7.2 Sampling and Sample Size for Qualitative Data

The selection of participants for FGDs and IDIs was purposive and in the community the sampling relied on an assistance of village or street leaders (See details in chapter eight). Prior information about the aim of the study and selection criteria were provided to the village or street leaders. Participants received an information sheet about the study a day or three days before the interview. Principal researcher (YS) verified participants' eligibility before beginning the interviews or discussions.

Baker SE et al 2012 (24) suggested a range of between 12 to 60 interviews with a mean of 30 to be sufficient in order to reach data saturation. Conversely, some researchers had questioned on whether a qualitative study should continue to be assessed based on reaching saturation point regardless of the variations in its meanings, the qualitative research type (25, 26) and lack of practical guidance to researchers on when the saturation point has been reached (27). Nevertheless, several authors (28-30) agree that data saturation is often achieved at a comparative early stage and Guest et al 2006 concluded that in a highly homogenous population, a sample of six interviews may be sufficient to

develop a meaningful themes and useful interpretations (28). We pre-determined the study sample size due to limited resources. We conducted eight FGDs with male and female in the communities and 25 IDIs (18 with women identified as current users and non-users of modern contraceptive methods, four with family planning services providers and three with district level staff). Across all responder groups, saturation was reached for the questions posed.

4.7.3 Quality Control for Qualitative Data

The interview guides translated in Swahili language were piloted in two villages and refined. Prior to the actual data collection, a male research assistant received a five days training that included piloting of the interview guides and processes. Prior and during interviews, participants were assured of confidentiality as well as conducting interviews in an environment that provided privacy. FGDs were conducted in the village executive offices in their respective villages or in a classroom at one of the primary schools in their area. In-depth interviews with women were conducted in a place preferred by the respondent, most often her home. Interviews with the service providers were conducted in their offices early in the morning before their clients started coming for services or late afternoon when the staff had finished attending all clients. After each interview, a review was conducted to find out if there was some missing information or any new themes. FGD with men were conducted by experienced male researcher (FG) and YS facilitated FGD with women and in-depth interviews with women and services providers. YS transcribed all data into word documents.

Reflexivity and Positionality

Positivist paradigm claims that some scientific truth or real event can be discovered empirically and explained with pure objectivity or logical analysis (31, 32). In addition, quantitative inquiry is often suggested to have a clear set of assessment criteria that can

help the reader (both researcher and non-researcher) to judge the quality of the research relatively easily (33, 34). This is contrary to qualitative inquiry where it is often suggested to have no agreed or easily applicable set of assessment criteria (34-36). As such, reflexivity on how one's background, personal values, and experiences affect the formulation of research questions, data collections and what he or she is able to observe and analyse (37-40) is integral to qualitative research.

As a holder of a bachelor degree in Sociology and a masters degree in Public Health in Developing Countries, I am trained in both quantitative and qualitative research methods. Prior to this PhD study, I had more than seven years of experience in conducting quantitative and qualitative research in Tanzania at various levels from being an interviewer, field supervisor, research officer to project coordinator in health related topics including family planning use and women's empowerment; gender and domestic violence against women; HIV/AIDS; tuberculosis; malaria; and maternal and newborn health care. The participants for previous qualitative research that I have facilitated were nulliparous, parous, male, female from both rural and urban areas and they had different education levels, age groups, economic background and marital status.

Working as the EQUIP project coordinator that involved district, health facility and community levels quality improvement activities, I was familiar with the district level stakeholders (district medical officer and district reproductive and child health coordinator), some health facility staff and village leaders in the district. This level of familiarity helped me to be comfortable in negotiating interview logistics and meeting participants for my PhD study. In addition, as a Tanzanian woman who shared the Swahili language with the participants and having the experience of conducting qualitative research in both rural and urban areas, it was easy to establish a rapport with them and be accepted. As such I considered myself as an "insider" (39) in the community, to female

participants and district level stakeholders. However, I and my research assistant were well educated compared to the study participants. There was also an age difference between us (the researchers) and the participants younger than 20 years. As such, I was very mindful of the potential power imbalance as this placed us (researchers) in a senior or powerful position (37-39, 41), as well as an “outsider” (39). For this reason, throughout the interviews, reflexivity was maintained to mitigate any respondents’ bias that could have resulted from my presence during data collection and facilitating the interviews. For example, with regards to participants younger than 20 years, as we continued to assure them confidentiality, they relaxed and felt more familiar with us and talked openly as the discussion or an interview progressed.

Being a female researcher, not married and not had a child yet, I anticipated the reaction of married, parous, and male participants to me as an “outsider”(39). In order to minimise the respondent bias neither me nor my research assistant disclosed the marital status and parity to any type of study participants unless when asked by the participants. Interestingly, my marital status and parity was asked only once during a pilot testing of FGD topic guide with women. Since it was asked at the end of the discussion, it was not clear whether and in what way it had influenced the discussion. In addition, I did not facilitate FGDs with male participants in the community. Instead, my roles were to draft the FGDs topic guide, recruit and train the research assistant to facilitate the FGDs with men, note taking during the FGDs with men, facilitating FGDs with women, conducting in-depth interviewing with women, health facility staff and district level stakeholders, transcribing, coding and analysing and interpreting the data. Although I was present as a note taker and observer during FGDs with men that were facilitated by the male research assistant, participants appeared not to be disturbed by my presence and were free to discuss and share their experiences.

4.7.4 Qualitative Data Handling and Ethics

Short notes were jotted down during the interview regardless of whether the interview was recorded. After each interview, recorded interviews were downloaded from digital recorder to a password-protected laptop and transcribed into a word document. For each interview, the following pieces of information were recorded as identifiers: date of interview, place of interview, type of interview (FGDs or IDIs), participants (health facility staff, community (male or female), sex of the participants, unique identification number, name of facilitator, name of notes taker and transcribers. Transcripts were imported into Nvivo 10 software for data management. Transcripts and coded interviews from the laptop were backed up into a password protected external drive. Respondent confidentiality and anonymity were maintained by removing personal identifications in the transcripts, notes and published reports.

4.8 Synthesis and Interpretation

A critical review of national health policy, programme and guidelines guiding implementation of family planning in the district and at national level was conducted and is shown in section 1.5.8. Guided by the qualitative and quantitative evidence, I subsequently conducted a narrative synthesis (42) of the provision of family planning services in the light of voluntary human rights-based family planning. For example, “abuse of care by family planning providers”-what do the national and WHO guideline recommend, what do quantitative and qualitative data say and what is the implication on policy on family planning services etc.

4.9 Ethical Considerations

The EQUIP project was granted ethical clearance No 58888 by the London School of Hygiene & Tropical Medicine (LSHTM) ethics committee, the Tanzanian Commission on Science and Technology (COSTECH) and the National Institute for Medical Research (NIMR) review board in Tanzania (Ref: NIMR/HQ/r.8a/Vol.IX/1034); and the Ifakara Health Institute (IHI) review board in Tanzania (Ref: IHI/IRB/07-2010). Following the upgrading outcome from MPhil to PhD, the ethical clearance for this PhD study was additionally granted by IHI review board (ref: IHI/IRB/17-2014) and Tanzania National Institute for Medical Research review board (ref: NIMR/HQ/R.8a/Vol.IX/1835).

Challenges of ethical considerations with qualitative studies involving young people have been reported in previous studies (43-45). A recent report by Powell et al., 2012 (44) discussed informed consent, payment of participants, confidentiality and power relations as the main ethical challenges emphasised in studies involving children and young people.

The ethical implications for this PhD study were related to both younger and older participants in quantitative (household survey, and health facility census) and qualitative studies (focus group discussions and in-depth interview participants). Information sheets

explaining the purpose of the study, benefits, potential harm and the interview procedures were provided to the head of household and to each study participants a day or two days before the interview. Assent was also sought from parents or guardians of the male and female participants who were under 18 years. The participants gave written informed consent. Participation was voluntary and all participants were informed of their rights to refuse to participate or withdraw from the interview or interrupt the interview should they wished to do so without a fear of being punished or denied their social and health rights in the community. Participants were thanked after each interview for taking part and for their time spent participating in the study. There were no payments for participating in the research, however, a bar of soap was provided to each participant after the interview. During focus group discussions and in-depth interviews with participants under 18 years, no information emerged suggesting the participant or another child was at risk. If such circumstance had occurred, the principal investigator (YS) would have sought advice from my local PhD supervisor, a senior research scientist in demography and population health.

4.10 References

1. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), Knowledge for Health Project. Family Planning: A Global Handbook for Providers (2011 update). Baltimore and Geneva: CCP and WHO, 2011. Available from:
http://apps.who.int/iris/bitstream/10665/44028/1/9780978856373_eng.pdf.
2. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Health Policy (in Swahili language) Tanzania: United Republic of Tanzania,; 2007 [updated 2015; cited 2013 April 2013]. Available from: http://www.tanzania.go.tz/egov_uploads/documents/sera_wizarafnl2_en.pdf.
3. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Family Planning Guidelines and Standards, 2013: Ministry of Health and Social Welfare; 2013 [cited 2013 April]. Available from: <https://sites.google.com/a/ihi.or.tz/ihi-main-site/announ/ministryofhealthreleasesnewfamilyplanningguidelines>.
4. National Bureau of Statistics. National Bureau of Statistics: 2012 Tanzania Population and Housing Census. Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar: Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar; 2013 [cited 8]. Available from:
<http://www.meac.go.tz/sites/default/files/Statistics/Tanzania%20Population%20Census%202012.pdf>.
5. Hanson C, Waiswa P, Marchant T, Marx M, Manzi F, Mbaruku G, et al. Expanded Quality Management Using Information Power (EQUIP): protocol for a quasi-

- experimental study to improve maternal and newborn health in Tanzania and Uganda. *Implement Sci.* 2014 Apr 2;9(1):41. doi: 10.1186/748-5908-9-41.
6. Marchant T, Schellenberg J, Peterson S, Manzi F, Waiswa P, Hanson C, et al. The use of continuous surveys to generate and continuously report high quality timely maternal and newborn health data at the district level in Tanzania and Uganda. *Implementation Science.* 2014;9(1):112.
 7. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara: Mtwara Regional Socio-economic Profile 1997 1997 [cited 2014 February]. Available from: www.tzonline.org/pdf/Mtwara.pdf.
 8. Hanson C, Waiswa P, Marchant T, Marx M, Manzi F, Mbaruku G, et al. Expanded Quality Management Using Information Power (EQUIP): protocol for a quasi-experimental study to improve maternal and newborn health in Tanzania and Uganda 2013.
 9. Waiswa P, Manzi F, Mbaruku G, Rowe A, Marx M, Tomson G, et al. Effects of the EQUIP quasi-experimental study testing a collaborative quality improvement approach for maternal and newborn health care in Tanzania and Uganda. *Implementation Science.* 2017;12(1):89.
 10. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF Available from: <https://www.dhsprogram.com/pubs/pdf/FR321/FR321.pdf>

11. Hanson C, Cox J, Mbaruku G, Manzi F, Gabrysch S, Schellenberg D, et al. Maternal mortality and distance to facility-based obstetric care in rural southern Tanzania: a secondary analysis of cross-sectional census data in 226 000 households. *Lancet Glob Health*. 2015 Jul;3(7):e387-95. doi: 10.1016/S2214-109X(15)00048-0. Epub 2015 May 21.
12. Creswell JW, Clark VLP. *Designing and conducting mixed methods research*. 2nd ed. London: SAGE; 2011.
13. Creswell JW. *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage Publications, Incorporated; 2003.
14. Creswell JW, Plano Clark VL, Gutmann ML, Hanson WE. Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioral research*. 2003;209:240.
15. Bryman A. The end of the paradigm wars. *The SAGE handbook of social research methods*. 2008:13-25.
16. Sale JE, Lohfeld LH, Brazil K. Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality and quantity*. 2002;36(1):43-53.
17. Giddings LS. Mixed-methods research: positivism dressed in drag? *Journal of research in nursing*. 2006;11(3):195-203.
18. Howe KR. A critique of experimentalism. *Qualitative inquiry*. 2004;10(1):42-61.
19. Smith JK, Heshusius L. Closing down the conversation: The end of the quantitative-qualitative debate among educational inquirers. *Educational researcher*. 1986;15(1):4-12.
20. Hanson WE, Creswell JW, Clark VLP, Petska KS, Creswell JD. Mixed methods research designs in counseling psychology. *Journal of Counseling Psychology*. 2005;52(2):224.

21. Annabel Erulkar. Family Planning Use Among Married Adolescents in Three East African Countries. International Conference on Family Planning; Addis Ababa, Ethiopia 2013.
22. van Teijlingen E, Forrest K. The range of qualitative research methods in family planning and reproductive health care. *Journal of Family Planning and Reproductive Health Care*. 2004;30(3):171-3.
23. Kitzinger J. The methodology of focus groups: the importance of interaction between research participants. *Sociology of health & illness*. 1994;16(1):103-21.
24. Baker SE, Edwards R, Doidge M. How many qualitative interviews is enough?: Expert voices and early career reflections on sampling and cases in qualitative research. 2012.
25. O'Reilly M, Parker N. 'Unsatisfactory Saturation': a critical exploration of the notion of saturated sample sizes in qualitative research. *Qualitative Research*. 2012;1468794112446106.
26. Mason M, editor Sample size and saturation in PhD studies using qualitative interviews. *Forum qualitative Sozialforschung/Forum: qualitative social research*; 2010.
27. Bowen GA. Naturalistic inquiry and the saturation concept: a research note. *Qualitative research*. 2008;8(1):137-52.
28. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field methods*. 2006;18(1):59-82.
29. Romney AK, Weller SC, Batchelder WH. Culture as consensus: A theory of culture and informant accuracy. *American anthropologist*. 1986;88(2):313-38.
30. Griffin A, Hauser JR. The voice of the customer. *Marketing science*. 1993;12(1):1-27.

31. Green J, Thorogood N. Qualitative methods for health research. 3rd ed. Croydon, Great Britain: Sage; 2014.
32. Kaboub F. Positivist paradigm. *Encyclopaedia of Counselling*. 2008;2:343.
33. Campbell DT. Factors relevant to the validity of experiments in social settings. *Psychological bulletin*. 1957;54(4):297.
34. Hammersley M. Assessing validity in social research. *The SAGE handbook of social research methods*. 2008:42-53.
35. Hammersley M, editor *Assessing quality in qualitative research*. ESRC TLRP seminar series: Quality in educational research; 2005.
36. Mays N, Pope C. Qualitative research in health care: Assessing quality in qualitative research. *BMJ: British Medical Journal*. 2000;320(7226):50.
37. D'silva MU, Smith SE, Della LJ, Potter DA, Rajack-talley TA, Best L. Reflexivity and Positionality in Researching African-American Communities: Lessons from the Field. *Intercultural Communication Studies*. 2016;25(1).
38. Bourke B. Positionality: Reflecting on the research process. *The Qualitative Report*. 2014;19(33):1-9.
39. Merriam SB, Johnson-Bailey J, Lee M-Y, Kee Y, Ntseane G, Muhamad M. Power and positionality: Negotiating insider/outsider status within and across cultures. *International Journal of Lifelong Education*. 2001;20(5):405-16.
40. Berger R. Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative research*. 2015;15(2):219-34.
41. Barker J, Smith F. Power, positionality and practicality: Carrying out fieldwork with children. *Ethics, Place & Environment*. 2001;4(2):142-7.
42. Popay J, Roberts H, Sowden A, Petticrew M, Arai L, Rodgers M, et al. *Guidance on the conduct of narrative synthesis in systematic reviews*. A product from the ESRC methods programme Version. 2006;1:b92.

43. Duncan RE, Drew SE, Hodgson J, Sawyer SM. Is my mum going to hear this? Methodological and ethical challenges in qualitative health research with young people. *Soc Sci Med.* 2009;69(11):1691-9.
44. Powell MA, Fitzgerald RM, Taylor N, Graham A. Powell, M.A., Fitzgerald, R., Taylor, N.J., & Graham, A. (2012, March). *International Literature Review: Ethical Issues in Undertaking Research with Children and Young People (Literature review for the Childwatch International Research Network)*. Lismore: Southern Cross University, Centre for Children and Young People / Dunedin: University of Otago, Centre for Research on Children and Families. 2012.
45. Kirk S. Methodological and ethical issues in conducting qualitative research with children and young people: A literature review. *International journal of nursing studies.* 2007;44(7):1250-60.

5 Chapter 5: An Overview of Results

This chapter presents an overview of findings in relation to study objectives and the thesis conceptual framework.

Table 5.1: An overview of results in relation to study objectives and conceptual Framework

Objectives	Links to Conceptual Framework	Key Findings	Result Chapter
1. To assess family planning service provision in the study area in the context of Tanzania national family planning guidelines and standards	Availability, accessibility and quality	All facilities in the study area were providing family planning services and the majority had basic equipment. But dispensaries in particular had low availability of method mix, trained staff and some essential equipment.	6
2. To describe and analyse demand, current use and unmet need for modern contraception among delayers of first birth contrasting them to women who would like to space or limit future births	Accessibility	4% of 2,218 sexually active women aged 13-49 years expressed desire to delay their first birth. The majority were younger than 20 years (82%) and unmarried (88%). 59% of the delayers were using modern contraception: injectables dominated their use. Unmet need for contraception was higher among delayers (41%; 95% CI 32-51) and limiters (41%; 95% CI 35-47) as compared to spacers (19%; 95% CI 17-22).	7

Table 5.1 [Contn...]

Objectives	Links to Conceptual Framework	Key Findings	Result Chapter
3. To explore individual, community and health provider's perception about provision and use of modern contraceptives for women who would like to delay their first birth	Acceptability, accessibility and quality	Use of modern contraception to delay first birth was widely acceptable for young, students, unmarried women and women in unstable marriages. But implants and IUD were perceived as inappropriate for delayers of first birth partly due to fear around delayed return to fecundity. There was lack of clarity and consistency on definition of 'young' and that had direct implications for access, confidentiality and consent	8
4. To describe sources of modern contraception among delayers of first birth and assess whether they were informed about side-effects of the methods, what to do if experienced any side effect and other available methods they could have used, contrasting them to women who would like to space or limit future births	Availability, accessibility and quality	Overall, 69% of all women accessed modern contraception from public facilities, predominantly dispensaries. There was no evidence of difference in public or informal sources by women's life stage of reproduction (p=0.4). Indicators of quality service provision were low for all women	9
5. To synthesise and interpret the results in the light of voluntary, human rights-based family planning to provide recommendations for health policy and planning	Availability, accessibility, acceptability and quality	Overall discussion and conclusion	10

6 Chapter 6: Health facility readiness to provide modern contraceptives in Mtwara region, southern Tanzania: results from health facility census

This chapter presents unpublished analysis of health facility census data to provide a contextual description of the family planning service environment in southern Tanzania. Specifically, the chapter describes family planning services availability (facilities offering family planning and availability of contraceptive methods), service readiness (guidelines, staff, training, equipment, medicine and commodities), adherence to standards for quality services provision (counselling in family planning), basic management and administrative systems (supervision and training). The chapter also presents the volume of clients who accessed family planning services in the past four months prior to the census, disaggregated by facility type. The chapter concludes with recommendations on how to improve availability and provision of a range of method mix in facilities in southern Tanzania according to the national guideline and standards.

6.1 Background

Family planning services require availability of essential medicines and commodities, guidelines, functioning equipment and trained health staff (1). With recent increased attention on human rights-based services (2-4), access to the full range of contraceptive methods is vital. The provision of the methods however, varies according to the level of health care (1) and available trained staff and infrastructure. While short-acting methods (pills, injectables, condoms) can be provided with basic infrastructure and equipment, provision of long-acting reversible (implants and IUDs) and permanent (male and female sterilisation) methods require advanced equipment and trained staff in the methods (5, 6).

The Services Provision Assessment (SPA) survey (7) is one of the tools in monitoring facility readiness to provide health care services including family planning. The SPA tracer indicators specific for facility readiness to provide family planning services fall within the following domains 1) staff trained in family planning in the past 24 months; 2) availability of family planning guideline; 3) functioning equipment and 4) availability of medicines and commodities. Definitions for core tracer indicators across these domains are provided in table 6.1. Country specific assessments use these core indicators when adapting their own SPA survey tool.

Table 6.1: Tracer indicators for facility readiness to provide family planning services

Domain	Tracer indicator: % of facilities on the date of interview with:	Definition	Data collection	References
Guideline	Guideline on family planning	Country adapt to which guideline are required/accepted	Guideline observed in service area	Family planning: A Global handbook for providers. http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/
Staff and training	Staff trained in family planning	At least one staff member providing the service trained in the last two years in some aspect of FP	Interview response from in-charge of service area day of survey	Family planning: A Global handbook for providers. http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/
Equipment	Blood pressure apparatus	Digital blood pressure machine or manual sphygmomanometer with stethoscope	Observed availability, reported functionality, and in service area or adjacent area.	Family planning: A Global handbook for providers. http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/

Table 6.1 [Contn...]

Domain	Tracer indicator: % of facilities on the date of interview with:	Definition	Data collection	References
Medicines and commodities	Oral contraceptive pills	Combined, progestin-only and emergency contraceptive pills	Observed in service area OR where routinely stored; in stock with at least one valid.	Family planning: A Global handbook for providers. http://www.who.int/reproductivehealth/publications/family_planning/9780978856304/en/
	Condoms	Male and female condoms		
	Injectable contraceptives	Combined and progestin-only injectables		
	Intra-uterine devices and systems			
	Implants			
	Cycle beads for standard days method			
	Male and female sterilisation services			

Source: *The DHS Program_ Service Provision Assessments (SPA) (7)*

The Tanzania Service Provision Assessment surveys including the TSPA 2015/16 (8) collect information on a larger number of indicators (Table 6.2) than the SPA core, but reports provide national and regional levels, not district level estimates. Therefore, using a health facility census of 63 facilities (2 district hospitals, five health centres:-one mission owned, and 56 dispensaries) conducted through the EQUIP project, this result chapter presents health facility readiness to provide family planning services for the two districts within the study setting of this PhD:-Tandahimba and Newala districts in southern Tanzania.

Table 6.2: Family planning indicators assessed, by survey type

Service specific indicator	Tracer indicator: % of facilities on the date of interview with:	EQUIP health facility census 2014	Tanzania SPA 2015/16
Family planning service			
Services availability	▪ Facilities offering FP services	√ [‡]	√
	▪ Frequency of FP services	X	√
	▪ Specific methods offered	X	√
	▪ Availability of the methods	√	√
Service readiness			
Guideline, staff and training	▪ Staff trained in FP services [§]	√ [*]	√
	▪ Guideline on family planning	√	√
Equipment	▪ Digital Blood pressure machine or manual sphygmomanometer with stethoscope	√	√
	▪ Speculum	√	√
	▪ Examination light	X	√
	▪ Model for IUD insertion	X	√
	▪ Model for condom use	X	√
	▪ Examination bed for IUD insertion	X	√
	▪ Infection control items (soap, running water, disinfectant, latex gloves, sharp box)	√	√
	▪ Adult weighing scale	√	√
	▪ Pregnancy test kit	√	√
	▪ Room giving visual privacy	√	√
▪ HIV test kit	√	√	
Medicine and commodities	▪ Oral contraceptive pills	√ [‡]	√
	▪ Emergency contraceptives	√	√
	▪ Injectable contraceptives	√	√
	▪ Male condom	√	√
	▪ Female condom	√	√
	▪ Implants	√	√
	▪ Intrauterine devices	√	√
Adherence to standards for quality services provision	▪ Counselling in family planning	√	√ ^ψ
Basic management and administrative systems	▪ Supervision	√	√ ^ψ
	▪ Training	√	√
Clients opinion and knowledge (facility exit interview)	▪ Major services problems	X	√
	▪ Client's knowledge about contraceptive methods	X	√
User fees	▪ User fees for contraceptive commodities	X	X

[‡]At least one method type was available on survey day; [§]At least one staff member providing the service trained in the last two years in some aspect of FP; ^{*}Asked whether ever received training;

[‡]Did not ask each type of oral contraceptives pills separately; ^ψWe did not ask for content

6.2 Results

6.2.1 Family planning services: availability and method mix

Family planning services were offered in all 63 health facilities. Table 6.3 below presents percentage distribution of facilities with contraceptive medicines and commodities and method mix per facility level. Overall, a median of 2 (inter-quartile range [IQR] 1-6) modern contraceptive method types were available in the facilities on the interview day. A median of 4.5 (IQR 3-6), 4 (IQR 1-5) and 2 (IQR 1-5) contraceptive methods per hospital, health centre and dispensary, respectively were available. Male condoms and injectables were the most commonly available methods in all health facility levels.

Table 6.3: Availability of family planning services and essential commodities and medicines, by facility level

Facilities on the date of interview with:	Hospital (N=2)	Health centre (N=5)	Dispensary (N=56)	Total (N=63)
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Contraceptive medicines & commodities				
Male condoms	100	100	86 (73-93)	87 (76-94)
Injectables	100	80 (25-98)	52 (39-65)	56 (43-68)
Pills	50 (2-98)	60 (16-84)	36 (24-49)	38 (27-51)
Implants	50 (2-98)	80 (25-98)	27 (17-40)	32 (21-44)
IUDs	100	40 (8-84)	7 (3-18)	13 (6-24)
Emergency contraceptive pills	0	0	4 (1-14)	3 (1-12)
Female condoms	50 (2-98)	0	0	2 (0-11)
Contraception method mix per facility:				
1 method	0	20 (2-75)	32 (21-46)	30 (20-43)
2 methods	0	0	37 (25-51)	33 (22-46)
3 methods	50 (2-98)	20 (2-75)	19 (11-32)	21 (12-33)
4 methods	0	20 (2-75)	9 (4-20)	9 (4-20)
5 methods	0	40 (8-84)	2 (0-12)	5 (1-14)
6 methods	50 (2-98)	0	0	2 (0-11)
7+ methods	0	0	0	0
Median method mix				
Median number of method mix per facility (IQR)	4.5 methods (IQR 3-6)	4 methods (IQR 1-5)	2 methods (IQR 1-5)	2 methods (IQR 1-6)

IQR: Inter-quartile range, 25th and 75th percentile

6.2.2 Services readiness

Health staff employed, trained and providing FP services

Table 6.4 below presents percentage distribution of facilities with at least one employed staff, staff providing family planning services, family planning providers who ever received training in family planning services and providers trained in family planning services who were available on interview day.

All health facilities in the study area had at least one staff employed. A median of 10 (IQR 6-15); 6 (IQR 4-8) and 2 (IQR 1-4) health staff were providing family planning services at hospitals, health centres and dispensaries, respectively.

Overall, 58 (92%; 95% CI 82-97) of all health facilities had at least one provider who ever received training in family planning services. Of note, all family planning service providers in hospitals and health centres had ever received training, but not all in dispensaries had received training (91%; 95% CI 80-96). In addition, unlike hospitals and health centres, not all dispensaries had at least one trained family planning provider available on the interview day (91%; 95% CI 80-96).

Table 6.4: Cadre of staff employed and providing FP services, by facility level

Facilities on the day of interview with at least one:	Hospital (N=2)	Health centre (N=5)	Dispensary (N=56)	Total (N=63)
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Employed staff cadre:				
Clinician (Dr/AMO)	100	60 (16-92)	0	8 (3-18)
Clinical officer/Assistant CO	100	100	55 (42-68)	60 (47-72)
Registered nurses	100	80 (25-98)	2 (0-12)	11 (5-22)
Midwife	100	100	71 (58-82)	75 (62-84)
Others	100	100	80 (67-89)	82 (71-90)
Total	100	100	100	100
Median number of employed staff per facility	174 staff (IQR 151-197)	15 staff (IQR 10-17)	2 staff (IQR 2-3)	2 staff (IQR 2-3)
Staff providing FP services				
Clinician (Dr/AMO)	100	60 (16-92)	0	8 (3-18)
Clinical officer/Assistant CO	50 (2-98)	60 (16-92)	55 (43-68)	56 (42-68)
Registered nurses	100	80 (25-98)	2 (0-12)	11 (5-22)
Midwife	100	100	71 (58-82)	75 (62-84)
Others	50 (2-98)	40 (8-84)	80 (67-89)	76 (64-85)
Total	100	100	100	100
Median number of staff providing family planning per facility	10.5 staff (IQR 6-15)	6 staff (IQR 4-8)	2 staff (IQR 2-3)	2 staff (IQR 2-3)
FP provider who has ever received training in FP				
Clinician (Dr/AMO)	100	60 (16-92)	0	8 (3-18)
Clinical officer/Assistant CO	50 (2-98)	60 (16-92)	41 (29-55)	43 (31-56)
Registered nurses	100	80 (25-98)	2 (0-12)	11(5-22)
Midwife	100	100	62 (49-74)	67(54-77)
Others	50 (2-98)	40 (8-84)	37 (26-51)	38 (27-51)
Total	100	100	91 (80-96)	92 (82-97)
Trained FP provider who were available on visit day				
Clinician (Dr/AMO)	100	20 (2-75)	0	5 (1-14)
Clinical officer/Assistant CO	50 (2-98)	60 (16-92)	30 (19-44)	33 (22-46)
Registered nurses	100	60 (16-92)	2 (0-12)	9 (4-20)
Midwife	100	80 (25-98)	52 (39-65)	56 (42-58)
Others	50 (2-98)	40 (8-84)	21 (12-34)	24 (15-36)
Total	100	100	91 (80-96)	92 (82-97)

IQR: Inter-quartile range, 25th and 75th percentile; Dr: Medical doctor; AMO: Assistant

Medical Officer; CO: Clinical officer.

Service guidelines and posters or leaflets

The majority of the health facilities [59 (94%; 95% CI 84-98)] had family planning guidelines available on interview day. All hospitals, four (80%; 95% CI 25-98) health centres and 53 (95%; 84-98) dispensaries had the guidelines. Posters or leaflets promoting family planning services were also almost universally available in all health facilities (Table 6.5).

Functioning equipment

The availability of functioning equipment by facility type is presented in table 6.5. Of note, the equipment were available in all hospitals and health centres, but only 35 (62%; 95% CI 49-74) and 37 (66%; 95% CI 52-77) dispensaries had blood pressure machine and speculum, respectively.

Infection control items

All hospitals had the infection control items (i.e. sharp box, sterile scissors or blade, disposable gloves, soap, clean running water, disinfectant and functioning means of sterilisation) on the interview day. The items were also seen in the majority of health centres and dispensaries (Table 6.5).

6.2.3 Adherence to Standards for quality services provision

Family planning counselling

Overall, 62 (98%; 95% CI 89-100) facilities reported family planning counselling to be one of the services they routinely offer, of which 60 (97%; 95% CI 88-99) had the service available on the survey day (Table 6.5).

6.2.4 Basic Management and administrative systems

Supervision

Overall, all 63 health facilities and each specific level of care (two hospitals, five health centres and 56 dispensaries) received supervision in the past six months (Table 6.5).

Table 6.5: Availability of family planning guideline, equipment and supervision, by facility level

Facilities on the date of interview with:	Hospital (N=2)	Health centre (N=5)	Dispensary (N=56)	Total (N=63)
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
FP guideline and posters or leaflets				
Posters/leaflets promoting FP	100	100	95 (84-98)	95 (86-98)
Availability of FP guideline	100	80 (25-98)	95 (84-98)	94 (84-98)
Functioning equipment				
HIV rapid test	50 (2-98)	100	100	98 (89-100)
Pregnancy test kit	100	100	95 (84-98)	95 (86-98)
Room giving visual privacy	100	100	95 (84-98)	95 (86-98)
Stethoscope	100	100	93 (82-97)	93 (84-98)
Adult weighing scale	100	80 (25-98)	84 (71-91)	84 (72-91)
Speculum	100	100	66 (52-77)	69 (57-80)
Blood pressure machine	100	100	62 (49-74)	67 (54-77)
Items for infection control				
Sharp box	100	100	96 (86-99)	97 (88-99)
Sterile scissors or blade	100	80 (25-98)	96 (86-99)	95 (86-98)
Disposal gloves	100	80 (25-98)	95 (84-98)	94 (84-98)
Soap	100	100	91 (80-96)	92 (82-97)
Clean running water	100	100	84 (74-92)	86 (74-92)
Disinfectant	100	100	77 (64-86)	79 (76-88)
Functioning means of sterilisation	100	100	71 (58-82)	75 (62-84)
Supervision and counselling services				
Provide FP counselling	100	80 (25-98)	100	98 (89-100)
FP counselling available on interview day	100	100	96 (86-99)	97 (88-99)
Received supervision in the past six months	100	100	100	100

6.2.5 Volume of clients who received contraceptives in the past four months

Overall, a total of 22,164 clients (new and revisit) received family planning services in the past previous four months before the census. Of these, 3259 received the services from hospitals, 1733 from health centres and 17,172 from dispensaries.

Across facilities, a median number of 287 clients (IQR 168-437) had received family planning services of whom 163 (IQR 79-306) received injectables, 59 (IQR 26-100) received pills, and 7 (IQR 1-29) received male condoms (Table 6.6).

Of note, a median of clients who received all services was almost the same in the dispensaries (283; IQR 166-425) as in health centres (270; IQR 197-625), and much higher in the hospital (1629; IQR 1272-1987) (Table 6.6).

Table 6.6: Volume of all (new and re-visit) clients received family planning services in the past four months before the census day, by level of health care

Clients received family planning services	Hospital (N=2)	Health centre (N=5)	Dispensary (N=56)	Total (N=63)
	Median number of clients (IQR)			
All services	1629 (1272-1987)	270 (197-625)	283 (165.5-425)	287 (168-437)
By method types (in health facility services)				
Injectables	1053.5 (740-1367)	199 (114-319)	144.5 (77.5-276.5)	163 (79-306)
Pills	415 (400-430)	71 (68-110)	48 (25.5-84.5)	59 (26-100)
Implants insertion	98.5 (64-133)	0 (0-2)	0 (0-5)	0 (0-11)
Implants removal	37 (18-56)	0 (0-3)	0	0
Female sterilisation	12.5 (10-15)	0	0	0
Female condoms	5 (0-10)	0	0 (0-3)	0 (0-3)
Male condoms	4 (1-7)	1 (0-1)	14 (2-30)	7 (1-29)
IUD removal	1.5 (0-3)	0	0	0

IQR: Inter-quartile range, 25th and 75th percentile

6.3 Conclusions

Our study indicates that the majority of hospitals and health centres were equipped for family planning services. However, there was evidence that many dispensaries lacked some essential equipment, trained family planning providers, and had a limited method mix. Of note, dispensaries had fewer staff providing family planning services, large numbers of untrained non-health employees, more absenteeism, but provided the service to the same median number of clients as health centres. The low volume of clients who accessed long-acting reversible contraceptive methods at dispensaries and health centres also points to constraining clients' choice (a median of 283 and 270 clients in a dispensary and health centre, respectively) and to inadequate staff trained in the methods. In 2016, 87% of facilities in Mtwara region were offering any modern contraceptive methods and were offering the methods for five days or more a week (8). Of the facilities offering modern contraceptives, only 18% had at least one staff trained in family planning in the past 24 months and 58% had samples of family planning methods available on interview day (8). Strengthening the drugs and supplies ordering system and increased training in long-acting reversible methods might improve availability and provision of a range of method mix in primary as well as secondary health facilities in southern Tanzania.

6.4 References

1. The Partnership for Maternal, Newborn & Child Health. 2011. A Global Review of the Key Interventions Related to Reproductive, Maternal, Newborn and Child Health (Rmnch). Geneva, Switzerland: PMNCH. Available from: http://www.who.int/pmnch/topics/part_publications/essential_interventions_18_01_2012.pdf.
2. Cottingham J, Germain A, Hunt P. Use of human rights to meet the unmet need for family planning. *The Lancet*. 2012;380(9837):172-80.
3. Hardee K, Kumar J, Newman K, Bakamjian L, Harris S, Rodríguez M, et al. Voluntary, Human Rights–Based Family Planning: A Conceptual Framework. *Stud Fam Plann*. 2014;45(1):1-18.
4. World Health Organization. Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations: World Health Organization; 2014.
5. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), Knowledge for Health Project. Family Planning: A Global Handbook for Providers (2011 update). Baltimore and Geneva: CCP and WHO, 2011. Available from: http://apps.who.int/iris/bitstream/10665/44028/1/9780978856373_eng.pdf.
6. World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), INFO Project. Family Planning: A Global Handbook for Providers. Baltimore and Geneva: CCP and WHO, 2007 (Swahili translation). Available from: <https://www.fphandbook.org/sites/default/files/sw005-handbook.pdf>.

7. The Measure DHS Program: Service Provision Assessments (SPA) Available from:
<http://dhsprogram.com/What-We-Do/Survey-Types/SPA-Questionnaires.cfm>.
8. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International 2015. *Tanzania Service Provision Assessment Survey (TSPA) 2014-2015*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International. Available from: <http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>.

7 Chapter 7: Delaying first birth: an analysis of household survey data from rural Southern Tanzania

This research describes characteristics of delayers of first birth, their needs for family planning and modern contraceptive methods they use contrasting them with spacers of subsequent birth and limiters of future births. The findings of this chapter have been published in BMC Public Health journal (See appendix 11.2). The final manuscript is presented below.

Registry

T: +44(0)20 7299 4646
F: +44(0)20 7299 4656
E: registry@lshtm.ac.uk

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SECTION A – Student Details

Student	Yovitha Sedekia
Principal Supervisor	Tanya Marchant
Thesis Title	Family planning services in rural southern Tanzania for women who would like to delay their first birth: a mixed method study

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

SECTION B – Paper already published

Where was the work published?	BMC Public Health		
When was the work published?	January 2017		
If the work was published prior to registration for your research degree, give a brief rationale for its inclusion			
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--	--

Student Signature: _____



Date: 19/09/2017

Supervisor Signature: _____



Date: _____

19/9/17

Title: Delaying first birth: an analysis of household survey data from rural Southern

Tanzania

Authors: Yovitha Sedekia^{1,2*}, Rose Nathan¹, Kathryn Church³, Silas Temu¹, Claudia Hanson²,
⁴, Joanna Schellenberg² and Tanya Marchant²

Institutional addresses:

¹Ifakara Health Institute, P.O BOX 78373, Dar-es-Salaam, Tanzania

²Department of Disease Control, London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK

³Department of Population Health, London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK

⁴Department of Public Health Science (Global Health), Karolinska Institutet, Stockholm, Sweden

* **Corresponding author email address:** Yovitha.sedekia@lshtm.ac.uk

7.1 Abstract

Background

Currently, family planning metrics derived from nationally-representative household surveys such as the Demographic and Health Surveys (DHS) categorise women into those desiring to space or limit (permanently stop) births, or according to their age in the case of young women. This conceptualisation potentially ignores a large and growing group of young women who desire to delay a first birth. This study uses household survey data to investigate the characteristics and needs for family planning of women who want to delay their first birth.

Methods

The research was conducted in two rural districts in southern Tanzania (Tandahimba and Newala), and nested within the Expanded Quality Management Using Information Power (EQUIP) study. Data were collected as part of a repeated cross sectional household survey conducted between September 2013 and April 2014. The socio-demographic characteristics, including parity, contraceptive practices and fertility intentions of 2128 women aged 13-49 were analysed. The association between women's life stages of reproduction (delayers of first birth, spacers of subsequent pregnancies and limiters of future births) and selected contraceptive outcomes (current use, unmet need and demand for modern contraceptives) was assessed using the point estimates and 95% confidence intervals for each indicator, adjusted for the survey design.

Results

Overall, four percent of women surveyed were categorised as 'delayers of first birth', i.e. sexually active but not started childbearing. Among this group, the majority were younger than 20 years old (82%) and unmarried (88%). Fifty-nine percent were currently using a modern method of contraception and injectables dominated their contraceptive use.

Unmet need for contraception was higher among delayers (41%; 95% CI 32-51) and limiters (41%; 95% CI 35-47) compared to spacers (19%; 95% CI 17-22).

Conclusions

Delayers of first birth have very high unmet needs for modern contraceptives and they should be routinely and separately categorised and measured within nationally-representative surveys such as Demographic and Health Survey and Multiple Indicator Cluster surveys. Acknowledging their unique needs could help catalyse a programmatic response.

Keywords: Adolescents, contraceptives, delayers of first birth, family planning use, maternal and child health, unmet need, Tanzania

7.2 Background

Evidence that family planning affects the life course of women from the moment of their own birth through to menopause is abundant and compelling (1-6). Since family planning improves perinatal and child survival outcomes through lengthening the inter-pregnancy interval (3), children born to parents who had the power and means to decide on the number and spacing of pregnancies tend to be healthier, do better in school and get opportunities to earn higher incomes (4). Furthermore, use of contraceptives can help both adolescent and post-adolescent women to start child-bearing later, thus allowing them to complete their education and offering opportunities to engage in income-producing activities (4, 7).

Currently, family planning metrics derived from nationally-representative household surveys such as the Demographic and Health Surveys categorise women into those desiring to space or limit (permanently stop) birth (8-11), or according to their age (particularly for young women aged 15-24 years). Those wishing to delay their first birth are not readily identifiable as a group with a distinct profile and their specific reproductive needs may be neglected even though this group of women are likely to become increasingly important. For example, an analysis of DHS data revealed unmet need for family planning to be highest amongst young married women with no children than those with a child (12). In sub-Saharan Africa this finding is consistent with evidence that age at first sex is falling (13), age at first marriage is increasing (14) and women are more empowered to demand education and rights to determine the timing of a pregnancy (15, 16).

In Tanzania, public policies and strategies are in place for the achievement of universal access to family planning, backed-up by strong political commitment (17-20). Men and women in the country including young people (10-24 years of age) regardless of parity, marital status, creed, race, or sexual preference are legally eligible to access accurate and

complete family planning information, education and services without the need for parental or spousal consent (21). Tanzania is also a Family Planning 2020 focus country, a global initiative that aims to expand contraceptive use to 120 million additional women and girls by 2020 (22, 23). Girl's enrolment into secondary school has increased over the last decade as a consequence of government commitment to provide free primary and secondary education (24, 25).

In the context of increased global attention to family planning and reproductive rights, and to the education of girls, it is important to understand the needs of girls and women who are sexually active but who wish to delay their first birth. Using data from the high fertility setting of Tanzania, we estimated how many sexually active married or unmarried women aged 13-49 years expressed a preference to delay their first birth, described their characteristics and examined the family planning outcomes for this group of 'delayers', contrasting them to spacers of subsequent pregnancies and limiters of future birth.

7.3 Method

Study setting

Detailed information about the study setting is provided elsewhere (26, 27). Briefly, this research was carried out in two rural districts of Mtwara region in southern Tanzania: Tandahimba and Newala. The research was nested within the Expanded Quality Management Using Information Power (EQUIP) study (26, 27).

Tandahimba and Newala districts in Mtwara region-Southern Tanzania, where this study was carried out, cover an estimated population of over 400,000 people served by 63 health facilities (26-28), and is characterised as predominantly rural, having limited infrastructure (29) and high maternal and newborn mortality rates of 712 per 100,000 live births (30) and 31 deaths per 1000 live births respectively (31). Makonde is the dominant ethnic group in the study area and over 90% of the population depends on agricultural activities which include cash (cashew nuts, sesame and groundnuts) and food crops (cassava, maize, rice and sorghum) (29). The most recent Demographic and Health Survey (2010) estimated the Mtwara region to have a total fertility rate of 4.4, median age at first birth of 19 years, and high estimates for use of modern family planning methods (37%) in comparison to the rest of Tanzania mainland (27%) in 2010 (31), measured among married women aged 15-49 years. Among current users of any family planning method, 25% were using for spacing and 13% for limiting; and among those with unmet need (24%), half was for spacing and half for limiting (at 12% respectively) (31).

Study design and participants

Data were collected as part of the repeated cross sectional household surveys conducted by the EQUIP study between September 2013 and April 2014. Full details about the survey methods are reported elsewhere (26). In short, each month, in each district, a representative sample of 10 household clusters (defined as sub-villages) each of 30

households was drawn. For each district, sub-villages were listed and the number of households in each sub-village cumulated then 10 clusters selected with probability proportional to the total number of households in the district. The survey applied modular survey tools compatible with DHS and Multiple Indicators Cluster surveys to estimate indicators across the reproductive, maternal and newborn health continuum among resident women aged 13-49 years. All household heads and resident women (aged 13 to 49 years) who gave consent were interviewed. Household heads were interviewed about residents and household characteristics; whereas, women aged 13-49 years were interviewed about maternal and newborn health care and family planning knowledge and services.

Data processing and analysis

Data were analysed using STATA 13 (32). For the purpose of this analysis, sexually active women included married (including cohabiting) and unmarried women aged 13-49 years who reported having had sexual intercourse in the past three months. Women's life stages of reproduction were categorised as follows: (1) delayers of first birth (nulliparous who on survey day reported a preference to delay their first birth for at least two years or more), (2) spacers of subsequent pregnancies (parous who on survey day desired to wait for at least two years or more before having another child), (3) limiters of future birth (parous who had reached their desired family size and on survey day reported that they did not desire any subsequent children), (4) desire child soon (nulliparous and parous who on survey day desired to have a child within two years), and (5) infecund (women who on survey day reported that cannot get pregnant or had never been pregnant in the past five years and had never used contraceptives) as indicated in table 7.1.

Table 7.1: Women’s life stages of reproduction

Women’s life stages of reproduction	Sexually active (married and unmarried) women aged 13-49 who at the time of the interview: (N=2128)	N	% (95% CI)
Delayers of first birth (“delayers”)	<ul style="list-style-type: none"> ▪ were nulliparous (including women who reported previous pregnancy but no live birth), not currently pregnant, and their preference was to delay their first birth for at least two years or more 	83	4 (3-5)
Spacers of subsequent pregnancies (“spacers”)	<ul style="list-style-type: none"> ▪ had started child bearing (including current pregnant women)and desired to wait at least for two years or more before having another child 	790	37 (35-40)
Limiters of future birth (“limiters”)	<ul style="list-style-type: none"> ▪ had reached their desired family size (including current pregnant women) and did not desire any subsequent children 	409	19 (17-21)
Desire child soon	<ul style="list-style-type: none"> ▪ have started childbearing, had at least one child and at the time of interview wanted a child within two years 	675	32 (30-34)
	<ul style="list-style-type: none"> ▪ have never had a child and at the time of interview they were not pregnant and wanted child within two years 	108	5 (4-6)
Infecund	<ul style="list-style-type: none"> ▪ self-reported that cannot get pregnant or married for the past five years and never been pregnant, never used contraceptives, currently not pregnant and currently not using contraceptives 	63	3 (2-4)

Modern contraceptives were defined according to Hubacher, 2015 (33) and included short acting contraceptives (pills, injectables and condoms), long acting reversible contraceptives (implants and intrauterine devices and systems (IUDs) and permanent contraceptive methods (male and female sterilisation). We applied the definition of unmet need for contraceptives as per Bradley S et al 2012 (34), but restricted to modern contraceptive methods as per Westoff 2012 (10). Delayers of first birth who on survey day reported a preference to delay their first birth for at least two years or more but were currently not using modern contraceptives were classified as having unmet need.

Percentages and 95% confidence intervals were used to show distribution of women in various background characteristics including quintiles of socio-economic status that was derived from a wealth index constructed using principal components analysis of asset ownership. The association between women's life stages of reproduction (delayers of first birth, spacers of subsequent pregnancies and limiters of future birth) and selected contraceptive outcomes (current use, unmet need and demand for modern contraceptives) was assessed using the point estimates and 95% confidence intervals for each indicator, adjusted for the survey design using "svy" commands in STATA.

7.4 Results

Study population

Between September 2013 and April 2014 a total of 4723 households were sampled across both districts, 3820 resident women aged 13-49 years identified, of whom 3578 were interviewed. Among the 3578 respondents, 2128 (59%) were sexually active in the last three months and included in this analysis. Of these, 1772 (83%) were currently married or cohabiting, mean parity was 3 births (range 0-11), 13% had no education, 97% were Muslim, and 92% were of the Makonde ethnic group (Table 7.2).

Table 7.2: Characteristics of study sample

Background characteristics	All women 13-49 years (N=3578)		Sexually active (married and unmarried) women 13-49 years included in the analysis (N=2128)	
	n	% (95% CI)	n	% (95% CI)
Age groups (yrs)				
13-14	205	6 (5-7)	10	<1 (0-1)
15-19	529	15 (14-16)	182	9 (7-10)
20-24	491	14 (12-15)	297	14 (12-16)
25-29	466	13 (12-14)	312	15 (13-17)
30-34	527	15 (13-16)	355	17 (15-18)
35-39	519	15 (13-16)	344	16 (15-18)
40-44	504	14 (13-15)	361	17 (16-19)
45-49	337	9 (8-11)	267	13 (11-14)
Median age				
Median	3578	30 (IQR 21-39)	2128	33 (IQR 25-41)
Marital status				
Currently married	2344	66 (64-67)	1713	80 (79-82)
Cohabiting	82	2 (2-3)	59	3 (2-4)
Divorced/separated	439	12 (11-13)	212	10 (9-11)
Widow	22	1 (0-1)	4	<1 (0-0)
Single	691	19 (18-21)	140	7 (6-8)
Education				
No education	463	13 (11-15)	286	13 (12-16)
Some primary	474	13 (12-15)	243	11(10-13)
Completed primary	604	73 (70-75)	1574	74 (72-77)
Some secondary or higher	30	1 (0-2)	20	1(0-2)
Religion				
Muslim	3459	97 (95-98)	2054	97(95-98)
Others	119	3 (2-5)	74	3 (2-5)
Ethnicity				
Makonde	3338	93 (91-95)	1965	92 (90-94)
Others	238	7 (5-9)	162	8 (6-10)
Household socio-economic status				
Q1 (most poor)	420	12 (10-13)	306	10 (8-11)
Q2	586	16 (15-18)	334	16 (14-18)
Q3	692	19 (18-21)	414	19 (18-21)
Q4	914	26 (23-28)	5611	26 (24-29)
Q5 (least poor)	966	27 (24-30)	613	29 (26-32)
Parity				
Mean parity	3578	3 births (range 0-11)	2128	3 births (range 0-11)
Total	3,578	100	2128	59

IQR: Inter-quartile range, 25th and 75th percentiles

Women's life stages of reproduction

The distribution of women across the life stages of reproduction is shown in Table 7.1. Four percent (95% CI 3-5) had never had a child and reported a preference to delay their first birth for at least two years or more ("delayers"), 37% (95% CI 35-40) had started child bearing and desired to wait for at least two years or more before having another child ("spacers"), 19% (95% CI 17-21) did not desire any subsequent children ("limiters"), 32% (95% CI 30-34) had at least one child and wanted another child in the next two years, 5% (95% CI 4-6) had never had a child and wanted a child in the next two years and 3% (95% CI 2-4) were infecund.

Characteristics of the delayers, spacers and limiters

Table 7.3 shows selected background characteristics of delayers of first birth and contrasts these to those of spacers and limiters. As expected, women categorised as delayers were younger on average than spacers and limiters, although of interest was that 18% of them were 20 years or older and 12% (95% CI 7-20) of the delayers were currently married or cohabiting. We found no difference in distribution by level of education attained, or other key socio-demographic characteristics (religion, ethnicity or socio-economic status of households) between women's life stages of reproduction (delayers, spacers and limiters).

Table 7.3: Characteristics of the delayers, spacers and limiters aged 13-49 years

Background Characteristics	Sexually active [‡] (married and unmarried) women 13-49 years who are: (N=2128)					
	Delayers (N=83)		Spacers (N=790)		Limiters (N=409)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Age group (yrs)						
13-14	9	11 (6-18)	0	0	0	0
15-19	59	71 (61-79)	60	8 (6-10)	0	0
20-24	10	12 (6-23)	168	21 (18-25)	11	3 (2-5)
25-29	1	1 (0-8)	157	20 (17-24)	25	6 (4-9)
30-34	3	4 (1-11)	170	22 (18-25)	41	10 (7-13)
35-39	1	1 (0-8)	121	15 (13-18)	57	14 (11-18)
40-44	0	0	73	9 (7-12)	126	31 (27-35)
45-49	0	0	39	5 (4-7)	148	36 (31-42)
Median age						
Median	83	16 (IQR 15-18)	790	30 (IQR 24-36)	409	42 (IQR 37-46)
Marital status						
Currently married	9	11 (6-19)	647	82 (79-85)	354	87 (82-90)
Cohabiting	1	1 (0-8)	23	3 (2-4)	15	4 (2-7)
Divorced/separated	3	4 (1-10)	90	11 (9-14)	40	10 (7-13)
Widow	0	0	0	0	0	0
Single	70	84 (77-90)	30	4 (3-5)	0	0
Education						
No education	6	7 (3-15)	99	13 (10-15)	79	19 (15-24)
Some primary	5	6 (3-14)	90	11 (9-14)	54	14 (10-17)
Completed primary	72	87 (77-93)	590	75 (71-78)	272	67 (62-71)
Some secondary or higher	0	0	10	1 (0-3)	2	<1 (0-2)
Religion						
Muslim	80	96 (89-99)	768	97 (96-98)	388	95 (92-97)
Others	3	4 (1-11)	22	3 (2-4)	21	5 (3-8)
Ethnicity						
Makonde	78	94 (84-98)	730	92 (89-95)	376	92 (87-95)
Others	5	6 (2-16)	60	8 (5-11)	33	8 (5-16)
Household socio-economic status						
Q1 (most poor)	10	12 (7-20)	85	11 (9-13)	37	9 (6-13)
Q2	18	22 (14-31)	126	16 (13-19)	58	14 (11-18)
Q3	18	22 (14-31)	144	18 (16-21)	97	24 (19-29)
Q4	20	24 (16-35)	220	28 (24-32)	107	26 (22-31)
Q5 (least poor)	17	20 (13-30)	215	27 (24-31)	110	27 (22-32)
Parity						
Mean parity	83	n/a	790	3 births (range 1-8)	409	4 births (range 1-11)
Total	83	4 (3-5)	790	41 (39-43)	409	19 (18-21)

[‡] Characteristics of sexually active women desiring a child /another child soon within two years and infecund women are excluded from the table; n/a: not applicable; IQR: Inter-quartile range, 25th and 75th percentiles

Current use, unmet need and demand for modern contraceptives among delayers, spacers and limiters

Table 7.4 presents current use, unmet need and demand for modern contraceptives by women’s life stages of reproduction (delayers, spacers, limiters). Fifty nine percent (95% CI 49-68) of delayers were currently using a modern method of contraception, similar to the proportion among spacers (65%; 95% CI 62-68) and limiters (53%; 95% CI 47-59). However, the proportion of unmet need for modern contraceptives was higher among delayers (41%; 95% CI 32-51) and limiters (41%; 95% CI 35-47) than spacers (19%; 95% CI 17-22). Total demand for modern contraceptives was high for all groups being universal amongst delayers (as indicated by their definition of not wanting a birth), 94% amongst limiters (95% CI 91-96) and 84% among spacers (95% CI 81-86).

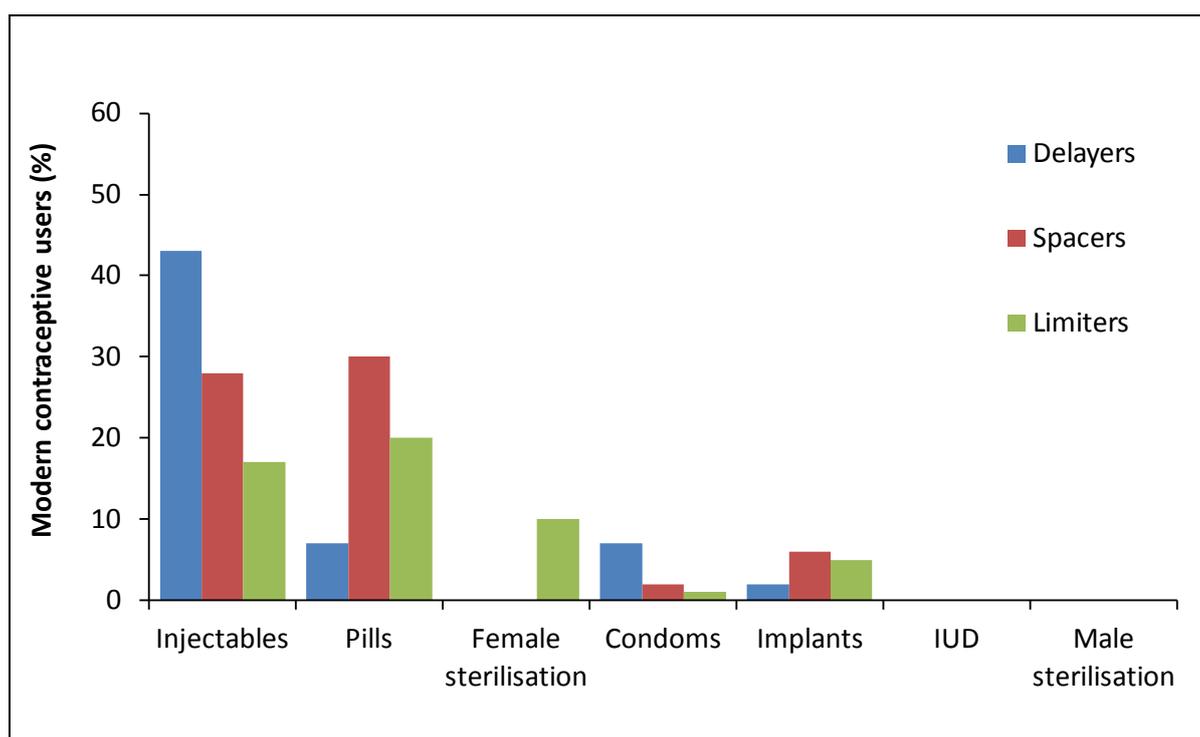
Table 7.4: Percentage of current use, unmet need and demand for modern contraceptive methods among delayers, spacers and limiters aged 13-49 years

Contraceptive Outcome	Delayers (N=83)		Spacers (N=790)		Limiters (N=409)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Current use of modern contraceptive	49	59 (49-68)	512	65 (62-68)	218	53 (47-59)
Unmet need for modern contraceptives	34	41 (32-51)	152	19 (17-22)	167	41 (35-47)
Demand for modern contraceptives	83	100	664	84 (81-86)	385	94 (91-96)

Types of modern contraceptives used

Figure 7.1 presents the different types of modern contraceptives currently used by women according to their reproductive stage. Injectables (26%; 95% CI 23-29) and pills (25%; 95% CI 22-28) were the most commonly used methods, followed by implants (5%; 95% CI 4-7), female sterilisation (3%; 95% CI 2-4) and condoms (2%; 95% CI 1-3). Use of injectables was higher among delayers (43%; 95% CI 34-53) than spacers (28%; 95% CI 24-31) or limiters, (17%; 95% CI 15-24). Condoms were also more commonly used by delayers (7%; 95% CI 3-15) than limiters (1%; 95% CI 1-3) or spacers (2%; 95% CI 1-3).

Figure 7.1: Percentage of modern contraceptive users by type of method used among delayers, spacers and limiters aged 13-49 years



7.5 Discussion

In this study we highlighted a small but important group of sexually active women aged 13-49 years who had not started childbearing and wanted to delay their first birth. The majority of this group are younger than 20 years old and unmarried. More than half were currently using a modern method of contraception, and injectables dominated their contraceptive use. Despite the fact that in our findings, only four percent of women were delayers of first birth, this is equivalent to approximately 281,778 women aged 13-49 years in the whole country of Tanzania in 2010 (35). Taking our findings on 41% of delayers having unmet need for family planning, this equates to 115,529 women in the whole country of Tanzania who want to delay their first birth but have an unmet need for modern contraceptives.

Delayed first birth, delayed marriage or delayed sexual debut all have the potential to lead to lower fertility (36). In high and middle income countries, where secondary education is universal, women delay their first birth well beyond the adolescent years (37-39). For example, in the United Kingdom the average age of women at first birth in 2013 was 30 years (40), and data suggests that first births to women aged 35-39 years and 40-44 years continue to rise (41). While important cultural differences should persist, similar trends in delayed childbearing are likely to occur in sub-Saharan Africa as school enrolment and income-earning opportunities for women increase, and the continent moves away from widespread high fertility norms that places high expectations on young women to start childbearing, maintain family lineage and provide labour (24, 42)

Injectables are the most commonly used contraceptive method in East Africa (including Tanzania) accounting for over 40% of contraceptive use (43, 44), and were the most commonly used method by delayers of first birth in our study. Of concern is that contraceptive discontinuation rate for users of injectables and pills has been reported to be

high, leading to part of the explanation for increases in unmet need in women who have tried either injectables or pills but discontinued their use without switching to another (45). For young people who may engage in intercourse infrequently, there is clearly a need to provide alternatives, including long-acting reversible contraceptives such as implants or IUDs which can offer long-term contraceptive protection. But currently in Tanzania long-acting reversible contraceptives are not widely available throughout the country (46).

One of the strengths of our study was that it included women aged 13-14 years who are typically not included in the sampling frame of surveys such as DHS. Our analysis indicated that 11% of the sexually active delayers were aged 13-14 years and available data suggests that age at first sex is decreasing (13) and unintended pregnancies continue to exist among young teenage women in Tanzania (47, 48). This is not a problem for Tanzania alone. The State of World Population report 2013 stated that of 7.3 million (19%) births to women under 18 years in developing countries, two million (3%) were to girls who were 14 years or younger (49) and who are most at risk of grave long-term health and social consequences from pregnancy. They are also likely to be excluded in the family planning policies and other reproductive health services (7).

Our study had three important limitations. First, with regard to definition of family planning indicators used by DHS, in addition to including women aged 13-49 not 15-49, we also included a recall period of three months not four weeks for sexual activity because of concerns that young unmarried people may have less frequent sexual relations than other women but still be at risk because of a lack of protection, and ignored because of a lack of attention. However this may have had the effect of over-estimating the number of women classified as recently sexually active, although our findings on family planning use for spacing and limiting were consistent with existing estimates. Further, we did not have data

with which to directly categorise women as menopausal or not, although this was unlikely to affect our findings on delaying first birth.

Second, despite intensive training and supervision of enumerators the risk of social desirability bias cannot be eliminated, particularly with regards to reporting sexual activities among unmarried and young women, which may have led to an underestimation of the number of women at risk. A study from Ethiopia suggested that unmarried women aged 13-24 years might only report half of sexual activities but over exaggerated on contraceptive and condom use (50). Third, recall bias on timing for last sexual activity may also have been present, especially among unmarried women; and errors in age reporting cannot be discounted.

7.6 Conclusions

In conclusion, our study demonstrates that even in this rural environment a small but important proportion of sexually active women would like to delay their first birth. Nearly all these women had some formal education, and all had a demand for modern contraceptives, but nearly half had an unmet need for contraception suggesting they are not currently well served by family planning programmes. We propose that delayers of first birth should be consistently categorised, using nationally representative survey data, preferably from a younger age than currently assessed, and their needs addressed in policy and programme formulation.

7.7 References

1. Brown W, Ahmed S, Roche N, Sonneveldt E, Darmstadt GL. Impact of family planning programs in reducing high-risk births due to younger and older maternal age, short birth intervals, and high parity. *Seminars in perinatology*. 2015;39(5):338-44.
2. Singh S, Darroch J, Ashford L. *Adding It Up: The Costs and Benefits of Investing in Sexual and Reproductive Health 2014*. New York: The Guttmacher Institute. 2014.
3. Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. *The Lancet*. 2012;380(9837):149-56.
4. Canning D, Schultz TP. The economic consequences of reproductive health and family planning. *The Lancet*. 2012;380(9837):165-71.
5. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet*. 2012 Jul 14;380(9837):111-25. PubMed PMID: 22784531. Epub 2012/07/13. eng.
6. Stover J, Ross J. How increased contraceptive use has reduced maternal mortality. *Maternal and Child Health Journal*. 2010;14(5):687-95.
7. Levine R, Lloyd C, Greene M, Grown C. *Girls Count: A Global Investment & Action Agenda* (Washington, DC: Center for Global Development, A Girls Count Report on Adolescent Girls) 2009. Available from: <http://www.icrw.org/publications/girls-count-global-investment-and-action-agenda>.
8. Cleland J, Harbison S, Shah IH. Unmet Need for Contraception: Issues and Challenges. *Stud Fam Plann*. 2014;45(2):105-22.
9. McCleary-Sills AW, Stobenau K, Hollingworth G. *Understanding the Adolescent Family Planning Evidence Base*. International Centre for Research on Women. 2014.
10. Westoff CF. *Unmet need for modern contraceptive methods: DHS Analytical Studies No.28*. Calverton, Maryland, USA: ICF International. 2012.

11. Woog V, Singh S, Browne A, Philbin J. Adolescent Women's Need for and Use of Sexual and Reproductive Health Services in Developing Countries. New York: Guttmacher Institute; 2015.
12. MacQuarrie K. MacQuarrie, Kerry L.D. 2014. Unmet Need for Family Planning among Young Women: Levels and Trends. DHS Comparative Reports No. 34. Rockville, Maryland, USA: ICF International 2014.
13. Doyle AM, Mavedzenge SN, Plummer ML, Ross DA. The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. *Trop Med Int Health*. 2012;17(7):796-807.
14. Shapiro D, Gebreselassie T. Marriage in sub-Saharan Africa: Trends, determinants, and consequences. *Population Research and Policy Review*. 2014;33(2):229-55.
15. You D, Hug L, Anthony D. UNICEF report Generation 2030 Africa calls upon investing in and empowering girls and young women. *Reprod Health*. 2015;12(1):18.
16. Cottingham J, Germain A, Hunt P. Use of human rights to meet the unmet need for family planning. *The Lancet*. 2012;380(9837):172-80.
17. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Health Policy (in Swahili language) Tanzania: United Republic of Tanzania,; 2007 [updated 2015; cited 2013 April 2013]. Available from: http://www.tanzania.go.tz/egov_uploads/documents/sera_wizarafnl2_en.pdf.
18. Ministry of health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: The National Family Planning Costed Implementation Programm 2010-2015, updated July 2013 Dar es Salaam: Government/MoHWSW; 2010. Available from: <http://www.fhi360.org/sites/default/files/media/documents/national-fp-costed-implementation-plan-tanzania-main-text.pdf>.

19. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: Health Sector Strategic Plan III, July 2009 – June 2015: “Partnership for Delivering the MDGs” The United Republic of Tanzania 2008. Available from: <http://www.mamaye.org/evidence/tanzania-health-sector-strategic-plan-iii-july-2009-%E2%80%93-june-2015>.
20. Ministry of Finance and Economic Affairs. The United Republic of Tanzania, Ministry of Finance and Economic Affairs: National Strategy for Growth and Reduction of Poverty II Dar es Salaam-Tanzania: MKUKUTA Secretariat, Poverty Eradication and Economic Empowerment Department, ; 2010. Available from: www.unpei.org/sites/default/files/PDF/TZ-MKUKUTA-Nat-Strategy.pdf.
21. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Family Planning Guidelines and Standards, 2013: Ministry of Health and Social Welfare; 2013 [cited 2013 April]. Available from: <https://sites.google.com/a/ihi.or.tz/ihi-main-site/announ/ministryofhealthreleasesnewfamilyplanningguidelines>.
22. FP2020. Progress Report 2012-2013: Partnership in Action. Washington DC: FP2020, 2013. Available from: <http://www.mamaye.org/en/evidence/fp2020-partnership-action-2012-13>.
23. Family Planning 2020. Family Planning 2020: 2016 FP2020 Annual commitment update questionnaire response 2015 [cited 2016 22nd March 2016]. Available from: http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2016/10/FP2020_2016_Annual_Commitment_Update_Questionnaire-Tanzania_DLC.pdf.
24. Hoogeveen J, Rossi M. Enrolment and grade attainment following the introduction of free primary education in Tanzania. *Journal of African economies*. 2013;0(0):1-19.

25. Tanzania Regional Administration and Local Government. Tanzania Regional Administration and Local Government: Pre- Primary, Primary and Secondary Education Statistics 2013 Dodoma2014. Available from:
<http://www.pmoralg.go.tz/noticeboard/tangazo-1023-20141229-Basic-Education-Statistics-BEST/FINAL-NATIONAL-27-MAY-2014.pdf>.
26. Marchant T, Schellenberg J, Peterson S, Manzi F, Waiswa P, Hanson C, et al. The use of continuous surveys to generate and report high quality timely maternal and newborn health data at the district level in Tanzania and Uganda. 2013.
27. Hanson C, Waiswa P, Marchant T, Marx M, Manzi F, Mbaruku G, et al. Expanded Quality Management Using Information Power (EQUIP): protocol for a quasi-experimental study to improve maternal and newborn health in Tanzania and Uganda. *Implement Sci.* 2014 Apr 2;9(1):41. doi: 10.1186/748-5908-9-41.
28. National Bureau of Statistics. National Bureau of Statistics: 2012 Tanzania Population and Housing Census. Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar: Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar; 2013 [cited 8]. Available from:
<http://www.meac.go.tz/sites/default/files/Statistics/Tanzania%20Population%20Census%202012.pdf>.
29. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara: Mtwara Regional Socio-economic Profile 1997 1997 [cited 2014 February]. Available from: www.tzonline.org/pdf/Mtwara.pdf.
30. Hanson C, Cox J, Mbaruku G, Manzi F, Gabrysch S, Schellenberg D, et al. Maternal mortality and distance to facility-based obstetric care in rural southern Tanzania: a secondary analysis of cross-sectional census data in 226 000 households. *Lancet Glob*

- Health. 2015 Jul;3(7):e387-95. doi: 10.1016/S2214-109X(15)00048-0. Epub 2015 May 21.
31. National Bureau of Statistics. National Bureau of Statistics (NBS) [Tanzania] and ICF Macro. 2011. Tanzania Demographic and Health Survey 2010. Dar es Salaam, Tanzania: NBS and ICF Macro 2011 [Last accessed 08 August 2015]. Available from: [http://dhsprogram.com/pubs/pdf/FR243/FR243\[24June2011\].pdf](http://dhsprogram.com/pubs/pdf/FR243/FR243[24June2011].pdf).
 32. StataCorp, inventorStata: Release 13.2013.
 33. Hubacher D, Trussell J. A definition of modern contraceptive methods. *Contraception*. 2015;92(5):420-1.
 34. Bradley S, Croft TN, Fishel JD, Westoff CF. Revising Unmet Need for Family Planning. DHS Analytical Studies No. 25. Calverton, Maryland, USA: ICF International. 2012.
 35. National Bureau of Statistics. National Bureau of Statistics: *2012 Tanzania Population and Housing Census. Population Distribution by Age and Sex*. Ministry of Finance Dar es Salaam and Office of Chief Government Statistician President's Office, Finance, Economy and Development Planning Zanzibar. Ministry of Finance Dar es Salaam and Office of Chief Government Statistician President's Office, Finance, Economy and Development Planning Zanzibar; 2013. Available from: http://ihi.eprints.org/2169/1/Age_Sex_Distribution.pdf.
 36. Finlay JE, Mejía-Guevara I, Akachi Y. Delayed marriage, contraceptive use, and breastfeeding. United Nations University 2016, WIDER Working Paper 2016/43 2016 [cited WIDER Working Paper 2016/43]. Available from: <https://www.wider.unu.edu/sites/default/files/wp2016-043.pdf>.
 37. Oláh LS. Changing families in the European Union: Trends and policy implications 2015. Available from: <http://www.familiesandsocieties.eu/wp-content/uploads/2015/09/WP44Olah2015.pdf>.

38. Zeitlin J, Mohangoo A, Delnorn M, Alexander S, Blondel B, Bouvier-Colle M, et al. European perinatal health report. The health and care of pregnant women and babies in Europe in 2010. 2013.
39. Mathews T, Hamilton B. Mean Age of Mothers is on the Rise: United States, 2000-2014. NCHS data brief. 2016 (232):1-8.
40. Office for National Statistics, Childbearing across the EU28: 4 Facts UK: Office for National Statistics; 2015 [updated October 2015; cited 2015 October]. Available from: <http://www.ons.gov.uk/ons/rel/vsob1/birth-summary-tables--england-and-wales/2013/childbearing-across-the-eu28--4-facts.html>.
41. Mathews T, Hamilton BE. First births to older women continue to rise. NCHS Data Brief 152. Hyattsville MD: National Center for Health Statistics 2014 2014 [152]. Available from: <https://www.cdc.gov/nchs/data/databriefs/db152.pdf>.
42. Dyer SJ. The value of children in African countries—insights from studies on infertility. *Journal of Psychosomatic Obstetrics & Gynecology*. 2007;28(2):69-77.
43. United Nations Population Division. United Nations, Department of Economic and Social Affairs, Population Division: The World Contraceptives Patterns 2013 Department of Economic and Social Affairs, Population Division.; [updated January 2016]. Available from: <http://www.un.org/en/development/desa/population/publications/pdf/family/worldContraceptivePatternsWallChart2013.pdf>.
44. United Nations Department of Economic and Social Affairs. United Nations, Department of Economic and Social Affairs, Infochart: World Contraceptive Patterns 2015 2015. Available from: <http://www.un.org/en/development/desa/population/publications/family/contraceptive-infochart-2015.shtml>.

45. Ali MM, Cleland JG, Shah IH, Organization WH. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys. 2012.
46. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International 2015. *Tanzania Service Provision Assessment Survey (TSPA) 2014-2015*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International. Available from: <http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>.
47. Nyalali K, Maternowska C, Brown H, Testa A, Coulson J, Gordon-Maclean C. Unintended pregnancy amongst teenagers in Arusha and Zanzibar, Tanzania: a situation analysis. Marie Stopes International, London. 2013.
48. Calvert C, Baisley K, Doyle AM, Maganja K, Changalucha J, Watson-Jones D, et al. Risk factors for unplanned pregnancy among young women in Tanzania. *Journal of Family Planning and Reproductive Health Care*. 2013;jfprhc-2012-100389.
49. Williamson N. State of world population 2013. Motherhood in childhood. Facing the challenge of adolescent pregnancy 2013. Available from: <http://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP2013-final.pdf>.
50. Lindstrom DP, Belachew T, Hadley C, Hattori M, Hogan D, Tessema F. Survey Estimates of Non-Marital Sex and Condom Knowledge among Ethiopian Youth: Improved Estimates Using a Non-Verbal Response Card. *Stud Fam Plann*. 2010;41(4):251.

8 Chapter 8: Using contraceptives to delay first birth: a qualitative study of individual, community and health provider perceptions in southern Tanzania

This research presents individual, community and provider's perceptions on use of modern contraception for women who would like to delay their first birth. The findings of this chapter have been accepted for publication in BMC Public Health journal. The final manuscript is presented below.

Registry
T: +44(0)20 7299 4646
F: +44(0)20 7299 4656
E: registry@lshtm.ac.uk

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Student	Yovitha Sedekia
Principal Supervisor	Tanya Marchant
Thesis Title	Family planning services in rural southern Tanzania for women who would like to delay their first birth: a mixed method study

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

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Stage of publication	In press

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 conceptualized the study, collected and analysed the data. I also wrote the first draft
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Date: 19/09/2017

Supervisor Signature:



Date:

19/9/17

Title: Using contraceptives to delay first birth: a qualitative study of individual, community and health provider perceptions in southern Tanzania

Authors: Yovitha Sedekia^{1,2}, Caroline Jones³, Rose Nathan¹, Joanna Schellenberg² and Tanya Marchant²

Institutional addresses:

¹Ifakara Health Institute, P.O BOX 78373, Dar-es-Salaam, Tanzania

²Department of Disease Control, London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK

³KEMRI-Wellcome Trust Research Programme, Kilifi Kenya

Corresponding author email address: Yovitha.sedekia@lshtm.ac.uk

8.1 Abstract

Background

Young adolescents and unmarried women in low and middle income countries face challenges in accessing family planning services. One factor likely to limit contraceptive use is the attitude and opinion of local stakeholders such as community leaders and health workers. Much of the existing evidence on this topic focuses on women who have already started childbearing. Using primary qualitative data, we explored individual, community and health provider's perceptions about using modern contraceptives to delay the first birth in a high fertility setting.

Methods

A descriptive qualitative study was conducted in Tandahimba district in southern Tanzania between December 2014 and March 2015. We conducted 8 focus group discussions with men and women and 25 in-depth interviews (18 with women, 4 with family planning service providers and 3 with district-level staff). Participants were purposively sampled. Data transcripts were managed and coded using NVivo 11 software and we employed a thematic framework analysis.

Results

Three main themes emerged about using modern contraceptives to delay first birth: (1) the social and biological status of the woman (2) the type of contraceptive and (3) non-alignment among national policies for adolescents. Use of modern contraceptives to delay first birth was widely acceptable for women who were students, young, unmarried and women in unstable marriage. But long-acting reversible methods such as implants and intrauterine devices were perceived as inappropriate methods for delaying first birth, partly because of fears around delayed return to fecundity, discontinuation once woman's marital status changes and permanently limiting future fertility. The support for use of

modern contraceptives to delay a first pregnancy was not unanimous. A small number of participants from both rural and urban areas did not approve the use of contraceptive methods before the birth of a first baby at all, not even for students. There was lack of clarity and consistency on the definition of 'young' and that had direct implications for access, autonomy in decision-making, confidentiality and consent for young people.

Conclusions

Women who wish to delay their first birth face challenges related to restrictions by age and method imposed by stakeholders in accessing and provision of modern contraceptives.

There is a need for a clearly communicated policy on minimum age and appropriate method choice for delayers of first birth.

Keywords: Acceptability, modern contraceptives, delayers of first birth, family planning use, maternal and child health, Tanzania

8.2 Background

Globally in 2015, 57% of married or in-union women of reproductive age were using modern contraception, but the use was much lower in the least developed countries (34%) and was particularly low in Sub-Saharan Africa (24%) (1). Modern contraceptive use among adolescents is effective at helping to prevent teenage pregnancy which in turn leads to averting abortions, miscarriage and maternal and newborn deaths (2, 3). The use of modern contraceptives also helps the adolescents to complete and attain longer education, a later and healthier start to child birth and more opportunity to engage in income generating activities (2-6). In low and middle income countries some adolescent girls are sexually active before the age of 15 years (7-9), age at first marriage is increasing (10), contraceptive use among married or in-union women is increasing (1) and fertility is declining. At the same time, education and the right to determine timing of a pregnancy is becoming more prevalent among women (11, 12). While education had been reported to have an effect on increasing age at first marriage (13), the combination of the initiation of sexual activities even before the age of 15 years and increasing age of first marriage lead to the possibility that more young women are at risk of early or unplanned first pregnancy if they do not have adequate access to contraception. It is important to understand the factors that enhance or constrain contraceptive use among this group. A recent analysis of DHS data from 52 developing countries found that a large proportion of women (married and unmarried) cite fear of contraceptive side effects and infrequent sex as reasons for not using contraception, and among unmarried women, simply being unmarried was one of the reasons for not using family planning (14). In addition, the attitudes and opinions of local stakeholders such as community leaders and health workers have been found to limit contraceptive use among young and unmarried women in developing countries (8, 15-21),

as well as women being pressured to prove their fertility as soon as they get married (22, 23).

Family Planning 2020 is an initiative to expand contraceptive use to 120 million additional women and girls by 2020 (24, 25). Tanzania is one of the Family Planning 2020 focus countries and has the policy, strategy and guidelines in place to respond to this initiative. All men and women in the country, including young people (10-24 years of age) regardless of parity, marital status, creed, race, or sexual preference are eligible to access family planning information, education and services. There is no parental, guardian or spousal consent required for adolescents (10 – 18 years), although such consent is required for people with severe mental disabilities and clients seeking permanent methods (26, 27). As the legal minimum marriage age for women in Tanzania is 15 years with parental consent (28), this policy allows for the provision of family planning services to young unmarried women. Modern contraceptive methods approved for use in Tanzania include: implants, male and female sterilisation, oral contraceptive pills, progestogen-only injectables, intrauterine device - copper containing only (IUCD), male and female condoms and emergency oral contraceptive pills (26). In addition, the government is committed to making family planning services accessible, safe, acceptable, affordable, and encourages integration or linkage with other reproductive and child health services (26, 27). In 2015, 32% of currently married or in-union women aged 15-49 years in Tanzania were using modern contraceptive methods lower than estimates for sexually active unmarried women (46%) (29), and for Eastern Africa (40%) (1) for the same period. The use was much lower among adolescent girls aged 15-19 years (9%) (29).

While the strategies, guidelines and policy frameworks are in place, little is known about how they are being implemented, including the opportunities and challenges that exist in accessing modern contraceptives among women wanting to delay their first pregnancy.

Using primary qualitative data from the high fertility setting of Tanzania, we explored individual, community and health provider's perceptions about the acceptability of modern contraceptives to delay first birth.

8.3 Methods

Study setting

The study was conducted in Tandahimba district in southern Tanzania. Tandahimba district covers an estimated population of 227,500 people served by 34 health facilities (33 primary care facilities and one hospital) (30, 31). In 2015, 87% of health facilities were offering any modern method of family planning, 58% had samples of family planning methods in stock, and only 18% had at least one staff trained in family planning services (32). Characterised as a predominantly rural area with limited infrastructure, over 90% of the population depends on agricultural activities especially cashew nuts for their subsistence (33). The area has a total fertility rate of 4 and a median age at first birth of 19 years (29). Estimates of modern contraceptive use are high compared to Tanzanian mainland at 50% among currently married women (32% mainland) and 70% among sexually active unmarried women aged 15 to 49 years (46% mainland) (29), but the neonatal and maternal mortality rates are also high at 47 newborn deaths per 1,000 live births (29) and 712 per 100,000 live births (34) respectively. A study in southern Tanzania reported that four percent of all sexually active women aged 13-49 years wanted to delay their first birth and this group of women overlap substantially, but not exclusively, with the adolescent age group (10-19 years) (35). Forty one percent of these women who wanted to delay their first pregnancy had unmet need for modern contraceptives (35). The implementation of family planning services in the study area is guided by the national policy, strategies and guidelines (26, 27).

Study design and data collection

This was a descriptive, qualitative study. Between December 2014 and March 2015, we conducted eight focus group discussions (FGDs) with men and women, 25 in-depth interviews (IDIs): 18 with women, four with family planning service providers and three with district-level staff.

Focus Group Discussions

Eight FGDs, four in urban settings and four in rural settings with 6–12 participants per group were conducted. In each setting one FGD was held with each of the following: men above 20 years; men below 20 years; women above 20 years; and women below 20 years. Participants were purposively sampled from the community to reflect the range of people living in the community, and a total of 71 people took part in the FGDs (Table 8.1). A topic guide covering issues such as: use of contraceptives in their communities; community acceptability of modern contraceptives for women who would like to delay their first birth; and type of contraceptive methods appropriate for the delayers, was used to guide the discussions. Each discussion lasted between 60–90 minutes. Women’s FGDs were facilitated by the female principal investigator (YS) and the FGDs with men were facilitated by an experienced male research assistant who also received a five days training that included pilot testing of the topic guides specifically for this study. Four FGDs were conducted in the village executive offices in their respective villages and four were conducted in a classroom at one of the primary schools in their area.

In-depth Interviews

We conducted 18 semi-structured in-depth interviews with women who did not take part in FGDs (Table 8.1). The women were purposively sampled from the community based on their age (above or below 20 years), use of modern contraceptives (current use or non-use), and place of residence (urban or rural) to reflect the range of women living in the

community. Women were asked about eligibility to use contraceptives; if they approve use of modern contraception to delay first birth; appropriate types of contraceptive methods for delayers of first birth; and if their husbands or partners approve use of contraceptives to delay first birth. The interviews were conducted in a place preferred by the respondent, most often her home.

We conducted four semi-structured in-depth interviews with family planning service providers (Table 8.2). The providers were purposively selected from different types and levels of health facilities (one from each of hospital, public health centre, mission health centre, and a rural dispensary). Where there was more than one family planning provider employed we purposively selected the staff member allocated to provide services on the day of interview (one from nine family planning providers employed at the hospital, one from six family planning providers employed at the public health centre and one from two family planning providers employed at the mission health centre. The rural dispensary employed only one staff member for all services. The service providers were also asked about: eligibility to receive modern contraceptive methods and the methods that they recommend for women who would like to delay their first birth. Interviews with the service providers were conducted in their offices early in the morning before their clients started coming for services or late afternoon when the staff had finished attending all clients.

We conducted semi-structured interviews with: 1) one District Medical Officer (DMO); 2) one District Reproductive and Child Health coordinator (DRHco) who oversees reproductive and child health services in the district; and 3) one District Hospital Social Welfare Officer (DHSWO)(Table 8.2). In-depth interviews with DMO and DRCHco asked about provision of family planning services and policy and guidelines that govern the service provision in their district. The DHSWO was interviewed to understand his involvement in family planning services in the district.

All IDIs were facilitated by the female principal investigator and lasted for up to one hour. Village or street leaders assisted in the sampling of FGD and IDIs participants in their communities.

Data management and analysis

The FGDs and interviews were all conducted in Swahili language and recorded and transcribed verbatim. A few transcribed interviews were translated into English and shared with a non-Swahili speaker involved in the study (TM) for comments during the initial stage of data collection. Results were translated from Swahili to English by the principal investigator during the final interpretation of the data presented in this study. Data analysis took place alongside data collection. Data transcripts were managed and coded using NVivo 11 software. We employed a thematic framework analysis method (36) in which themes were derived from the research questions as well as emerging from the discussion and interview data (37). The analysis included five steps. The first step involved familiarisation with the data during which the principal investigator listened to the audio recordings and read through the field notes and transcripts. The second step involved coding a few transcripts and identifying initial themes which were shared with TM, discussed, and the work refined until no new themes were generated. All data were coded by the principal investigator. The third step involved organising codes reflecting prominent themes within the data set. The fourth step involved creating a framework matrix for each theme and charting data for each code, IDIs and FGDs within that theme (comparison of both within and between interviews), and fifth step involved data mapping and interpretation through reviewing the matrices and looking at relationships between the codes and the interviews (IDIs & FGDs) (38, 39).

8.4 Results

The characteristics of the study participants are shown in Tables 8.1 and 8.2. A total of 71 participants took part in FGDs (38 men and 33 women). About half of men and women participants were currently married. More than half of women participants who were currently married had been married more than once; - i.e. they were in their second or third marriages. More than half of male had never had a child and about half of women had at least one child. Half of IDIs participants (current users and non-users of contraception) had never had a child and majority of currently married women were in polygamous marriage. All current users of modern contraceptives who had started childbearing had more than one child whereas, more than half of non-users of contraception had one child (Table 8.1).

Table 8.1: Characteristics of participants in community focus group discussion and in-depth interview

Background characteristics	Type of respondent			
	FGD participants (men) N=38	FGD participants (women) N=33	IDIs with women in the community who were current users of modern contraceptives (N=9)	IDIs with women in the community who were current non-users of modern contraceptives (N=9)
Age				
13-19	15	16	5	5
20-39	15	16	2	2
40 and above	8	1	2	2
Marital status				
Single	16	16	5	5
Currently Married/cohabiting	20	15	4	4
Divorced	2	2	0	0
Marriage type[‡]				
Monogamous	17	≠	1	1
Polygamous	3	≠	3	3

‡ for currently married/cohabiting; -Not applicable; ≠ Information was not requested from the participants

Table 8.1 [Contn...]

Background characteristics	Type of respondent			
	FGD participants (men) N=38	FGD participants (women) N=33	IDIs with women in the community who were current users of modern contraceptives (N=9)	IDIs with women in the community who were current non-users of modern contraceptives (N=9)
Area of residence				
Urban	21	15	5	5
Rural	17	18	4	4
Number of living children				
None	22	15	5	5
1	7	6	0	3
2-4	7	10	4	1
>4	2	2	0	0
Number of marriages a divorced or currently married woman has had				
1	-	8	3	2
2	-	7	1	1
3	-	2	0	1
Number of wives a divorced or currently married men has had				
1	18	-	-	-
2	3	-	-	-
3	1	-	-	-

‡ for currently married/cohabiting; -Not applicable; † Information was not requested from the participants

Of the four family planning service providers interviewed, two were enrolled nurses, one a registered nurse and one a medical attendant. The majority of the service providers and district-level staff had worked and provided family planning services in their current facilities for more than one year (Table 8.2).

Table 8.2: Characteristics of family planning providers and district stakeholders participating in in-depth interviews

Background characteristics	Type of respondent	
	IDIs with health facility family planning service providers (N=4)	IDIs with district-level staff (N=3)
Cadre		
District medical officer	-	1
DRCHco	-	1
DHSWO	-	1
Enrolled nurse	2	-
Registered nurse	1	-
Medical attendant	1	-
Number of years working at the facility		
<1 year	1	1
1-10 years	2	-
>10 years	1	2
Years providing/overseeing FP services at the facility		
<1 year	1	1
1-10years	2	-
>10 years	1	2

- : not applicable

DRCHco: District Reproductive and Child Health co-ordinator

DHSWO: District Hospital Social Welfare Officer

Across all group types, three main emerging themes from the analysis about using modern contraceptives to delay first birth were: (1) the social and biological status of the woman (2) the type of contraceptives and (3) non-alignment among national policies for adolescents.

The social and biological status of the woman

There was strong consensus among participants across all group types that some groups of sexually active women should use modern contraceptives to delay their first birth. These were: students, young women, unmarried women, and women in unstable marriage.

Being a student

It was commonly agreed across all groups that using modern contraceptives to delay first birth was acceptable and widely used among students in order to avoid pregnancies while they were still studying.

“Yeah, they approve, especially we young generation because many of we youth who are in secondary schools use modern contraceptives to avoid unwanted pregnancies.....” (FGD, 18 year-old man, rural)

A variety of justifications were given. Firstly, across all groups the importance of secondary education for young people was raised: *“We need a large percentage of our children to be educated The education will help her or him to get good earning” IDI01, 47 years-old woman, currently non-user of modern contraceptives, urban)* and pregnancy was widely perceived to impact on the ability of a young woman to complete her secondary education as schools reportedly take punitive action against pregnant students.

“.....once you become pregnant they tell you that’s the end of your studies..... (IDI05, 16 years-old woman, currently non-user of modern contraceptives, urban)

Furthermore, there were concerns that, in addition to the girl being expelled from school, schools might invoke legal action against the girl’s parents or partner.

“....first of all, some [parents] are taken to the court if she [student] becomes pregnant while she is still studying....the school take parents to the court.....”

(IDI03, FP service provider, dispensary, rural)

The issue of a student’s mother being blamed for her daughter’s pregnancy was also raised as a concern by some family planning services providers and several FGD participants of both sexes aged 20 years and above from rural area.

“....Eeh, it happened in our family as well, my sister was in secondary school. She became pregnant while at school, my father accused my mother to be the source of my sister’s pregnancy by saying that she [=my sister] is so close to her mother, she turns to her for everything (FGD, 30 years-old man, rural)

These data suggest that families are concerned about the economic, legal and social consequences of a studying daughter becoming pregnant and it was suggested by several participants that families played a role in facilitating access to modern contraceptives for female students in their households.

“....in some households they take their children to the dispensary for implants or pills and they complete their studies without any problem. But in some households [where they do not] the father becomes furious when it happens [=his daughter getting unwanted pregnancy].....” (FGD, 26 years-old man, rural)

“What I have learnt from students using contraceptives is that, first of all, parents themselves are the one who bring the students....[they say] aaah, nowadays these children behave badly, they might get pregnant before completing their studies” (IDI03, FP service provider, dispensary)

“...I have a [girl] child who has completed standard seven [=primary school education].....I will take her [to the facility for contraception] when she is nearly going to join [secondary] school.....” (FGD, 38 years-old woman, urban)

Being young

Participants reported that it was also acceptable for young married and unmarried women to use modern contraceptives to delay their first birth. Participants however, held mixed views regarding the age that a woman was considered “young”. There was no commonly agreed age for being considered “young” or at first use of contraception across all groups but they agreed that girl’s age at first sex had decreased and many girls started sexual activities while they were still studying, and thus justifying the use of modern contraception.

“From twelve years because nowadays many children start engaging into sexual activities while they are still at school.... (FGD, 37 years-old woman, rural)

“.....sixteen years-old girl should use contraceptives because at that age many children are at school and start engaging [into sex] while they have not completed their studies..... (FGD, 19 years-old woman, rural)

“...nowadays even 13 years old girls come for contraceptive method, though not many [the 13 years girls] in this village [who come], but 13, 14, 16 years [girls], students from standard five and above come to access contraception (IDI03, FP service provider, dispensary)

And some start sexual activities even before getting their first menstrual period or they experience teenage marriage:

“Nowadays I approve [use of contraceptive to delay first birth] because many children start engaging into love affairs at a very young age unlike during our days..... Nowadays children start sexual intercourse even before getting their first period....” (IDI01 47 years-old woman, currently non-user of modern contraceptives, rural)

“....sometimes you find a 14 years girl get married. That is a very young age. It is better for her to delay her first birth until she at least turns 16 or 18 years old. [At that age] she is at least matured enough “kuhimili vishindo” [=to cope with challenging situations] (FGD, 19 years-old man, urban)

Several, but not all participants expressed the view that early pregnancies were bad for girl’s health and use of modern contraceptives by young people was justifiable.

“From 12 years, a girl should delay her first birth until she at least turns 17 years or 18 years old to avoid teenage pregnancy.....It [=teenage pregnancy] affects her during delivery as she may not get complete cervical dilatation. She is not matured enough. She has to use pills or injectables or implants until when she reaches a reproductive age.” (FGD, 26 years old woman, urban)

“.....So, since they [=girls] are allowed to marry from the age of 15 years, you cannot just let them be pregnant at that age [=by denying them contraception]. Their reproductive organs are not matured enough for pregnancy. She has to delay a bit until she at least turns 18 years” (IDI05, DRCHco)

Conversely, some participants from both rural and urban areas expressed fear of infertility and did not approve use of modern contraceptives for women below the age of 18 years.

“.....when you use before giving birth [to a child] the uterus gets affected, it rots, and fallopian tubes lose the capacity to hold the ovary. So, you become the source of your infertility (I: from what age?) 15 to 17 years” (FGD, 13 years-old girl, rural)

“One day I saw a certain woman at the hospital. The doctor [=service provider] asked her, “you woman, are you mentally fit? You brought such a young child for injectables or implants? Do you know that you are causing her to be infertile?”.....I do not know if they were unfair to her or not, but I saw her” (FGD, 36 years-old woman, urban).

Being unmarried

The majority of participants across all FGDs (men and women) and IDIs with women reported use of contraceptives to delay first birth to be acceptable for unmarried women.

Two key reasons given were both associated with the social and economic consequences of being an unmarried mother. First, a pregnancy outside of marriage brought shame to the woman, and this social stigma may transfer to the family more broadly.

“... if she [unmarried woman] does not use [contraceptive methods] she will become pregnant and get illegitimate child. It is a shame. To avoid an embarrassment she has to use contraceptive methods” (FGD, 45 years-old man, urban)

Second, it was said to be easier for a man to abandon a pregnant woman if they were not married; leaving the woman vulnerable both economically and socially, or alternatively being forced by her parents to go and live with the man’s family even before marriage.

“.....aah, other men abandon you. So, once he abandons you, you remain with your pregnancy on your own. Parents also do not like it. (IDI01, 16 years-old woman, contraceptive user of modern contraceptive, urban)

“He impregnated me, and then my parents asked who was responsible with the pregnancy, I told them. I and my parents went to his family to meet with his parents. They asked him and he agreed that he had sexual affairs with me and the pregnancy was his. Then I was left there [=to stay into his family’s home], he and his parents were the ones taking care of me.....Eeh, it was before we got married, I only had the pregnancy” (IDI02, 20 years-old woman, currently non-user of modern contraceptives, rural)

Despite the social stigma and economic consequences of being an unmarried mother, several respondents across all groups were of the view that pregnancies outside marriage were relatively common in the study area.

“Mmh! It is a common thing [=for unmarried women to become pregnant] in this area because majority who have given birth are not married. There are so many children born out-of-wedlock.....” (IDI02, 20 years-old woman, currently non-user of modern contraceptives, rural)

Being married in an unstable marriage

Participants across all FGDs and IDIs had mixed views about delaying first birth for married women. A few participants across all groups reported that it was acceptable for married women to delay their first birth only if they were not quite sure about their husband’s behaviours and needed to first understand them better before they started child bearing.

“You find a woman who marries and has no child within a year since marriage. When you ask her what happened she replies, “Such a man, can you just get him a child so soon? I have to understand his behaviours”. Some men are “bondia” ” (=they beat their wives) (FGD, 36 years-old man, urban)

This was corroborated by health facility providers who said they receive both married and unmarried women who come for modern contraceptives in order to delay their first birth.

“.....for the few [married women] that I have received told me that “I still don’t know his behaviour. So, I cannot just get married and become pregnant. I would like to use contraceptives for two years then after we have known each others’ behaviour better, I can decide to have a child.....” (IDI01, FP service provider, district hospital)

It was also acceptable if a woman was married to an uncommitted and financially unstable man.

“Some [women] do not stop [using modern contraceptives]. She first observe economic situation of the household she is married in.....So my opinion is the same-to first delay for at least six months while observing the situation” (FGD, 19 years-old woman, urban)

However, the majority of the participants across all groups held the view that married men or even some married women do not accept using contraceptives for delaying first birth because they want to start having children.

“once I have married her and she tells me that she wants to delay first pregnancy, I will not agree and I cannot live with such a woman” (FGD, 45 years-old man, urban)

The importance of having children to raise an individual's status in the community was very prevalent.

“Children are very important in the community in various situations. If you do not have a child, you are not a rich person. Even if you are a millionaire, you are nothing because a child can help you in many challenges and without a child you can get a lot of problems in this world” (FGD, 45 years-old man, urban)

In addition a view was expressed that the rise of more nuclear style families made social and economic reliance on children rather than family clans even more important.

“.....the clan era has ended. Therefore you and your child have to rely on each other and not the society....” (IDI01, 24 years-old woman, current user of modern contraceptive, rural)

Although families and children were viewed as important and the Islam which is the dominant religious belief in the study area does not allow use of modern contraception, participants across all FGDs (with men and women) and IDIs with women commonly acknowledged that nevertheless people have decided to use them.

“According to religious beliefs it is not allowed to use modern contraceptives, but the community has decided, that is why we use contraceptives” (FGD, 39 years-old woman, rural)

Divergent views

The support for use of modern contraceptives to delay a first pregnancy of a student, a young person, unmarried, or married in unstable marriage was not unanimous. A small number of participants from both rural and urban areas held different views, with some not approving the use of contraceptive methods before the birth of a first baby at all, not even for students.

“Family planning is not for delaying first birth. The aim of family planning [methods] is to space between the first child and subsequent child” (FGD, 18 years old man, rural)

The main reason for disapproval was based on the “defined fertility concept” that a woman has a limited fertility and if contraceptive methods were used, a woman might end up with infertility.

It might happen that God has destined the person to have a single child and at a certain specific time. It might happen that the person has one or two eggs [= this is about fertility/fecundity], once she uses contraceptive methods and destroy the eggs will she conceive once she stop using them? She will not conceive. It is better if she first gives birth to a child and then starts using contraceptive methods....” (IDI04, 43 years woman, currently non-user of modern contraceptives, urban).

Another reason was the urge to prove fertility:

“If I had continued with studies and completed my secondary school education before using any contraceptive methods, I could have got a child first and then use the [contraceptive] methods. (I: why?) how could I have known that I was fertile while I was using pills or injectables?.....” (IDI02, 20 years old woman, currently non-user of modern contraceptives, rural)

For some participants, the ability to access family planning to delay a first birth among students was not necessarily a good thing as it carried the potential of giving the student inappropriate confidence to engage in sexual activities.

“.....when she [parent] sees that her child [=daughter] is going to start form one [=secondary school education] she takes her to the dispensary for implants. But I think it [=implants] makes the child to be confident and start engaging into a bad peer groups because she is confident that she already has implants.....” (FGD, 19 years-old woman, rural)

The type of contraceptive

The district reproductive and child health coordinator and district medical officer who oversee reproductive and child health services in the district reported that: *“It depends on the client’s choice” (IDI05, DRCHco)*. However the DRCHco went on to say that in their experience the long-acting reversible methods (intrauterine devices and implants) were ideal for women who would like to delay their first birth and that they generally counselled for the use of these method types.

For example a girl who is still studying cannot use injectables because she will get tired to visit for injections. So you advice her to use IUD or implant that can last for three to five years. Other clients receive advice from their peers and they come for injectables, but we counsel them that injectables are provided after every three months and you will get tired, you better use IUD” (IDI05, DRCHco)

By contrast, some family planning providers in facilities said that they did not always recommend or provide long-acting reversible methods for delayers of first birth. The first reason was a request for early removal of the methods especially from newly married women. Some providers said they would not recommend long acting reversible methods to delayers of first birth who are currently unmarried to avoid the women to come to the facility asking to remove them before the removal date as soon as they get married.

“... For delayers it is condoms, pills, and injectables.....There are reasons for this, for example, you cannot provide implants to a woman who wants to delay a first pregnancy for one year because implants protect for three years..... Another client can tell you that when I inserted the implant I was not yet married. Now I am married and my husband needs a child...” (IDI01, FP provider, district hospital)

“.....When you ask most of them they say “once I get married I will stop using”, so you can advise her to use implants and find her coming back after a week for removal (=before removal date)” (IDI04, FP service provider, public health centre)

A second reason was concern about a rapid return to fecundity. Some of the providers recommend pills as the most appropriate contraceptive method for delayers of first birth because of the perception that a return to fecundity would be quicker than other methods, including injectables.

“I usually recommend them to use pills because she can conceive as soon as she stops taking them. The temporary side effects from injectables do delay a woman to conceive for up to six or nine months” (IDI04, FP service provider, public health centre)

The majority of participants who took part in FGDs and women who took part in the IDIs agreed with this perspective:

“....those who have not given birth should use pills. She can conceive immediately at any time once she stops...that is what we have said that anyone who has never been pregnant even once uses the pills, when she stops she will get a child (FGD, 39 years-old woman, urban)

The third factor influencing the providers’ choice of method was logistical. The providers reported that many facilities experienced stock-outs and frequently had a limited method mix to offer clients.

“Because injectables and pills are the most available methods, our clients choose injectables and pills” (IDI03, FP service provider, dispensary)

An additional logistical constraint was that some providers have not received training in long-acting reversible methods and the methods were not ordered for their facilities. Clients were reported to be referred to other facilities with trained staff or were asked to wait for district staff who come to provide the service once or twice a year accompanied by staff from Marie-Stopes Tanzania.

“...some clients say “I need implants”. I normally tell them that I have not received any training on how to insert implants and implants are not available here [=at this facility]. Therefore, I refer them to other facilities where they are provided” (IDI02, FP service provider, mission health centre)

Non-alignment among national policies for adolescents

Multiple policies and laws are in place to protect the rights of young people in Tanzania, including having access to family planning services from the age of 10 years and with confidentiality without the need for consent from parents, guardian or spousal except for people with severe mental disabilities and clients seeking permanent methods (26, 27). The Tanzania child law of 2009 defines a child as anyone who is below the age of 18 years and according to the Tanzania education and training policy of 2014 (40) a girl who started primary school at the age of 7 years, is likely to turn 18 while she is still at secondary school. Men who engage into sexual activities with a primary or secondary school student and impregnate or marry the school girl can face up to 30 years in prison (41). Conversely, the minimum marriage age for girls in Tanzania according to the Tanzania marriage law of 1971 is 15 years with parental consent (28). At the district level the actors implementing these laws are hindered by lack of clarity and consistency about age-restrictions. In the case of family planning this has direct implications on the issue of access, confidentiality and consent for young people.

Access, confidentiality and consent

Young women who visit facilities face minimum age limit and limited method choice.

Family planning service providers at the district hospital were asked by the district hospital social welfare officer not to provide the service to any student or woman below 18 years before referring her to a district hospital social welfare for counselling. This pointed to a lack of confidentiality between clients and service providers, confusion about eligible age to receive contraception and the need for consent.

“.....I normally tell them that when a child comes to you to seek [family planning services] while she has not yet conceived, if she is ten or eleven or twelve years, I tell them to first refer them to [me] social welfare officer so that I can understand what is her problem such that she wants to use the service and I advice her. Therefore, that is how we work closely with RCH department.....” (IDI07, DHSWO)

“....they are children according to the child law of 2009 that I use to protect them. So, once she is received [=by family planning providers] and she is under 18 years, even if she has four children to me she is a child and she is my client...” (IDI07, DHSWO)

“If I counsel a student and manage to make her to not get involved into contraceptive use while she is under 18 years and still not become pregnant, to me that is a big achievement.....If I wake up in the morning and find more than 20 children queuing for family planning services, in terms of behavioural change, I am a failure” (IDI07, DHSWO)

In addition, family planning providers reported that for the clients brought by their parents or relatives, the parent or the relative explained the purpose of the visit and/or chose the contraception method. This pointed to a limited autonomy in decision-making to access the service and choice of specific contraception method among young women.

“The mother is the one who explains “she is here for injectables”. What I then do is just explain to them about injectables [use] and so on. I do not ask her [the client brought by her mother] if she is willing to use or not...., when they arrive I just take it as they have agreed each other since home. ..., from 14 years, 15 years up to 19 years, students” (IDI02, FP service provider, mission health centre)

“Those who are brought by their parents I only ask the parent that “this child is still young, has not decided yet and you have decided for her, do you really want your child to be given injectables? She replies “yes”. This means that she discussed with her at home and then brought her here. I provide her [the method] because she is brought by her mother. I cannot tell her that I won’t give you while she is the one who brought her here. She is confident that her child is grown up and is able to get involved into sexual activities. She came here so that she can avoid pregnancy..... (IDI03, FP service provider, dispensary, rural).

Lack of autonomy in the decision-making to use contraception for some young women and students was corroborated with FGDs and IDIs participants when sharing their experience on how the decision to access and use specific contraception for the first time was made.

“.....I do not know what they discussed, I was just injected with the injectables.....My sister told me that “let me take you to the dispensary because you are still a student. Perhaps you meet men and sleep with them, they will impregnate you, I do not want that, I want you to complete your studies”. Then I was taken to the dispensary and she talked to the facility staff and I was injected....when I say that I do not know anything it is because they went and talked alone, after they have talked and agreed, I was just injected with the injectables”. (IDI02, 20 years-old woman, currently non-user of modern contraceptives, rural)

8.5 Discussion

Our results suggest that being a student, being young, unmarried, or being in an unstable marriage were strongly perceived to be acceptable reasons for women using modern contraceptives to delay their first birth. However, long-acting reversible methods such as implants and intrauterine devices were perceived as inappropriate methods for delaying first birth. In addition, there was lack of clarity and consistency on acceptable age at first use of contraception and that had direct implications for access, autonomy in decision-making, confidentiality and consent for young people. A few participants disapproved use of any modern contraceptives for delaying first birth mainly due to: 1) the defined fertility concept- that there is an amount of limited fertility a woman has and if contraceptive methods were used, a woman might end up infertile; 2) proving woman's fertility; and 3) lack of clan as extended families dissolve and nuclear style families become more prevalent you have to rely on your children rather than your clan.

Similar to a recent research in Kenya (42), several participants approved use of modern contraceptives despite acknowledging that religious beliefs prohibit their use. A more important emerging issue, and also reported in other settings (8, 15-17) was the varying views on age limit at first use of the modern methods, expressed by people at community and at facility level, despite participant's commonly agreed views on decreasing age at first sex in their community. In southern Tanzania, the majority of delayers of first birth use injectables, pills and condoms (35) -methods reported to have high discontinuation rates (29, 43). Consistent with previous studies (44, 45), fear of delayed return to fecundity, discontinuation of long-acting reversible contraceptive methods such as implants and intrauterine devices in order to become pregnant once a woman's marital status changes were the main reasons for not recommending the methods to women who would like to delay their first birth. But this lack of method mix for delayers may also be related to the

insufficient number of trained staff in long-acting reversible contraceptive methods in the study area –a common problem in low and middle income countries (17, 46, 47). The recent Tanzania service provision assessment survey also found that long-acting reversible contraceptive methods were not widely available throughout the country and only 18 percent of facilities that offered any modern methods had at least one staff trained in family planning in 24 months before the survey (32).

Contrary to the Tanzanian national family planning policy, guideline and standards (26, 27) officials at district management and facility levels had contradictory interpretation of the policy with regards to young women, students and unmarried women. This was similar to challenges reported in previous studies in sub-Saharan Africa including Tanzania where consent requirement were imposed or women were expected to have given birth to at least one child before adoption of modern contraceptives (8, 16, 17, 19, 20). In addition, in some families that supported delayers of first birth who were young or students to access contraception, the family members played a key role in decision making to access and choosing the method-an indication of lack of autonomy in decision-making among the young women. This may not be unique to Tanzania: a meta-ethnography on what influences adolescents' contraceptives decision making in United States also found that parents made contraceptive decisions for some adolescents (48). And it has also been reported from Uganda that family planning providers also chose contraceptive methods for some young people - again pointing to lack of autonomy in decision making among young women (21). Conversely, not all women lacked autonomy in decision making to use modern contraceptives since it was reported that women married in an unstable marriage were using the methods to delay their first birth while learning their husband's behaviours such as intimate physical violence, or for financial and economical stability reasons. Findings from a recent study conducted in Ghana also found that women who justified wife beating in one or more instances were less likely to use modern contraceptives suggesting

that women who did not justify wife beating's behaviour were more likely to use modern contraceptives (49). About seventy percent of nulliparous women over 33 years in the UK were reported to be using modern contraceptives for delaying their first birth due to reasons concerning their relationships with husbands or partners (50) also consistent with our finding that using modern contraception was acceptable for women in unstable relationships.

The views of the few participants who disapproved the use of modern contraception to delay first birth were similar to a recent study in Uganda, where contraception was perceived to be for spacing subsequent pregnancies, and access to the contraception was affected by the women's overwhelming fear of permanent infertility (51). In addition, their views were similar to the findings from a study conducted in India where women who were pressured to prove their fertility as soon as they got married were less likely to use modern contraceptives (22). This may not be unique to India: a previous study (52) had reported that the value of children in African countries also places high expectations on young women to start childbearing in order to maintain family lineage and for the children to provide labour. However, in sub-Saharan Africa including Tanzania, as school enrolment and income-earning opportunities for women increase (53), prevalence of sexual activities among adolescents aged 10-19 years (8) and government increased commitment to provide family planning services (24, 25), there is likely to be an increasing demand for the use of modern contraceptive for delaying first birth. For example, a recent study in Southern Tanzania found that all of the women who wanted to delay their first pregnancy had demand for modern contraceptives, yet only fifty nine percent of the women were currently using modern contraceptives (35). Since the majority of the women who would like to delay their first birth are young adolescents and unmarried women (35) who are less likely to access a range of these methods, service provision to this group needs clarity and consistency on age limits and appropriate contraception method.

This qualitative study has some limitations. While all health facility levels were represented the number of interviewees from health facilities was relatively small; nonetheless, across all responder groups saturation was reached for the questions posed. Every effort was taken to minimise the effect of methodological issues that can introduce bias in qualitative studies, for example maintaining reflexivity throughout data collection to reduce the influence of researchers on responses, providing clear selection criteria for interviewees, and analysis being carried out by a fluent Swahili and English speaker to preserve the original meaning of responses to the extent possible. Despite these efforts respondent bias cannot be discounted, particularly among health staff directly involved in provision of family planning services.

8.6 Conclusions

In conclusion, our study demonstrates that in southern Tanzania it is acceptable to use modern contraceptives to delay first birth if a woman is a primary or secondary school student, young, unmarried, or in an unstable marriage. These women face challenges related to restrictions by age and method imposed by stakeholders. There is a need for a well-communicated policy on minimum age and appropriate contraception methods for the delayers of first birth.

8.7 References

1. United Nations, Department of Economic and Social Affairs, Population Division (2015). Trends in Contraceptive Use Worldwide 2015 (ST/ESA/SER.A/349). 2015. Available from: <http://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf>.
2. Darroch J, Woog V, Bankole A, Ashford L. Adding it up: Costs and benefits of meeting the contraceptive needs of adolescents. New York, Guttmacher Institute, 2016 May. [15] p. Guttmacher Institute and UNFPA. 2016;15.
3. Brown W, Ahmed S, Roche N, Sonneveldt E, Darmstadt GL. Impact of family planning programs in reducing high-risk births due to younger and older maternal age, short birth intervals, and high parity. *Seminars in perinatology*. 2015;39(5):338-44.
4. Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. *The Lancet*. 2012;380(9837):149-56.
5. Levine R, Lloyd C, Greene M, Grown C. Girls Count: A Global Investment & Action Agenda (Washington, DC: Center for Global Development, A Girls Count Report on Adolescent Girls) 2009. Available from: <http://www.icrw.org/publications/girls-count-global-investment-and-action-agenda>.
6. Canning D, Schultz TP. The economic consequences of reproductive health and family planning. *The Lancet*. 2012;380(9837):165-71.
7. Doyle AM, Mavedzenge SN, Plummer ML, Ross DA. The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. *Trop Med Int Health*. 2012;17(7):796-807.
8. Chandra-Mouli V, McCarraher DR, Phillips SJ, Williamson NE, Hainsworth G. Contraception for adolescents in low and middle income countries: needs, barriers, and access. *Reprod Health*. 2014;11(1):1.

9. Kothari, Monica T., Shanxiao Wang, Sara K. Head, and Nouredine Abderrahim. 2012. Trends in Adolescent Reproductive and Sexual Behaviors. DHS Comparative Reports No. 29. Calverton, Maryland, USA: ICF International. Available from: <https://www.dhsprogram.com/pubs/pdf/CR29/CR29.pdf>.
10. Shapiro D, Gebreselassie T. Marriage in sub-Saharan Africa: Trends, determinants, and consequences. *Population Research and Policy Review*. 2014;33(2):229-55.
11. You D, Hug L, Anthony D. UNICEF report Generation 2030 Africa calls upon investing in and empowering girls and young women. *Reprod Health*. 2015;12(1):18.
12. Cottingham J, Germain A, Hunt P. Use of human rights to meet the unmet need for family planning. *The Lancet*. 2012;380(9837):172-80.
13. Manda S, Meyer R. Age at first marriage in Malawi: a Bayesian multilevel analysis using a discrete time-to-event model. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*. 2005;168(2):439-55.
14. Sedgh G, Ashoford LS, Hussain R. Unmet need for contraception in developing countries: examine women's reasons for not using a method. The Guttmacher Institute, 2016.
15. 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. *Reprod Health*. 2009;6(1):1.
16. Miller K, Miller R, Fassihian G, Jones H. How providers restrict access to family planning methods: results from five African countries. New York, Population Council, 1998. 159-79. New York: Population Council, 1998 Contract No.: 138493.
17. Nalwadda G, Mirembe F, Tumwesigye NM, Byamugisha J, Fixelid E. Constraints and prospects for contraceptive service provision to young people in Uganda: providers'

- perspectives. BMC Health Serv Res. 2011;11:220. PubMed PMID: 21923927.
 Pubmed Central PMCID: PMC3181204. English.
18. Nalwadda G, Mirembe F, Byamugisha J, Faxelid E. Persistent high fertility in Uganda: young people recount obstacles and enabling factors to use of contraceptives. BMC Public Health. 2010;10(1):530.
 19. Tumlinson K, Okigbo CC, Speizer IS. Provider barriers to family planning access in urban Kenya. Contraception. 2015;92(2):143-51.
 20. Speizer IS, Hotchkiss DR, Magnani RJ, Hubbard B, Nelson K. Do service providers in Tanzania unnecessarily restrict clients' access to contraceptive methods? Int Fam Plann Perspect. 2000:13-42.
 21. Nalwadda G, Mirembe F, Byamugisha J, Tumwesigye NM, Faxelid E. Young peoples' interface with providers of contraceptive care: a simulated client study in two Ugandan districts. Contraception and Reproductive Medicine. 2016;1(1):15.
 22. Jejeebhoy SJ, Santhya KG, Zavier AJF. Demand for Contraception to Delay First Pregnancy among Young Married Women in India. Stud Fam Plann. 2014;45(2):183-201.
 23. Adams MK, Salazar E, Lundgren R. Tell them you are planning for the future: gender norms and family planning among adolescents in northern Uganda. Int J Gynaecol Obstet. 2013 Nov;123 Suppl 1:e7-10. PubMed PMID: 23992625. English.
 24. FP2020. Progress Report 2012-2013: Partnership in Action. Washington DC: FP2020, 2013. Available from: <http://www.mamaye.org/en/evidence/fp2020-partnership-action-2012-13>.
 25. Family Planning 2020. Family Planning 2020: 2016 FP2020 Annual commitment update questionnaire response 2015 [cited 2016 22nd March 2016]. Available from: <http://ec2-54-210-230-186.compute-1.amazonaws.com/wp->

[content/uploads/2016/10/FP2020_2016_Annual_Commitment_Update_Questionnaire-Tanzania_DLC.pdf](#).

26. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Family Planning Guidelines and Standards, 2013: Ministry of Health and Social Welfare; 2013 [cited 2013 April]. Available from: <https://sites.google.com/a/ihi.or.tz/ihi-main-site/announ/ministryofhealthreleasesnewfamilyplanningguidelines>.
27. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Health Policy (in Swahili language) Tanzania: United Republic of Tanzania,; 2007 [updated 2015; cited 2013 April 2013]. Available from: http://www.tanzania.go.tz/egov_uploads/documents/sera_wizarafnl2_en.pdf.
28. United Republic of Tanzania. Tanzania Registration Insolvency and Trustship Agency: The Law of Marriage Act of 1971, cap 29 Dar es Salaam: United Republic of Tanzania; 1971 [updated February 2014; cited 2013]. Available from: [http://rita.go.tz/eng/laws/History%20Laws/Marriage%20Ordinance,%20\(cap%2029\).pdf](http://rita.go.tz/eng/laws/History%20Laws/Marriage%20Ordinance,%20(cap%2029).pdf).
29. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF Available from: <https://www.dhsprogram.com/pubs/pdf/FR321/FR321.pdf>
30. National Bureau of Statistics. National Bureau of Statistics: 2012 Tanzania Population and Housing Census. Ministry of Finance, Dar es Salaam and President's

Office, Finance, Economy and Development Planning, Zanzibar: Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar; 2013 [cited 8]. Available from: <http://www.meac.go.tz/sites/default/files/Statistics/Tanzania%20Population%20Census%202012.pdf>.

31. Hanson C, Waiswa P, Marchant T, Marx M, Manzi F, Mbaruku G, et al. Expanded Quality Management Using Information Power (EQUIP): protocol for a quasi-experimental study to improve maternal and newborn health in Tanzania and Uganda. *Implement Sci.* 2014 Apr 2;9(1):41. doi: 10.1186/748-5908-9-41.
32. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International 2015. *Tanzania Service Provision Assessment Survey (TSPA) 2014-2015*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International. Available from: <http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>.
33. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara: Mtwara Regional Socio-economic Profile 1997 1997 [cited 2014 February]. Available from: www.tzonline.org/pdf/Mtwara.pdf.
34. Hanson C, Cox J, Mbaruku G, Manzi F, Gabrysch S, Schellenberg D, et al. Maternal mortality and distance to facility-based obstetric care in rural southern Tanzania: a secondary analysis of cross-sectional census data in 226 000 households. *Lancet Glob Health.* 2015 Jul;3(7):e387-95. doi: 10.1016/S2214-109X(15)00048-0. Epub 2015 May 21.

35. Sedekia Y, Nathan R, Church K, Temu S, Hanson C, Schellenberg J, et al. Delaying first birth: an analysis of household survey data from rural Southern Tanzania. *BMC Public Health*. 2017;17(1):134.
36. Ritchie J, Spencer L, Bryman A, Burgess R. *Analysing qualitative data*. London: Routledge. 1994;3.
37. Ritchie J, Spencer L. *Qualitative data analysis for applied policy research. The qualitative researcher's companion*. 2002;573:305-29.
38. Green J, Thorogood N. *Qualitative methods for health research*. 3rd ed: Sage; 2013.
39. Green J, Thorogood N. *Qualitative Methods for Health Research*. 2nd ed. College) DSG, editor: Sage; 2009.
40. Ministry of Education and Vocational training: Tanzania Education and Training policy 2014 (in Swahili language). Available from: http://www.tanzania.go.tz/egov_uploads/documents/SERA_ya_Elimu_2_en.pdf.
41. Tanzania: 30-years in jail for marrying or impregnating schoolgirls, parliament resolves. Available from: <http://thisisafrica.me/tanzania-30-years-jail-marrying-impregnating-schoolgirls-parliament-resolves/>.
42. Bakibinga P, Mutombo N, Mukiira C, Kamande E, Ezeh A, Muga R. The Influence of Religion and Ethnicity on Family Planning Approval: A Case for Women in Rural Western Kenya. *Journal of religion and health*. 2016;55(1):192-205.
43. Ali MM, Cleland JG, Shah IH, World Health Organisation. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys: World Health Organization; 2012. Available from: <http://www.who.int/iris/handle/10665/75429>.
44. Hirozawa A. A first pregnancy may be difficult to achieve after long-term use of an IUD. *Int Fam Plann Perspect*. 2001;27(3):158-9.

45. Staveteig S, Mallick L, Winter R. Uptake and discontinuation of long-acting reversible contraceptives (LARCS) in low-income countries 2015. Available from: <https://dhsprogram.com/pubs/pdf/AS54/AS54.pdf>.
46. Mbizvo MT, Phillips SJ. Family planning: Choices and challenges for developing countries. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2014;28(6):931-43.
47. Ross J, Keesbury J, Hardee K. Trends in the contraceptive method mix in low-and middle-income countries: analysis using a new “average deviation” measure. *Global Health: Science and Practice*. 2015;3(1):34-55.
48. Daley AM. What Influences Adolescents' Contraceptive Decision-Making? A Meta-Ethnography. *Journal of Pediatric Nursing*. 2014 11//;29(6):614-32.
49. Blackstone SR. WOMEN’S EMPOWERMENT, HOUSEHOLD STATUS AND CONTRACEPTION USE IN GHANA. *J Biosoc Sci*. 2016:1-12.
50. Proudfoot S, Wellings K, Glasier A. Analysis why nulliparous women over age 33 wish to use contraception. *Contraception*. 2009;79(2):98-104.
51. Morse JE, Rowen TS, Steinauer J, Byamugisha J, Kakaire O. A qualitative assessment of Ugandan women’s perceptions and knowledge of contraception. *International Journal of Gynecology & Obstetrics*. 2014;124(1):30-3.
52. Dyer SJ. The value of children in African countries—insights from studies on infertility. *Journal of Psychosomatic Obstetrics & Gynecology*. 2007;28(2):69-77.
53. Hoogeveen J, Rossi M. Enrolment and grade attainment following the introduction of free primary education in Tanzania. *Journal of African economies*. 2013;0(0):1-19.

9 Chapter 9: Sources of modern contraception in rural southern Tanzania among women delaying their first birth

This research presents findings on sources of modern contraception for women who would like to delay their first birth. The findings presented below are within a manuscript submitted on 14th July 2017 to BMC Health Services Research journal.

Registry
 T: +44(0)20 7299 4646
 F: +44(0)20 7299 4656
 E: registry@lshtm.ac.uk

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Student	Yovitha Sedekia
Principal Supervisor	Tanya Marchant
Thesis Title	Family planning services in rural southern Tanzania for women who would like to delay their first birth: a mixed method study

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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 conceptualized the study, oversaw data collection, analysed the data and wrote the first draft
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Supervisor Signature: _____



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**Title: Sources of modern contraception in rural southern Tanzania among women
delaying their first birth**

Authors: Yovitha Sedekia^{1,2}, Joanna Schellenberg², Rose Nathan¹ and Tanya Marchant²

Institutional addresses:

¹Ifakara Health Institute, P.O BOX 78373, Dar-es-Salaam, Tanzania

²Department of Disease Control, London School of Hygiene and Tropical Medicine, Keppel
Street, London, WC1E 7HT, UK

Corresponding author email address: Yovitha.sedekia@lshtm.ac.uk

9.1 Abstract

Background

Understanding the source of modern contraceptive methods is crucial for policy and for program design. This study investigated the sources of contraception among women who were using methods to delay their first birth, and assessed whether they received quality care, contrasting them to women using methods to space or limit future births.

Method

The research was conducted in two rural districts in southern Tanzania between September 2013 and April 2014. The socio-demographic characteristics of sexually active married and unmarried women aged 13-49 years who were currently using modern contraception were analysed, of whom 49 were delayers of first birth, 512 spacers and 218 limiters. The association between women's life stages of reproduction (delayers, spacers and limiters) and contraceptive service outcomes were assessed.

Results

Women who were using modern contraception to delay their first birth were predominantly younger than 20 years (86%; 95% CI 72-93) and unmarried (90%; 95% CI 77-96). Overall, 69% (95% CI 65-73) accessed their modern contraception from public health facilities, 30% (95% CI 26-34) from informal sources, and 1% (95% CI 0-1) from religious or private health facilities. There was no evidence of difference in public or informal source by women's life stages of reproduction ($p=0.4$). Within the public sector most women accessed the methods from dispensaries. For all women, injectables and pills were obtained from both public and informal sources, implants were accessed at public facilities, whereas the majority of condoms were obtained from informal sources. Only 20% (95% CI 9-37) of delayers who accessed methods from public facilities and 11% (95% CI 2-35) of those who accessed the methods from informal facilities received quality care. There was

no evidence of difference by sources amongst the delayers with regards to quality care (p=0.4).

Conclusions

Over one-fifth of women using contraceptives to delay their first birth used injectables obtained from informal sources. Results indicated that family planning quality of care was universally low. Health care managers should actively invest more in information and education on sexual and reproductive health and rights that will enable individuals, including women who have not yet started childbearing to demand high quality family planning services.

Keywords: Delaying first birth, family planning, modern contraception, maternal and child health, sources of contraception, Tanzania

9.2 Background

Understanding the sources accessed by young women for modern contraceptive methods and services could be crucial for policy makers and for better program design. Geary et al (1) reported that 63% of young women aged 16-24 years in the UK access modern contraceptives from general practitioners. Ugaz et al (2) found that for the past 20 years about half of all current users of modern contraceptive in Asia relied on private sectors and long-acting reversible contraceptives (LARCs), whereas, only about a third in sub-Saharan Africa relied on private sector, with limited use in LARCs and permanent methods from private sectors. A recent study in Southern Tanzania found that 59% of sexually active women (current married or unmarried) who expressed a need to delay their first birth for at least two years were using modern contraception (3). The majority of these “delayers of first birth” were reported to be younger than 20 years old (82%) and unmarried (88%) (3). Of concern however is that previous research (4-10) in the study area and other settings, has reported that some family planning service providers imposed unnecessary age limits and method restrictions to young, nulliparous and unmarried women. Therefore, it is important to understand sources of contraception amongst women using methods to delay their first births.

Tanzania is one of the Family Planning 2020 focus countries committed to expand contraceptive use to 120 million additional women and girls by 2020 (11, 12) aligned with priorities defined by the Sustainable Development Goals targets 3.7, 3.8 and 5.6 (13) and the United Nations Global Strategy 2.0 for Women's, Children's and Adolescents' Health, 2016-2030 (14, 15). In Tanzania all men and women, including young people (10-24 years of age) are eligible to access family planning information, education and services regardless of parity, marital status, creed, race or sexual preference (16). With the exception of clients with severe mental disabilities and clients seeking permanent methods, no parental,

guardian or spousal consent is required for adolescents (10–18 years) (16, 17). In addition, clients have the right to choose where to access family planning services from (16). Family planning methods and services are provided for free in all public facilities including at community level and should be provided for free in the private sector when the government has a special agreement (16). A small fee may be charged for consultative services in some private facilities and for the product when the government does not have a special agreement with a facility and products are supplied through social marketing (16).

Evidence exists on where modern contraceptive Tanzanian users access services overall, with government or parastatal dispensaries being the most frequently accessed source of implants, injectables and pills, government district hospitals and religious/voluntary hospitals for female sterilisation, and mainly pharmacies, accredited drug dispensing outlets and shops for male condoms (18).

This study reports on method source specifically for women who would like to delay their first birth. Using data from the high fertility setting of Tanzania, we described sources of contraception among women who were delaying their first birth and assessed whether they received quality care, contrasting them to spacers of subsequent pregnancies and limiters of future birth.

9.3 Methods

Study setting

This research was nested within the Expanded Quality Management Using Information Power (EQUIP) study (19, 20) and was carried out in two rural districts of Mtwara region in southern Tanzania: Tandahimba and Newala. Briefly, the study setting is dominated by the Makonde ethnic group and over 90% of the population depend on agricultural activities for income. It is characterised as predominantly rural and has limited infrastructure (21). The area covers an estimated population of over 400,000 people served by 63 health facilities (19, 20, 22) and has high maternal and newborn mortality rates of 712 per 100,000 live births (23) and 47 deaths per 1000 live births, respectively (18). In 2015, it had household size of 3.7 persons (22), a total fertility rate of 3.8 and median age at first birth of 19 years (18). In 2015, use of modern contraception in Mtwara Region was high relative to the country average at 50% among married women and 70% among sexually active unmarried women aged 15-49 years in comparison to 32% and 46% respectively in the rest of Tanzania mainland (18).

Study design and participants

Data were collected between September 2013 and April 2014 as part of the repeated cross sectional household survey conducted by the EQUIP study. Full details about the survey methods are reported elsewhere (3, 19). Briefly, a representative sample of 10 household clusters (defined as sub-villages) each of 30 households was drawn in each district each month. For each district, sub-villages were listed and the number of households in each sub-village cumulated then 10 clusters selected with probability proportional to the total number of households in the district. Modular survey tools compatible with Demographic and Health Surveys and Multiple Indicators Cluster surveys were applied to estimate indicators across the reproductive, maternal and newborn health continuum among

resident women aged 13-49 years. All household heads and resident women aged 13 to 49 years who gave consent were interviewed. Household heads provided information about residents and household characteristics, whereas, all information related to maternal and newborn health care and family planning knowledge and services was derived from direct interviews with individual women.

Data processing and analysis

Data were analysed using STATA 13 (24). We performed descriptive analysis on women who were currently using a modern method of contraception disaggregated by fertility stage to determine sources.

Indicator definitions

Definitions for sexually active women, women's life stages of reproduction (delayers of first birth, spacers of subsequent pregnancies, limiters of future birth), and modern contraceptive methods were provided in Sedekia et al, 2017 (3). Briefly, sexually active women included married (including cohabiting) and unmarried women aged 13-49 years who reported having had sexual intercourse in the past three months. Delayers of first birth included nulliparous women who reported on the survey day that their preference was to delay their first birth for at least two years. Spacers of subsequent pregnancies included parous women who on the survey day desired to wait for at least two years before having another child. Limiters of future birth included parous women who had reached their desired family size and on the survey day did not desire any subsequent children. Modern contraceptives were defined according to Hubacher, 2015 (25) and included short acting contraceptives (pills, injectables and condoms), long-acting reversible contraceptives (implants and intra-uterine devices and systems (IUDs) and permanent contraceptives methods (male and female sterilisation).

We categorised the source of modern contraceptives as follows: 1) public health facilities,

including referral/special hospital, regional hospital, district hospital, health centre, dispensary and community based health worker; 2) informal sources, including a pharmacy, kiosk/ shop, relative, friends or neighbours, and unknown sources, and 3) religious-based or private health facilities (no sub-categories due to low coverage).

In addition, quality of family planning services provided was assessed using three proxy measures: - (1) whether respondents reported having ever received information about possible alternative method choices, (2) whether they had ever been informed of any possible side-effects of the method and (3) what to do if they experienced side-effects.

Users who reported to have ever received information on both three measures (i.e. yes to all three questions above) were considered to have received quality care.

Data analysis

Percentages and 95% confidence intervals were used to show distribution of women who were using contraception to delay their first birth by background characteristics including quintiles of socio-economic status, derived from a wealth index constructed using principal components analysis of asset ownership (26). The association between women who were delaying their first birth and four different outcomes, sources of contraception; whether they were informed about side effects; what to do if they experienced any side effects; and whether other methods were available, was explored using point estimates and the 95% confidence intervals for each indicator, adjusted for the survey design using “svy” commands in STATA. Pearson’s chi-squared was used to test the difference in these outcomes between delayers, spacers and limiters, and the difference between public health facilities and informal sources, adjusted for the survey design.

9.4 Results

Study population

Of 3578 women aged 13-49 years interviewed, 2128 were sexually active in the last three months. Of these, 83 (4%) wanted to delay their first birth for at least two years, 790 (37%) wanted to space subsequent birth for at least two years, 409 (19%) wanted to limit future birth, 783 (37%) wanted a child soon within two years, and 63 (3%) were infecund. Of these, 49 of 83 delayers of first birth, 512 of 790 spacers of subsequent births and 218 of 409 limiters of future birth were currently using modern contraception and form the basis of the analysis presented here. The characteristics of the current users of modern contraception are shown in table 9.1. Of note, women using modern contraception to delay their first birth were predominantly younger than 20 years (86%)- with the median age of 16 years (inter-quartile range 15-18), unmarried (90%) and had completed primary education (94%) (Table 9.1).

Table 9.1: Characteristics of the study sample

Background Characteristics	Sexually active [‡] (married and unmarried) women 13-49 years who were current users of modern contraception to: (N=779)					
	Delay first birth (N=49)		Space between births (N=512)		Limit future births (N=218)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Age group (yrs)						
13-14	6	12 (6-24)	0	0	0	0
15-19	36	74 (60-81)	24	5 (3-7)	0	0
20-24	7	14 (7-28)	116	23 (19-27)	7	3 (2-6)
25-29	0	0	112	22 (18-26)	15	7 (4-11)
30-34	0	0	127	25 (21-29)	33	15 (11-20)
35-39	0	0	81	16 (13-20)	42	19 (14-25)
40-44	0	0	40	8 (6-11)	71	33 (26-39)
45-49	0	0	12	2 (1-4)	50	23 (18-29)
Median age						
Median	49	16 (IQR 15-18)	512	30 (IQR 24-35)	218	40 (IQR 34-44)
Marital status						
Currently married	4	8 (3-20)	404	79 (75-83)	180	83 (77-87)
Cohabiting	0	0	71	14 (11-17)	27	12 (9-17)
Divorced/separated	1	2 (0-14)	13	3 (1-4)	11	5 (3-10)
Widow	0	0	0	0	0	0
Single	44	90 (77-96)	24	5 (3-7)	0	0
Education						
No education	2	4 (1-15)	66	13 (10-16)	35	16 (12-21)
Some primary	1	2 (0-14)	60	12 (9-15)	27	12 (8-18)
Completed primary	46	94 (82-98)	382	75 (70-79)	154	71 (65-76)
Some secondary or higher	0	0	3	1 (0-2)	2	1 (0-4)

Table 9.1 [Contn...]

Background Characteristics	Sexually active [‡] (married and unmarried) women 13-49 years who were current users of modern contraception to: (N=779)					
	Delay first birth (N=49)		Space between births (N=512)		Limit future births (N=218)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Religion						
Muslim	48	98 (86-100)	496	97 (94-98)	202	93 (89-95)
Others	1	2 (0-14)	16	3 (2-6)	16	7 (5-11)
Ethnicity						
Makonde	46	94 (82-98)	474	93 (89-95)	194	89 (82-94)
Others	3	6 (2-18)	38	7 (5-11)	24	11 (6-18)
Household socio-economic status						
Q1 (most poor)	6	12 (6-24)	65	13 (10-16)	19	9 (5-15)
Q2	9	18 (11-30)	72	14 (11-18)	24	11 (7-16)
Q3	9	18 (9-34)	101	20 (17-23)	48	22 (16-29)
Q4	15	31 (20-44)	145	28 (24-33)	62	28 (23-35)
Q5 (least poor)	10	20 (12-33)	129	25 (21-30)	65	30 (24-36)
Parity						
Mean parity	49	n/a	512	3 births (range 1-7)	218	4 births (range 1-9)
Total	49		512		218	

[‡]Characteristics of sexually active women desiring a child/another child soon within 2 years and infecund women are excluded from the table

n/a: not applicable

IQR: Inter-quartile range, 25th and 75th percentiles

Percentages do not always equal 100 due to rounding

Sources of modern contraception

Table 9.2 presents the distribution of sources of modern contraception among sexually active women (current married and unmarried) aged 13-49 years, disaggregated by women delaying, spacing or limiting future births. Overall, 69% (95% CI 65-73) of women accessed their modern contraception from public health facilities, 30% (95% CI 26-34) from informal sources, and 1% (95% CI 0-1) from religious or private health facilities. There was no evidence of difference in the percentage of women who accessed the methods from public or informal sources by women's life stage of reproduction ($p=0.4$). Within the public sector most women accessed the methods from dispensaries.

Table 9.2: Sources of modern contraception among delayers, spacers and limiters of future births aged 13-49 years

Sources of contraception	Sexually active women aged 13-49 years currently using modern methods: (N=779)							
	Total (N=779)		Delayers (N=49)		Spacers (N=512)		Limiters (N=218)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Public health facilities*	541	69 (65-73)	30	61 (45-75)	359	70 (65-74)	152	70 (62-76)
Referral/Regional/District hospital	64	8 (6-12)	0	0	25	5 (3-8)	39	18 (13-25)
Health centre	50	6 (4-10)	1	2 (0-13)	30	6 (4-9)	19	9 (5-15)
Dispensary	423	54 (48-60)	28	57 (41-72)	301	59 (52-65)	94	43 (35-52)
[‡] CBD worker	4	1 (0-2)	1	2 (0-14)	3	1 (0-2)	0	0
Informal sources	231	30 (26-34)	19	39 (25-55)	152	30 (25-34)	60	28 (21-35)
Pharmacy	75	10 (7-13)	5	10 (4-22)	51	10 (7-13)	19	9 (6-13)
Shop/kiosk	66	8 (7-11)	7	14 (7-27)	44	9 (6-12)	15	7 (4-11)
Source not known	68	9 (7-11)	5	10 (4-22)	44	9 (6-11)	19	9 (5-15)
Friend/relative/ neighbour	22	3 (2-4)	2	4 (1-15)	13	3 (1-4)	7	3 (2-6)
Religious/private facilities[§]	7	1 (0-2)	0	0	1	<1 (0-1)	6	3 (1-6)
Total	779	100	49	100	512	100	218	101

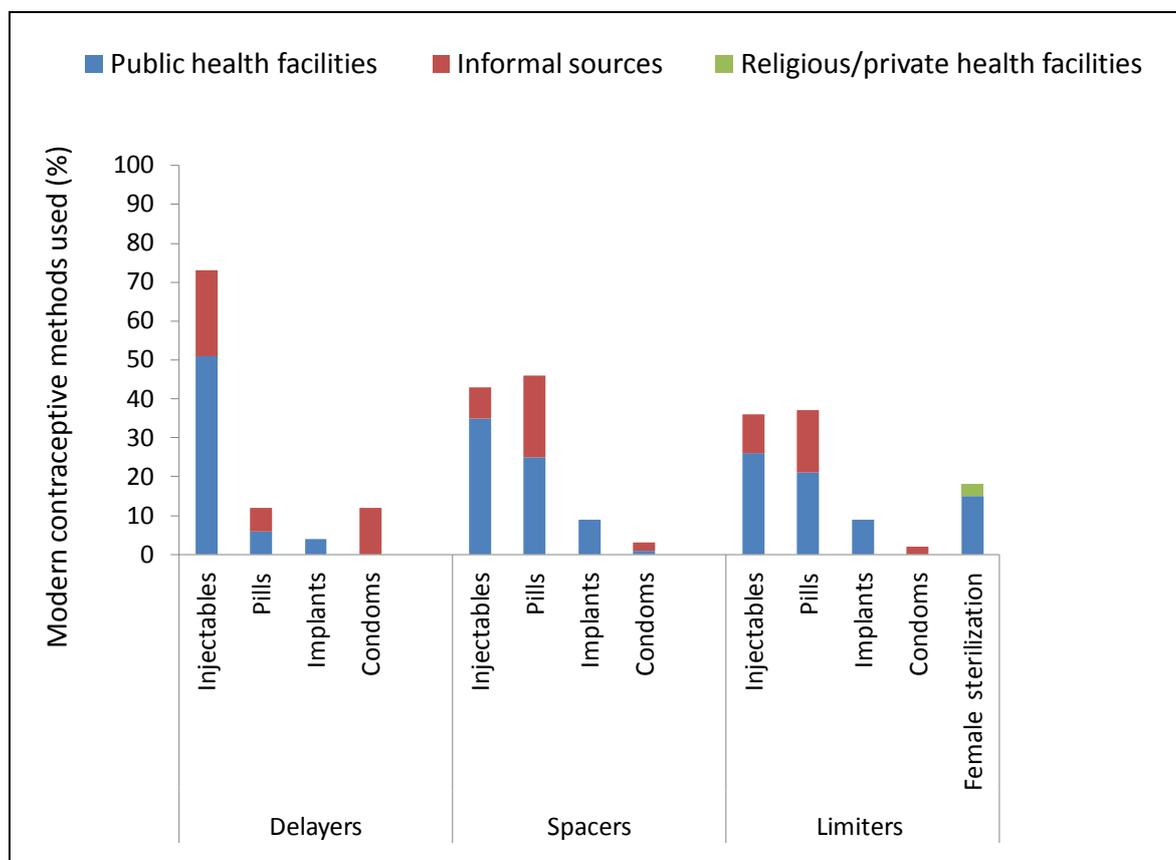
*Multiple sources for spacers and limiters if more than one method was used, hence percentage do not always add up to a hundred

[‡]CBD: Community-based distribution

[§]Categories not shown due to low coverage

Figure 9.1 presents percentage distribution of modern contraception used by sources, disaggregated by women’s life stages of reproduction. For all women, injectables and pills were obtained from both public and informal sources, implants were accessed at public facilities, whereas the majority of condoms were obtained from informal sources. Amongst delayers of first birth who were using modern contraception, 51% (95% CI 35-67) were using injectables that they accessed from public health facilities and an additional 22% (95% CI 12-39) were using injectables accessed from informal sources. Twelve percent (95% CI 5-25) were using condoms, all accessed from informal sources. Twelve percent were using pills, spilt half from public health facilities (6%; 95% CI 2-17) and half from informal sources (6%; 95% CI 2-17).

Figure 9.1: Percentage distribution of modern contraceptive methods used by by sources for delayers of first birth, spacers and limiters of future births



Quality of family planning services received

Table 9.3 presents proxy measures of quality of family planning services received by delayers contrasting them to spacers and limiters of future birth. No evidence of difference in these quality indicators was observed for delayers by public or informal sector.

Amongst delayers who accessed contraception from public health facilities, 50% (95% CI 36-64) were informed of other available methods they could have used, 40% (95% CI 36-64) were informed of any possible side-effect of the method used, and 30% (95% CI 17-47) were informed of what to do if they experienced any side effects from the method.

Conversely, amongst delayers who accessed contraception from informal sources, 58% (95% CI 34-79) were informed of other available methods they could have used, whereas, just 16% (95% CI 5-41) and 11% (95% CI 2-35) were informed of any possible side-effect and what to do if they experienced side effects of the method used, respectively.

Taking the three indicators together (i.e. users ever informed of all three proxy measures;- other available methods they could have used, any possible side effects, and what to do in case they experienced side-effects), we estimate that 20% (95% CI 9-37) of delayers who accessed methods from public facilities and 11% (95% CI 2-35) of those who accessed the methods from informal facilities received quality care. We found no evidence of difference by source amongst the delayers with regards to quality of care ($p=0.4$).

Table 9.3: Percentage distribution of users who were informed of other available methods they could use, any possible side effects of the method and what to do if they experienced side effects, by sources

Informed choice	Delayers of first birth (N=49)					Spacers of subsequent births (N=512)*					Limiters of future birth (N=218)*						
	Public facilities (N=30)		Informal sources (N=19)			P-value [¥]	Public facilities (N=359)		Informal sources (N=152)			P-value [¥]	Public facilities (N=152)		Informal sources (60)		
Informed of:	n	% (95% CI)	n	% (95% CI)	n		% (95% CI)	n	% (95% CI)	n	% (95% CI)		n	% (95% CI)	n	% (95% CI)	n
Other available contraceptive methods they could have used	15	50 (36-64)	11	58 (34-79)	0.56	248	69 (64-74)	89	59 (50-66)	0.02	91	60 (52-67)	32	53 (39-67)	0.48		
Any possible side-effects of the method used	12	40 (26-56)	3	16 (5-41)	0.10	174	48 (43-54)	60	39 (33-47)	0.04	86	57 (49-64)	16	27 (17-39)	<0.001		
What to do if they experienced side-effects	9	30 (17-47)	2	11 (2-35)	0.12	143	40 (34-46)	46	30 (24-38)	0.04	77	51 (42-59)	14	23 (15-35)	<0.001		

*Religious-based health facilities excluded from the test due to low coverage; ¥Pearson's Chi-squared test for the difference between public health facilities and informal sources

Table 9.3 [Contn...]

Informed choice	Delayers of first birth (N=49)					Spacers of subsequent births (N=512)*					Limiters of future birth (N=218)*				
	Public facilities (N=30)		Informal sources (N=19)			Public facilities (N=359)		Informal sources (N=152)			Public facilities (N=152)		Informal sources (60)		
	n	% (95% CI)	n	% (95% CI)	P-value [‡]	n	% (95% CI)	n	% (95% CI)	P-value [‡]	n	% (95% CI)	n	% (95% CI)	P-value [‡]
Composite index (i.e. informed of:)															
Available methods they could have used, any possible side-effects and what to do if they experienced side-effects	6	20 (9-37)	2	11 (2-35)	0.4	118	33 (28-38)	34	22 (16-30)	0.02	50	33 (26-40)	11	18 (11-30)	0.04

*Religious-based health facilities excluded from the test due to low coverage; ‡Pearson's Chi-squared test for the difference between public health facilities and informal sources

9.5 Discussion

In our study we found that women who were using modern contraception to delay their first birth were predominantly younger than 20 years and unmarried. Like other women, delayers of first birth mainly accessed their modern contraception from dispensaries in the public health facilities. While for all women injectables and pills were obtained from both public and informal sources, implants were exclusively accessed at public facilities and majority of condoms were obtained from informal sources. Family planning quality of care was universally low based on a composite of three proxy measures for quality (informed of both three indicators:-available methods they could have used, possible side-effects and what to do if they experienced side- effects of the method).

Public owned dispensaries, the commonly accessed level of health facility for contraception, has been reported to have a limited choice of contraceptive methods and few skilled staff (27). This might not be surprising since in Tanzania this level of health facility is expected to offer injectables, pills and condoms and refer family planning clients to the higher levels for other methods (16). Long-acting reversible methods (implants and intra-uterine devices) are only offered in dispensaries if the service provider has received training and proven competency in skills for insertion and removal (16). However, even in facilities with skilled providers, some providers reported not to recommend long acting reversible contraceptive methods to delayers of first birth due to concerns about delayed return to fecundity and early request to remove the method once marital status changes (9). Recent research amongst young people in Uganda also reported injectables to be the most suggested contraceptive method for women who had no children (10). Of particular concern, injectables, pills and condoms, the methods reported to be commonly used by delayers of first birth (3), have high rate of discontinuation (18, 28).

While condoms are amongst the methods to be provided at all levels of public owned facilities (16), majority of condoms were obtained from informal sources. According to the recent Tanzania service provision assessment report, 90% of health facilities that offered family planning services had equipment and commodities available on assessment day including condoms (29), but pharmacies, accredited drug dispensing outlets and shops were the main primary sources for male condoms (18). This calls for a need to explore whether condoms at public health facilities are not considered as contraceptive methods. Amongst sexually active young women aged 15-24 years in Kenya, condoms were not considered as a contraceptive methods (30).

Furthermore, while pharmacies are only supposed to dispense vials (16), over one-fifth of women using contraceptives to delay their first birth used injectables from informal sources which raises concerns about safety and appropriate use in case the injectables were not administered by skilled providers. Inadequate provider knowledge and skills amongst pharmacist providing family planning services in private sectors has been documented (31). Safety and appropriate of use of the method could also be major concerns amongst a few women who reported using contraception accessed from friends, relatives or neighbours.

An analysis of trends in informed choice in 22 sub-Saharan African including Tanzania reported an increase over time in clients informed about contraceptive methods but there was not a universal increase in clients being informed about side-effects of the methods used (32). In rural Southern Tanzania, families that supported younger women or students to use contraception, the family members played a key role in decision making to access, explained the purpose of the visit or chose the method (9). In addition, some of the young women reported to have been provided with contraception without knowing what the providers and the relatives who brought them to the facility discussed (9). This could partly

explain why only fewer than 25% of delayers of first birth (of whom majority are younger than 20 years) received quality care. Young people in Kenya were also reported to learn about side-effects of contraception methods through their social networks (30).

Information and counselling by providers on a range of available methods, side-effects and what to do if they experienced side-effects is a requirement as stipulated in the national and international family planning guideline and standards (16, 33, 34). Health care managers should actively invest more in information and education on sexual and reproductive health and rights that will enable individuals, including women who have not yet started childbearing to demand high quality family planning services.

While our study highlighted sources of contraception and quality of family planning services provided to delayers of first birth, it also has a number of potential limitations. First, definitions of indicators;-unlike DHS, our analysis included a three months recall period for sexual activity instead of one month and might have overestimated the number of recently sexually active women. It also included women aged 13-49 years instead of 15-49 years because of the concern that regardless of having less frequent sexual relationships, young unmarried women may still be more at risk than other women due to lack of protection and to being ignored. Sedekia et al 2017 reported that 11% of sexually active delayers were aged 13-14 years (3) and in this study, amongst delayers who were using modern contraception, 12% were aged 13-14 years. We did not have data to directly categorise women as menopausal or not. However this was unlikely to affect our findings on delaying first birth.

Second, social desirability and recall bias on reporting sexual activities especially amongst unmarried women-which might have led to underestimation of currently sexually active women could not be discounted despite intensive training and supervision of the interviewers. In Malawi, about 2% of women and 3% of men of those who initially denied

to ever had any sexual activity changed their answer after additional questions (35). Young unmarried women aged 13-24 in Ethiopia were also reported to under report sexual activities but over exaggerate on use of contraception and condoms (36).

Third, recall bias for quality care indicators could also not be discounted-which might have underestimated the reported estimates. However, limitation of measuring quality of health care using survey data had been reported (37). According to Tancred et al, 2016 (37) using qualitative methods gave participants more flexibility to discuss what mattered most to them in their care unlike in survey where respondents were subjected to the same measures of quality of care. Recall bias about age could also not be discounted.

Fourth, we do not have data of cadres for family planning providers and as such, we cannot report whether the methods used by women were provided by skilled or unskilled providers.

Last but not least, while recent research among young people in Uganda reported clients paying for family planning services in some public facilities where the services were expected to be provided for free of charge (10), we have not reported on cost incurred (if any) by users.

9.6 Conclusions

In our study area we found that like other women, the majority of delayers of first birth were using contraception accessed from public health facilities, mostly dispensaries.

Despite public health facilities being the dominant source, delayers of first birth like other women also accessed contraception from informal sources. Of note, over one fifth of delayers were using injectables from informal sources. Of concern, like other women, only a few of the delayers were counselled on possible side-effects of the methods and what to do if they experienced any side-effects. Such information and counselling is a requirement

as stipulated in the national and international family planning guideline and standards.

Health care managers should actively invest more in information and education on sexual and reproductive health and rights that will enable individuals, including women who have not yet started childbearing to demand high quality family planning services.

9.7 References

1. Geary RS, Tomes C, Jones KG, Glasier A, Macdowall W, Datta J, et al. Actual and preferred contraceptive sources among young people: findings from the British National Survey of Sexual Attitudes and Lifestyles. *BMJ Open*. 2016;6(9):e011966.
2. Ugaz JI, Chatterji M, Gribble JN, Mitchell S. Regional trends in the use of short-acting and long-acting contraception accessed through the private and public sectors. *International Journal of Gynecology & Obstetrics*. 2015;130:E3-E7.
3. Sedekia Y, Nathan R, Church K, Temu S, Hanson C, Schellenberg J, et al. Delaying first birth: an analysis of household survey data from rural Southern Tanzania. *BMC Public Health*. 2017;17(1):134.
4. Tumlinson K, Okigbo CC, Speizer IS. Provider barriers to family planning access in urban Kenya. *Contraception*. 2015;92(2):143-51.
5. Nalwadda G, Mirembe F, Tumwesigye NM, Byamugisha J, Faxelid E. Constraints and prospects for contraceptive service provision to young people in Uganda: providers' perspectives. *BMC Health Serv Res*. 2011;11:220. PubMed PMID: 21923927. Pubmed Central PMCID: PMC3181204. English.
6. Nalwadda G, Mirembe F, Byamugisha J, Faxelid E. Persistent high fertility in Uganda: young people recount obstacles and enabling factors to use of contraceptives. *BMC Public Health*. 2010;10(1):530.
7. 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. *Reprod Health*. 2009;6(1):1.
8. Speizer IS, Hotchkiss DR, Magnani RJ, Hubbard B, Nelson K. Do service providers in Tanzania unnecessarily restrict clients' access to contraceptive methods? *Int Fam Plann Perspect*. 2000:13-42.

9. Sedekia Y, Jones C, Nathan R, Schellenberg J, Marchant T. Using contraceptives to delay first birth: a qualitative study of individual, community and health provider perceptions in Southern Tanzania. *BMC Public Health* 2017.
10. Nalwadda G, Mirembe F, Byamugisha J, Tumwesigye NM, Faxelid E. Young peoples' interface with providers of contraceptive care: a simulated client study in two Ugandan districts. *Contraception and Reproductive Medicine*. 2016;1(1):15.
11. FP2020. Progress Report 2012-2013: Partnership in Action. Washington DC: FP2020, 2013. Available from: <http://www.mamaye.org/en/evidence/fp2020-partnership-action-2012-13>.
12. Family Planning 2020. Family Planning 2020: 2016 FP2020 Annual commitment update questionnaire response 2015 [cited 2016 22nd March 2016]. Available from: http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2016/10/FP2020_2016_Annual_Commitment_Update_Questionnaire-Tanzania_DLC.pdf.
13. United Nations, Department of Economic and Social Affairs: Sustainable Development Goals, 2015. Available from: <https://sustainabledevelopment.un.org/?menu=1300>.
14. Kuruvilla S, Bustreo F, Kuo T, Mishra C, Taylor K, Fogstad H, et al. The Global strategy for women's, children's and adolescents' health (2016–2030): a roadmap based on evidence and country experience. *Bull World Health Organ*. 2016;94(5):398-400.
15. World Health Organisation: The Global Strategy for Women's, Children's and Adolescents' Health (2016-2030)- Survive, Thrive, Transform. Available from: <http://www.who.int/life-course/partners/global-strategy/ewec-globalstrategyreport-200915.pdf?ua=1>.
16. Ministry of Health and Socail Welfare. The United Republic of Tanzania, Ministry of Health and Socail Welfare: National Family Planning Guidelines and Standards, 2013:

- Ministry of Health and Social Welfare; 2013 [cited 2013 April]. Available from:
<https://sites.google.com/a/ihi.or.tz/ihi-main-site/announ/ministryofhealthreleasesnewfamilyplanningguidelines>.
17. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Health Policy (in Swahili language) Tanzania: United Republic of Tanzania,; 2007 [updated 2015; cited 2013 April 2013]. Available from: http://www.tanzania.go.tz/egov_uploads/documents/sera_wizarafnl2_en.pdf.
 18. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF Available from: <https://www.dhsprogram.com/pubs/pdf/FR321/FR321.pdf>
 19. Marchant T, Schellenberg J, Peterson S, Manzi F, Waiswa P, Hanson C, et al. The use of continuous surveys to generate and continuously report high quality timely maternal and newborn health data at the district level in Tanzania and Uganda. *Implementation Science*. 2014;9(1):112.
 20. Hanson C, Waiswa P, Marchant T, Marx M, Manzi F, Mbaruku G, et al. Expanded Quality Management Using Information Power (EQUIP): protocol for a quasi-experimental study to improve maternal and newborn health in Tanzania and Uganda. *Implement Sci*. 2014 Apr 2;9(1):41. doi: 10.1186/748-5908-9-41.
 21. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara. The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara: Mtwara Regional Socio-economic Profile 1997 1997 [cited 2014 February]. Available from: www.tzonline.org/pdf/Mtwara.pdf.

22. National Bureau of Statistics. National Bureau of Statistics: 2012 Tanzania Population and Housing Census. Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar: Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning, Zanzibar; 2013 [cited 8]. Available from:
<http://www.meac.go.tz/sites/default/files/Statistics/Tanzania%20Population%20Census%202012.pdf>.
23. Hanson C, Cox J, Mbaruku G, Manzi F, Gabrysch S, Schellenberg D, et al. Maternal mortality and distance to facility-based obstetric care in rural southern Tanzania: a secondary analysis of cross-sectional census data in 226 000 households. *Lancet Glob Health*. 2015 Jul;3(7):e387-95. doi: 10.1016/S2214-109X(15)00048-0. Epub 2015 May 21.
24. StataCorp, inventorStata: Release 132013.
25. Hubacher D, Trussell J. A definition of modern contraceptive methods. *Contraception*. 2015;92(5):420-1.
26. Vyas S, Kumaranayake L. Constructing socio-economic status indices: how to use principal components analysis. *Health policy and planning*. 2006;21(6):459-68.
27. KESSY F. Access to Family Planning services in Rural Tanzania: Special Paper 16/3, REPOA-Dar es Salaam, 2016 2016. Available from:
http://www.repoa.or.tz/documents/REPOA_SP_16_1.pdf.
28. Ali MM, Cleland JG, Shah IH, World Health Organisation. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys: World Health Organization; 2012. Available from:
<http://www.who.int/iris/handle/10665/75429>.
29. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief

- Government Statistician (OCGS), and ICF International 2015. *Tanzania Service Provision Assessment Survey (TSPA) 2014-2015*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International. Available from: <http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>.
30. Ochako R, Mbondo M, Aloo S, Kaimenyi S, Thompson R, Temmerman M, et al. Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study. *BMC Public Health*. 2015;15(1):1-9.
31. The Private Sector as a Provider of Family Planning Services in Egypt: Challenges and Opportunities. Available from: http://evidenceproject.popcouncil.org/wp-content/uploads/2016/06/Egypt-PSA-Policy-Brief_5.18.16.pdf.
32. Informed choice among global family planning users: Trends from 2000 - 2014. Available from: http://evidenceproject.popcouncil.org/wp-content/uploads/2016/04/Wright_PAA-2016_Informed-Choice-Poster_Evidence-Project.pdf.
33. Organization WH. Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations: World Health Organization; 2014.
34. Hardee K, Kumar J, Newman K, Bakamjian L, Harris S, Rodríguez M, et al. Voluntary, Human Rights–Based Family Planning: A Conceptual Framework. *Stud Fam Plann*. 2014;45(1):1-18.
35. Glynn JR, Kayuni N, Banda E, Parrott F, Floyd S, Francis-Chizororo M, et al. Assessing the validity of sexual behaviour reports in a whole population survey in rural Malawi. *PLoS One*. 2011;6(7):e22840.
36. Lindstrom DP, Belachew T, Hadley C, Hattori M, Hogan D, Tessema F. Survey Estimates of Non-Marital Sex and Condom Knowledge among Ethiopian Youth:

Improved Estimates Using a Non-Verbal Response Card. *Stud Fam Plann.*

2010;41(4):251.

37. Tancred T, Schellenberg J, Marchant T. Using mixed methods to evaluate perceived quality of care in southern Tanzania. *International journal for quality in health care.* 2016:mzw002.

10 Chapter 10: Discussion

This chapter provides a synthesis of this thesis. It provides the summary of the key findings.

The extent to which the research findings are supportive of the voluntary human rights-based family planning recommended by World Health Organization and stipulated in the Tanzania national health policy and family planning guideline and standards is also explored. The strengths and limitations of this research are discussed. Last but not least, the implications of the findings for policy and for areas for future research are indicated.

10.1 Key Findings

Indicators for monitoring family planning have increasingly gained prominence in global initiatives and in national strategies. The recent global initiatives that included indicators for family planning are the Sustainable Development Goals (1), the United Nations Global Strategy 2.0 for Women's, Children's and Adolescents' Health (2016–2030) (2), Family Planning 2020 (3) and the Millennium Development Goal B, target 5 (4). There is also evidence from the critical review of literature in chapter one section 1.5 that demand for and use of family planning methods across East Africa is increasing, but most researchers who categorise metrics from many large surveys focus more on spacing and limiting future births than delaying first birth. This is also true for reporting factors that influence or inhibit use of modern contraception. Data from this thesis fill this gap by providing insights into levels of family planning needs of women who would like to delay their first birth contrasting them with women who would like to space or limit future births and the extent to which these needs are met within existing structures. The insights of the key findings are synthesised below around each thesis objective.

Objective 1: To assess family planning service provision in the study area in the context of Tanzania national family planning guidelines and standards

Chapter 6 indicates that the majority of the health facilities in the study area were equipped for provision of family planning services. Consistent with the 2016 Tanzania Service Provision Assessment (5), the majority of health facilities offering family planning services had some contraceptive method types:- on the day of survey a median of two methods in dispensaries, four in health centres and four and a half methods in hospitals were available. Male condoms and injectables were the most commonly available method types across all facility levels. The majority of health facilities had items for infection control available and all had received supervision in the six months before the interview day. About 90% of all health facilities had at least one family planning provider who had ever received training in family planning services. However, some trained family planning providers in health centres and dispensaries were absent on the interview day. High absenteeism amongst trained health staff due to various reasons has been suggested to result in some health care services being provided by unskilled staff or not provided at all (6, 7).

The majority of women including delayers of first birth who accessed modern contraception from the public health facilities did so from dispensaries (chapter 9) but it was observed that in many of the dispensaries family planning services were provided by unskilled staff. Dispensaries in Tanzania should be staffed by two clinical officers or assistant medical officers and five nurses (two in RCH clinic and three in delivery, antenatal and post natal care) (8), but none of the dispensaries had all seven required staff. The human resource challenge for health interventions is not a problem for Tandahimba and Newala districts or Mtwara region only but also for the majority of regions in the country (9) and in low and middle income countries at large. In Uganda for example, lack of trained staff was one of the constraints for young people in accessing family planning services (10-

12). Dispensaries also had low availability of functioning equipment such as blood pressure machines and speculum, a median method mix of just two methods in stock: - commonly injectables and male condoms, and a median of two staff providing family planning services, yet had the same median number of clients as health centres (283 [IQR 166-425] and 270 [IQR 197-625], respectively). The low availability of equipment and trained staff in primary health care facilities, particularly dispensaries, has been reported by previous research in Mtwara region (13) and other rural districts in Tanzania (14).

Objective 2: To describe and analyse demand, current use and unmet need for modern contraception among delayers of first birth contrasting them to women who would like to space or limit (permanently stop) future births

Chapter 7 highlights characteristics of a small but important group of sexually active women aged 13-49 years who had not started child bearing but expressed an intention to delay their first birth for at least two years. Of note, this group of women overlap substantially with adolescent girls (10-19 years) and youth (10-24 years). The majority of delayers were younger than 20 years (82%) and unmarried (88%).

About half of the delayers were using modern contraception and injectables dominated their use. This method choice could partly be attributed to the lack of method mix and trained staff in dispensaries (chapter 6) where the majority of the delayers accessed the methods (chapter 9) as well as negative perceptions around long-acting reversible contraceptive methods for nulliparous women (chapter 8). Injectables have previously been reported to be the most commonly used method in East African countries including Tanzania (15, 16) despite their reported high rate of discontinuation (17, 18). In 2016, Nalwadda G et al (19) also reported that progestin-only injection was the most suggested method by health care providers in Uganda for clients with no children.

In 2016, Sedgh G et al (20) reported family planning metrics for delayers of first birth, spacers and limiters in 52 low and middle income countries including East African countries but unlike this thesis, the metrics were categorised for married women and unmarried women separately. Of note from that analysis, although married women rarely had unmet need for delaying first birth, 29% sexually active never-married women aged 15-49 years in Tanzania had unmet need for family planning for delaying first birth as compared to 9% for spacing and 2% for limiting (20). This thesis provides evidence of high unmet need for modern contraception amongst delayers of first birth (41%) and limiters of future birth (41%) as compared to spacers of subsequent births (19%) regardless of marital status.

Objective 3: To explore individual, community and health provider's perception about provision and use of modern contraceptives for women who would like to delay their first birth

Chapter 8 indicates that use of modern contraceptives to delay first birth was widely perceived by the community and providers to be acceptable for women who were students, young, unmarried, and women in unstable marriage. However, a small number of participants from both rural and urban areas did not approve, not even for students. Similar to the views of the small number of participants who did not approve, the perception that contraception was for spacing between births, the fear of infertility, the need to prove fertility once a woman get married, and expected responsibility of children to support parents in old age had been reported in low and middle income countries including in East African countries (21-23).

Long-acting reversible methods such as implants and intrauterine devices were perceived as inappropriate methods for delaying first birth, partly because of fears around delayed return to fecundity, discontinuation once woman's marital status changes and permanently limiting future fertility. This has potentially serious consequence for delayers given that, in

low and middle income countries, there is a reported high rate of 40% discontinuation after one year for short method types, compared to the relatively low rate of 9% discontinuation for implants and 15% for IUDs (24).

While the Tanzania national family planning guideline and services recognise youth aged 10-24 years as eligible for family planning services and information (25), lack of clarity and consistency on the definition of 'young' even amongst district management and facility level staff had direct implications for access, autonomy in decision-making, confidentiality and consent for young people.

Objective 4: To describe sources of modern contraception among delayers of first birth and assess whether they received quality care, contrasting them to women who would like to space or limit future births

Chapter 9 indicates that the majority of delayers of first birth who were using modern contraception were younger than 20 years (86%) and unmarried (90%). Like other women, the majority of delayers access modern contraception from public health facilities, predominantly dispensaries. In East African countries including Tanzania, government or parastatal health facilities had been reported to be the dominant providers of modern contraception (18, 26-28).

In this study, similar to findings reported by Campbell et al, 2015 (29) contraceptive methods that required high medical skills were less likely to be obtained from private or informal sectors. For all women, implants were obtained from public facilities, whereas, injectables and pills were obtained from both public and informal sources, and the majority of condoms were obtained from informal sources. Of note, about one fifth of delayers using injectables accessed them from informal sources despite the fact that pharmacies in Tanzania are supposed to dispense vials only (25). Given that inadequate provider knowledge and skills amongst pharmacists in private sectors has been reported (30), this

raises the issue of safety and appropriate use of the method amongst the delayers using injectables from informal sources.

Finally, although counselling in family planning services was reported to be one of the services offered and available in the majority of the health facilities on the interview day (chapter 6), few women including delayers of first birth received high quality care as defined by being informed of potential side-effects of the methods, what to do if they experienced the side-effects and other available methods they could have used. The findings on counselling confirms what had previously been reported by other researchers for the majority of sub-Saharan Africa including East African countries (31, 32).

10.2 Reflections on Findings

As indicated in chapter one section 1.5.8, elements of voluntary human rights-based family planning information and services, as recommended by WHO (33), Hardee, et al 2014 (34) and Yamin et al 2013 (35), are stipulated in the Tanzania policy, strategies, guideline and standards (25, 36-39). The reflections on findings are synthesised below by showing whether each element listed in table 10.1 was realised for delayers of first birth.

Availability

According to the Tanzania national family planning guideline and standards, and strategies, a range of methods should be available and provided without discrimination. In Tandahimba and Newala district, this policy aspect was partially realised, not only for delayers of first birth but also for spacers and limiters of future births. While the majority of health facilities were providing family planning services and had some essential equipment for the services, there was low availability of (i) the range of method mix, (ii) trained staff in family planning services and (iii) some essential equipment for family planning services in dispensaries: - the most frequently accessed health facility level by modern contraception users. Lack of training in long-active reversible contraceptive methods was also evident which further limited availability, with clients being referred to higher level facilities or advised to wait for out-reach services supported by Engender-Health and Marie Stopes once or twice a year (chapter 8). Fortunately, Tanzania is one of the Family Planning 2020 and more than 50 influential organisations and governments signed a global consensus statement on expanding contraceptive choice for adolescents and youth to include long-active reversible contraception which was launched in 2015 (40). Of note from this analysis, the majority of delayers of first birth were younger than 20 years old and overlap substantially with adolescent girls and youth (chapter 7), the group targeted by the global consensus statement.

Acceptability

According to the voluntary human rights-based, family planning services and information must be respectful of medical ethics and culturally appropriate as well as sensitive to gender and life-cycle requirements. Use of contraception to delay first birth was perceived to be widely acceptable for young, students, and unmarried and married in unstable relationship (chapter 8) and more than a half of delayers were using modern contraception (chapter 7). However, long-acting contraceptive methods were not perceived by community and providers as appropriate for delayers of first birth (chapter 8) neither were they the dominant methods used by the delayers of first birth of whom majority are younger than 20 years and unmarried (chapter 7 and 9). Therefore, this aspect of policy was only partially realised for delayers of first birth. The perception that long-acting contraceptive methods are not appropriate for delayers of first birth could hamper the global consensus statement on expanding contraceptive choice for adolescents and youth to include long-acting reversible contraception.

Accessibility

Accessibility was also partially realised in Tandahimba and Newala districts. Contraceptive methods were provided to women including delayers of first birth: 59% of the delayers were using modern contraception (chapter 7); and like other women, delayers accessed contraception methods from both public and informal sectors (chapter 9). However, the request to refer adolescents who were under 18 years or students to district hospital social welfare officer not only had direct impact on confidentiality and the need to seek consent, but also had impact on access (chapter 8). The added step not only could lead the adolescent girls to give up to go back to the family planning provider after being referred, but also the counselling by the social welfare officer was not in support with accessing contraception for this group of women (chapter 8). This could in turn hamper the government of Tanzania to attain the target of 45% coverage of modern contraception use

among women of reproductive age as well as reduction of total fertility rate among adolescents from 116 per 1,000 births to 90 per 1,000 births by 2020 (37). In addition, it could also lead to unplanned first pregnancy among the adolescent girls which in turn might lead to increased dropout from school. In combination these could contribute to adolescent girls being unable to attain their desired future goals, contrary to the development and gender equality targets specified by the Sustainable Development Goals. This thesis has not addressed the topic of abortion but these findings on accessibility are likely to impact on the number of abortions that young women seek. In East Africa, the number of abortions has remained relatively stable from 32 per 1,000 women in 1990 to 34 per 1,000 women in 2014 (41) despite the increase in modern contraceptive uptake during the same period. In Tanzania, where legal restrictions for abortion are in place, unsafe abortions contribute to the overall high burden of maternal deaths and present a high cost to women, families and the health system (42). Improving the accessibility of appropriate family planning services for all women in need, including the young, could contribute towards reducing this burden.

High quality

The Tanzania family planning guideline and strategies also commits to provide high quality family planning services including non requirement of consent from a third party, maintaining privacy, confidentiality and informed choice. The majority of health facilities reported that counselling in family planning was one of the services they offered and rooms providing visual privacy were almost universally available at all levels of health facilities (chapter 6). However, like other women, few delayers of first birth received counselling on possible side-effects of the methods, what to do if they experienced any side-effects and other available methods they could have used (chapter 9). In addition, referring adolescents who were under 18 years or students to the district hospital social welfare officer has a direct impact on privacy, confidentiality and consent (chapter 8). As

such, this aspect of policy was also partially realised for the women including delayers of first birth. Given that fear of side-effects is one of the reasons commonly cited for not using contraception (20), low quality of care could lead to increased discontinuation of the methods among the current users, hence unplanned first and subsequent pregnancies.

Table 10.1: Policy aspects realised for delayers of first birth in accessing modern contraception per each element of voluntary human rights-based family planning services

Voluntary human rights-based family planning information and services	Tanzania national policy/guideline/ strategies that include voluntary human rights-based FP recommendations (ref)	Policy aspect implemented 1=Yes; 2=No 3=Partial	Recommendations for health policy and for health care managers
Availability	(25, 36-39, 43, 44)	3	To strengthen drugs and supplies ordering, and increase training in long-acting reversible contraceptive methods (chapter 6)
Acceptability	(25, 36-39, 43, 44)	3	To routinely categorise and measure delayers of first birth separately from spacers to acknowledge their unique needs (chapter 7) To have a well communicated policy on minimum age and appropriate contraception methods for the delayers of first birth (chapter 8).
Accessibility and High quality of services	(25, 36-39, 43, 44)	3	To have a well communicated policy on minimum age and appropriate contraception methods for the delayers of first birth (chapter 8). To actively invest more in information and education on sexual and reproductive health and rights to enable individuals, including delayers to demand high quality care (chapter 9)

10.3 Thesis Limitations and Strengths

10.3.1 Limitations

10.3.1.1 Quantitative Study: Continuous Household Survey and Health Facility Census

Since this PhD thesis was nested in an existing project that collected information for other indicators on maternal and newborn health, there was less flexibility in terms of timing of the study and number of questions to be added in the questionnaire. Questions about number of days per week family planning services are provided per facility, family planning providers who received training in the past two years, content of last supervision and counselling in family planning provided to clients could have added value to the analysis but were not added to the health facility questionnaire.

Cross-sectional data is also able to represent views and events at a single point in time only and may not be able to capture the complexity of reproductive decision making that longitudinal approaches could reveal.

10.3.1.2 Qualitative Study

My presence during data collection might have increased the possibility of respondent's bias thus reduced the credibility of data, but reflexivity was maintained throughout to mitigate it.

Chapter 8 highlighted how qualitative data were managed and analysed. Multiple transcript coders would have been ideal to increase rigour. Discussing the coding themes with a senior investigator (TM) was a good mechanism to increase the rigour during analysis.

10.3.1.3 Relevance to Other Settings

Findings in this thesis are based on data collected from a predominantly rural and Muslim setting. Their cultural norms and practices might be different from other settings which may limit generalisability. However, regardless of area of residence and religious belief, women who are sexually active but would like to delay their first birth and have inadequate access to modern contraception, have unmet need and are at risk of unplanned first birth.

10.3.2 Strengths

Despite the limitations above, this mixed methods study provided comprehensive evidence on the subject of delaying first birth including review of policy documents, the family planning service environment, the characteristics of women who were sexually active but desiring to delay their first birth, their family planning needs, sources of contraception and quality of care they received, but also individual, community and provider's perception on provision and use of modern contraception to delay first birth.

In addition, including adolescent girls as young as 13-14 years that are typically not included in sampling framework of surveys regarded as gold standards such as DHS was helpful in understanding their sexual activities (chapter 7), family planning practices (chapter 7 and 9), and their perception of using modern contraception to delay first birth (chapter 8). However, beyond extending the age range in a standard survey method it is also relevant to consider sample size implications for disaggregation for this age group.

I oversaw the survey data collection and ensured all measures for quality control were undertaken. I facilitated focus group discussions with women and all in-depth interviews, transcribed and analysed the data. Reflexivity was maintained throughout qualitative data collection, analysis and interpretation of the results. I am in the process of ensuring that the findings reach appropriate audiences through publications in peer-reviewed journals and presentations at various forums. So far I have submitted findings in open-access

academic journals and presented at various sessions including the 2017 London Summit side event organised in collaboration with London School of Hygiene and Tropical Medicine -UK, and the Royal Society of Hygiene and Tropical Medicines' "first East African research in progress" in Tanzania in September 2017.

To my knowledge, this is the third study that has extended the categorisation of metrics for family planning indicators to explore the family planning needs of delayers of first birth in at least one of the East African countries (20, 45). The combined review of the policy environment with population-level and facility-level evidence means that this thesis has also provided feasible recommendations for policy and practice and for future research (Section 10.4 and 10.5 below).

10.4 Implications for Policy and Practice

The thesis identified gaps in reporting family planning metrics derived from nationally representative surveys as well as from qualitative studies that report factors inhibiting or influencing contraception use. It also identified policy environments in Tanzania that are still challenging delayers of first birth to access family planning. To attain the Family Planning 2020 targets, these findings suggest that policy makers and health care managers could:

- Routinely categorise delayers of first birth separately from spacers of subsequent birth in data collection and reporting. This should be done by National Bureau of Statistics, research institutes and any other researchers who analyse DHS data or other national representative surveys. A few reports have already categorised delayers and spacers separately (20, 45, 46), suggesting that this is feasible.
- Continue communicating with clarity the policy on minimum age and appropriate method choice for adolescent girls. While the national family planning guideline and standards recognises youth aged 10-24 years as eligible to family planning services and information, continued clearly communicated policy on minimum age and appropriate method choice for delayers of first birth is necessary for successful implementation of the policy. A technical group consisting the following potential members (ministry of health -reproductive and child health coordinators, ministry of education, social welfare officers, and family planning services providers and non-governmental organisations (Marie Stopes, Engenderhealth) need to review the national family planning guideline and standards and the child law of 2009 together so that the implementers continue to protect young people without getting into each other's way. Specifically they could review the policies on sexual activities for adolescents younger than 18 years, eligible age for using

contraception, consent issue in accessing contraception, rights to quality family planning services including privacy and confidentiality, appropriate family planning services and information for adolescents and delivery mechanisms of the service to adolescents.

- Actively invest more in information and education on sexual and reproductive health and rights that will enable individuals, including women who have not yet started childbearing, to demand high quality family planning services. Potential members: the ministry of health and health care managers. This can be achieved by advocacy for budget increasing allocated for family planning services and by health managers targeting quality of care in their training and supervision.
- Continue strengthening drugs and supplies ordering system and increase training in insertion and removal of long-acting reversible methods. The government had already committed to increase its allocation for commodities and supplies from 14 billion Tanzanian shillings (6,240,600 US\$) in 2017 to 17 billion (7,576,793 US\$) by 2020 (47).

10.5 Suggested Areas for Future Research

In the light of the increasing focus on contraceptive choice for adolescents and youth to include long-acting reversible contraception (40), and given that majority of delayers of first birth are younger than 20 years (chapter 7), it will be useful for future research to investigate and document the positive and negative aspects of delayers' experiences on accessing and using the methods, especially in East African countries. Understanding why delayers are using long-acting reversible contraceptive methods despite the community and providers' perception that the methods are not appropriate for them would be relevant. It will also be good to investigate how the global consensus on expanding method choices has influenced use and provision of long-acting reversible contraceptives to delayers of first birth.

In this thesis, measures of quality care were low across all women's life stages of reproduction. But given the limitation of measuring quality of care using survey data, other studies are needed to measure the quality of family planning services for delayers of first birth through health facility observations and exit interviews or simulated clients. Simulated clients seeking family planning services were successfully used in Uganda but the clients were not exclusively delayers of first birth (19).

Furthermore, we found that some families that supported younger people to access modern contraception chose the methods for them. It would be important for future research to report on decision making process amongst women who would like to delay their first birth, specifically on initiating use of modern contraception, who decides?

10.6 General Conclusions

This thesis has highlighted the policy environment for family planning services in southern Tanzania, shown that a specific group of sexually active women desire to delay their first birth, and summarised their family planning needs and service practices. Routinely categorising and measuring delayers of first birth acknowledges their unique needs and could help to catalyse a policy and programmatic response.

10.7 References

1. United Nations, Department of Economic and Social Affairs: Sustainable Development Goals, 2015. Available from: <https://sustainabledevelopment.un.org/?menu=1300>.
2. World Health Organisation: The Global Strategy for Women's, Children's and Adolescents' Health (2016-2030)- Survive, Thrive, Transform. Available from: <http://www.who.int/life-course/partners/global-strategy/ewec-globalstrategyreport-200915.pdf?ua=1>.
3. FP2020. Progress Report 2012-2013: Partnership in Action. Washington DC: FP2020, 2013. Available from: <http://www.mamaye.org/en/evidence/fp2020-partnership-action-2012-13>.
4. WHO. Millenium Development Goal 5, Target 5B: achieve, by 2015, universal access to reproductive health 2010. Available from: <https://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>.
5. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International 2015. *Tanzania Service Provision Assessment Survey (TSPA) 2014-2015*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International 2016. Available from: <http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>.
6. Manzi F, Schellenberg JA, Hutton G, Wyss K, Mbuya C, Shirima K, et al. Human resources for health care delivery in Tanzania: a multifaceted problem. *Human resources for health*. 2012;10(1):1.
7. Schellenberg JRA, Mrisho M, Manzi F, Shirima K, Mbuya C, Mushi AK, et al. Health and survival of young children in southern Tanzania. *BMC Public Health*. 2008;8(1):1.

8. The united republic of Tanzania, ministry of health and social welfare : staffing levels for ministry of health and social welfare departments, health service facilities, health training institutions and agencies 2014-2019 (revised). Available from:
http://www.jica.go.jp/project/tanzania/006/materials/ku57pq00001x6jyl-att/REVIEW_STAFFING_LEVEL_2014-01.pdf.
9. Kurowski C, Wyss K, Abdulla S, Mills A. Scaling up priority health interventions in Tanzania: the human resources challenge. *Health policy and planning*. 2007;22(3):113-27.
10. Nalwadda G, Mirembe F, Byamugisha J, Faxelid E. Persistent high fertility in Uganda: young people recount obstacles and enabling factors to use of contraceptives. *BMC Public Health*. 2010;10(1):530.
11. Nalwadda G, Mirembe F, Tumwesigye NM, Byamugisha J, Faxelid E. Constraints and prospects for contraceptive service provision to young people in Uganda: providers' perspectives. *BMC Health Serv Res*. 2011;11(1):220.
12. Nalwadda G, Tumwesigye NM, Faxelid E, Byamugisha J, Mirembe F. Quality of care in contraceptive services provided to young people in two Ugandan districts: a simulated client study. *PLoS One*. 2011;6(11):e27908.
13. Hanson C, Ronsmans C, Penfold S, Maokola W, Manzi F, Jaribu J, et al. Health system support for childbirth care in Southern Tanzania: results from a health facility census. *BMC Res Notes*. 2013 Oct 30;6:435.(doi):10.1186/756-0500-6-435.
14. KESSY F. Access to Family Planning services in Rural Tanzania: Special Paper 16/3, REPOA-Dar es Salaam, 2016 2016. Available from:
http://www.repoa.or.tz/documents/REPOA_SP_16_1.pdf.
15. United Nations Population Division. United Nations, Department of Economic and Social Affairs, Population Division: The World Contraceptives Patterns 2013
Department of Economic and Social Affairs, Population Division.; [updated January

- 2016]. Available from:
<http://www.un.org/en/development/desa/population/publications/pdf/family/worldContraceptivePatternsWallChart2013.pdf>.
16. United Nations Department of Economic and Social Affairs. United Nations, Department of Economic and Social Affairs, Infochart: World Contraceptive Patterns 2015 2015. Available from:
<http://www.un.org/en/development/desa/population/publications/family/contraceptive-infochart-2015.shtml>.
17. Ali MM, Cleland JG, Shah IH, World Health Organisation. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys: World Health Organization; 2012. Available from:
<http://www.who.int/iris/handle/10665/75429>.
18. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. 2016. *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF Available from:
<https://www.dhsprogram.com/pubs/pdf/FR321/FR321.pdf>
19. Nalwadda G, Mirembe F, Byamugisha J, Tumwesigye NM, Faxelid E. Young peoples' interface with providers of contraceptive care: a simulated client study in two Ugandan districts. *Contraception and Reproductive Medicine*. 2016;1(1):15.
20. Sedgh G, Ashoford LS, Hussain R. Unmet need for contraception in developing countries: examine women's reasons for not using a method. The Guttmacher Institute, 2016.

21. Morse JE, Rowen TS, Steinauer J, Byamugisha J, Kakaire O. A qualitative assessment of Ugandan women's perceptions and knowledge of contraception. *International Journal of Gynecology & Obstetrics*. 2014;124(1):30-3.
22. Dyer SJ. The value of children in African countries—insights from studies on infertility. *Journal of Psychosomatic Obstetrics & Gynecology*. 2007;28(2):69-77.
23. Jejeebhoy SJ, Santhya KG, Zavier AJF. Demand for Contraception to Delay First Pregnancy among Young Married Women in India. *Stud Fam Plann*. 2014;45(2):183-201.
24. Staveteig S, Mallick L, Winter R. Uptake and discontinuation of long-acting reversible contraceptives (LARCS) in low-income countries 2015. Available from: <https://dhsprogram.com/pubs/pdf/AS54/AS54.pdf>.
25. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Family Planning Guidelines and Standards, 2013: Ministry of Health and Social Welfare; 2013 [cited 2013 April]. Available from: <https://sites.google.com/a/ihl.or.tz/ihl-main-site/announ/ministryofhealthreleasesnewfamilyplanningguidelines>.
26. National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda], and ICF International. 2015. Rwanda Demographic and Health Survey 2014-15. Rockville, Maryland, USA: NISR, MOH, and ICF International. 2016.
27. Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2015. Kenya Demographic and Health Survey 2014. Calverton, Maryland: KNBS and ICF Macro Calverton, Maryland: KNBS and ICF Macro; 2014. Available from: <https://dhsprogram.com/pubs/pdf/fr308/fr308.pdf>.
28. Uganda Bureau of Statistics (UBOS) and ICF International Inc. 2012. Uganda Demographic and Health Survey 2011. Kampala, Uganda: UBOS and Calverton, Maryland: ICF International Inc. 2012.

29. Campbell OM, Benova L, Macleod D, Goodman C, Footman K, Pereira AL, et al. Who, What, Where: an analysis of private sector family planning provision in 57 low-and middle-income countries. *Trop Med Int Health*. 2015;20(12):1639-56.
30. The Private Sector as a Provider of Family Planning Services in Egypt: Challenges and Opportunities. Available from: http://evidenceproject.popcouncil.org/wp-content/uploads/2016/06/Egypt-PSA-Policy-Brief_5.18.16.pdf.
31. Informed choice for modern contraceptive use: Evidence from 24 countries served by the UNFPA Supplies Programme Available from: https://paa.confex.com/paa/.../Informed%20Choice_PAA2016_UNFPA_Loiza.pdf.
32. Ochako R, Mbondo M, Aloo S, Kaimenyi S, Thompson R, Temmerman M, et al. Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study. *BMC Public Health*. 2015;15(1):1-9.
33. Organization WH. Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations: World Health Organization; 2014.
34. Hardee K, Kumar J, Newman K, Bakamjian L, Harris S, Rodríguez M, et al. Voluntary, Human Rights–Based Family Planning: A Conceptual Framework. *Stud Fam Plann*. 2014;45(1):1-18.
35. Yamin AE. Applying human rights to maternal health: UN Technical Guidance on rights-based approaches. *International Journal of Gynecology & Obstetrics*. 2013.
36. Ministry of health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: The National Family Planning Costed Implementation Programm 2010-2015, updated July 2013 Dar es Salaam: Government/MoHSW; 2010. Available from: <http://www.fhi360.org/sites/default/files/media/documents/national-fp-costed-implementation-plan-tanzania-main-text.pdf>.

37. United Republic of Tanzania, Ministry of Health and Social Welfare: The National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & adolescent health in Tanzania (2016-2020) (One Plan II), 2016. Available from: http://globalfinancingfacility.org/sites/gff_new/files/documents/Tanzania_One_Plan_II.pdf.
38. United Republic of Tanzania, Ministry of Health and Social Welfare: The National Road Map Strategic Plan to accelerate the Reduction of Maternal Newborn and Child death in Tanzania 2008-2015 (sharpened one plan), 2014. Available from: <http://advancefamilyplanning.org/sites/default/files/resources/RMNCH%20Plan%202014%20to%202015.pdf>.
39. Ministry of Health and Social Welfare. The United Republic of Tanzania, Ministry of Health and Social Welfare: National Health Policy (in Swahili language) Tanzania: United Republic of Tanzania,; 2007 [updated 2015; cited 2013 April 2013]. Available from: http://www.tanzania.go.tz/egov_uploads/documents/sera_wizarafnl2_en.pdf.
40. Pathfinder International, Evidence 2 Action, Population Services International, Marie Stopes International, and FHI 360, "Global Consensus Statement: Expanding Contraceptive Choice for Adolescents and Youth to Include Long-Acting Reversible Contraception", October 2015. Available from: <http://www.familyplanning2020.org/resources/10815>.
41. Sedgh G, Bearak J, Singh S, Bankole A, Popinchalk A, Ganatra B, et al. Abortion incidence between 1990 and 2014: global, regional, and subregional levels and trends. *The Lancet*. 2016;388(10041):258-67.
42. Woog, Vanessa and Pembe, AB: Unsafe abortion in Tanzania: a review of the evidence. *Issues in brief* (Alan Guttmacher Institute), 2013 2013 [1]. 1-4]. Available from: https://www.guttmacher.org/sites/default/files/report_pdf/ib_unsafe-abortion-tanzania.pdf.

43. United Republic of Tanzania, Health Sector Strategic Plan July 2015 – June 2020 (HSSP IV): Reaching all Households with Quality Health Care. Available from: http://www.tzdpg.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Key_Sector_Documents/Induction_Pack/Final_HSSP_IV_Vs1_0_260815.pdf.
44. United Republic of Tanzania, Ministry of Health and Social Welfare: The National Road Map Strategic Plan to accelerate the Reduction of Maternal Newborn and Child death in Tanzania 2008-2015 (One Plan), 2008. Dar es Salaam, Tanzania: Reproduction section.
45. Annabel Erulkar. Family Planning Use Among Married Adolescents in Three East African Countries. International Conference on Family Planning; Addis Ababa, Ethiopia 2013.
46. Darroch JE, Sedgh G, Ball H. Contraceptive technologies: Responding to women's needs. New York: Guttmacher Institute. 2011;201(1).
47. Family Planning 2020 Commitments: Updates from the Government of Tanzania, 11th July 2017. Available from: <http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2017/08/Govt.-of-Tanzania-FP2020-Commitment-2017-Update-SO-CL.pdf>.

11 Appendices

Appendix 11.1: Template summarising papers reviewed for literature review section

Country	Year [ref]	Aim of the study	Study population included in the analysis	Study or Survey	Categorised/ reported for:	Main findings/results
Kenya	2002 [69]	To describe knowledge, attitude and practice and factors influencing sexual relationships and contraceptive practice among the youth in Kisumu town in western Kenya	Male and female aged 15-24 years for survey; parents/guardians, health providers, policy makers for qualitative study	Survey and qualitative study (Key informant interview and informal conversation)	Youth, parents, policy makers and providers	<ul style="list-style-type: none"> ➤ The majority of the youth were sexually experienced (73.5%) with most of the first sexual experiences occurring within the 15-19 years age group ➤ There was high level of knowledge (99.2%) of contraceptive methods and a positive attitude towards contraception ➤ The level of contraceptive use was relatively lower (57.5%) even for the sexually active ➤ Individual's background, health delivery systems and policy were the factors influencing the practices
Kenya	2003 [70]	To examine trends and determinants of contraceptive methods choice in Kenya	Ever sexually active (married and unmarried women) aged 15-49 years	Kenya DHS 1989, 1993 & 1998	Spacing and limiting	<ul style="list-style-type: none"> ➤ Use of barrier methods among unmarried women was rising steadily, but the levels remained disappointingly low ➤ There was a dramatic rise in the use of injectables and was higher among rural women, women whose partners disapprove of family planning, uneducated women, and those less frequently exposed to family planning media messages, compared with their counterparts who have better access to services and greater exposure to family planning information

Kenya	2004 [71]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning and sources of contraception	Married women or in-union aged 15-49 years	Kenya DHS 2003	Spacing and limiting	<ul style="list-style-type: none"> ➤ Contraceptive use increased slightly since 1998, from 39 to 41% of married women ➤ 38% of currently married women were using modern methods ➤ Knowledge of family planning was nearly universal, with 94% of all women age 15-49 and 97% of men age 15 to 54 knowing at least one modern method of family planning ➤ Among all women, the most widely known methods were the male condom (91%), pills (90%), and injectables (89%) ➤ 24.5% of currently married women had an unmet need for family planning services, (14.4% for spacing and 10.1% for limiting) ➤ 53% of contraceptive users accessed them from public facilities
Kenya	2009 [72]	To compare the quality of family planning services delivered at public and private facilities in Kenya	Facilities, providers and FP clients	2004 Kenya SPA	By attributes of quality of care and by Facility ownership	<ul style="list-style-type: none"> ➤ Private facilities were superior to public sector facilities in terms of physical infrastructure, the availability of services and managing interpersonal aspects of care ➤ Public sector facilities were more likely to have management systems in place but Private providers were better at managing interpersonal aspects of care ➤ There was no difference between public and private providers in the technical quality of care provided
Kenya	2010 [73]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Current married women 15-49 years	DHS 2008-09	Spacing and limiting	<ul style="list-style-type: none"> ➤ The TFR in was 4.6 and ranged from 2.9 in urban to 5.2 in rural areas ➤ 46% of currently married women were using a method of contraception, including 39% who were using a modern method ➤ Injectables were the leading method, used by 22% of married women ➤ One quarter of currently married women have an unmet need for family planning and was evenly split for spacing and limiting ➤ Government facilities were the most common sources of contraceptives ➤ Knowledge of contraception was nearly universal. The most commonly known methods among both men and women were pill, injectables, and male condoms

Kenya	2011 [74]	To understand the trends, differentials and determinants of contraceptive use among adolescent girls aged 15-19 years in the country over a ten-year period and to identify the programmatic implications of the observed patterns	Current married and unmarried adolescent girls aged 15-19 years	Kenya DHS 1998, 2003 and 2008-09	Spacing and limiting	<ul style="list-style-type: none"> ➤ Use of contraception among adolescents increased from 16% in 1998 to 20% in 2003 and 25% in 2008-2009 and the increases occurred among those who were currently married (from 12% in 1998 to 15% in 2003 and 27% in 2008 2009) as well as among younger (15-17 years) and older (18-19 years) adolescents ➤ The proportion of currently married adolescent girls with unmet need for family planning (spacing and limiting) slightly increased from 27% in 1998 to 29% in 2003 and 30% in 2008-2009 in seven of the eight provinces of Kenya ➤ Current users of modern methods from low socio-economic backgrounds obtain their methods mostly from private health facilities
Kenya	2012 [75]	To examine the relationship between physical accessibility of health facilities and the spatial variation in use of modern contraceptives and unmet need across Kenya	Fecund women aged 15-49 years (marital status not specified)	Kenya DHS 2008-09	Contraceptive use and unmet need by distance	<ul style="list-style-type: none"> ➤ Overall, the prevalence of modern contraceptive use and unmet need among women aged 15-49 in Kenya was 42.1% and 19.7% respectively. ➤ Among the respondents who lived more than 5 km from the nearest health facility modern contraceptive use was significantly less likely compared to women resident 5 km or less from the nearest health facility ➤ Women from counties with higher health facility density were 53% more likely to use modern contraceptives compared to women in counties with low health facility density. ➤ Distance and health facility density in the county were not significantly associated with unmet need

Kenya	2013 [76]	To describe inequities in modern contraceptive use, types of methods used, and the main sources of contraceptives in urban Kenya; to examine the extent to which differences in contraceptive use between the poor and the rich widened or shrank over time; and to attempt to relate these findings to the FP programming context, with a focus on whether the services are increasingly reaching the urban poor	Currently married women; age <25 to 35+	1993, 1998, 2003 and 2008/09 Kenya DHS	Socio-economic status, education and sources of contraception	<ul style="list-style-type: none"> ➤ Dramatic change in contraceptive use between 2003 and 2008/09 that resulted in virtually no gap between the poor and the rich in 2008/09 ➤ by contrast during the period of 1993–1998 the improvement in contraceptive use did not significantly benefit the urban poor ➤ Most urban women use short-term and less effective methods, with the proportion of long-acting method users dropping by half during the review period ➤ The proportion of private sector users also declined between 2003 and 2008/09
Kenya	2015 [77]	to better understand drivers and barriers to contraceptive uptake among young women in order to inform the new communication campaign developed by Population	Women aged 16-24 years	Qualitative study using in-depth interviews	Users and non-users of contraception	<ul style="list-style-type: none"> ➤ All the respondents in the study were familiar with modern methods of contraception and most could describe their general mechanisms of action, but condoms were not considered as contraception by many users ➤ Contraception was also associated with promiscuity and straying ➤ Major barrier to use contraception was fear of side effects and adverse reactions and the biggest fear was infertility and many fears were based on myths and misconceptions

		Services Kenya				➤ Young women learnt about both true side effects and myths from their social networks
Kenya	2015 [78]	To better understand one of the possible factors affecting the persistent unmet need for family planning in Kenya, the study described the prevalence of provider imposed eligibility barriers among Kenyan service providers in public and private health care facilities in select urban areas of Kenya	Facility providers, FP clients	Individual and facility-level data collected by Measurement, Learning & Evaluation (MLE) Project	Providers and method types	<ul style="list-style-type: none"> ➤ More than half of providers (58%) reported imposing minimum age restrictions on one or more methods and the restrictions were commonly imposed on clients seeking injectables, with large numbers refusing to offer injectables to women younger than 20 years ➤ 41% of providers reported that they would not offer one or more methods to nulliparous women ➤ More than one in four providers reported that they would not offer the injectable to women without at least one child ➤ Providers at private facilities were more likely to impose barriers, across all method types, whereas, without in-service training on family planning provision had a significantly higher prevalence of imposing parity, marital, and consent barriers across most methods
Kenya	2015 [79]	To investigate whether family planning service quality was associated with current modern contraceptive use in five cities in Kenya in 2010	Facility providers, FP clients	Individual and facility-level data collected by Measurement, Learning & Evaluation (MLE) Project	Women, Providers and attributes of quality of care	<ul style="list-style-type: none"> ➤ 65% of women reported currently using a modern contraceptive method ➤ Provider's solicitation of clients' method preferences, assistance with method selection, provision of information on side effects and good treatment of clients were positively associated with current modern contraceptive use (prevalence ratios, 1.1 each) ➤ The associations were often stronger among younger and less educated women

Kenya	2015 [80]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Current married women 15-49 years	DHS 2014	Spacing and limiting	<ul style="list-style-type: none"> ➤ Fertility decreased from 4.9births per woman in 2003 to 3.9 births per woman ➤ 58% of currently married women were using a method of contraception ➤ Use of modern contraception increased from 32% in 2003 to 53% in 2014. ➤ Injectables were the leading method, used by 28% of married women ➤ 18% of currently married women have an unmet need for family planning (9% for spacing and 8% for limiting) ➤ Government facilities remained the most common sources of contraceptives (60%)
Kenya	2016 [81]	To explore whether attitudes towards FP can be attributed to religious affiliation and/or ethnicity among women in the region	Women aged 15-49 years (marital status and sexual activities not specified)	Packard Western Kenya Project Baseline Survey	Religion and ethnicity	<ul style="list-style-type: none"> ➤ religion and ethnicity had no impact ➤ the most significant factors were level of education and knowledge about the benefits of FP for the mother
Rwanda	2006 [82]	Among other topics, the survey collected information on fertility levels and preferences, awareness, use of family planning and sources of contraception	Married women or in-union aged 15-49 years	Rwanda DHS 2005	Spacing and limiting	<ul style="list-style-type: none"> ➤ 17% of currently married women were contraception, with 10% using modern contraceptive method ➤ Most commonly used modern contraception were injectables (5%) and the pills (2 %) ➤ 38% of currently married women had an unmet need for family planning services, (25% for spacing and 13% for limiting) ➤ Knowledge of at least one contraceptive method among women was nearly universal (98%)

Rwanda	2009 [83]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Married women or in-union aged 15-49 years	Rwanda interim DHS 2007-08	Spacing and limiting	<ul style="list-style-type: none"> ➤ Of 36% current married women who were using contraception, 27% were using modern contraceptive method mainly injectables and pills ➤ 48% of currently married women did not wish to have any more children, but 44% wanted more
Rwanda	2009 [84]	To presents levels, trends, and differentials in the use of contraception and to estimate the level of unmet need for family planning among women of reproductive age	All women and women currently in-union; aged 15-49 years	Rwanda DHS data from 2000-2007/08	Spacing and limiting	<ul style="list-style-type: none"> ➤ The use of contraception increased substantially from 2000 to 2007-08 among women currently in-union and contraceptive prevalence increased almost threefold from 13 % to 36% from 2005 to 2007-08 ➤ The increase was predominantly due to an increase in the use of modern contraceptive methods ➤ Women who were of prime reproductive age, had higher parity, were better educated, and lived in urban and more highly developed areas (Kigali), were more likely than other women to use a contraceptive method ➤ In 2007-08, the level of unmet need for family planning among women currently in-union had dropped, most likely due to an increase in the use of contraception, particularly for the purpose of limiting births. ➤ More women currently need family planning for limiting births than for spacing than in 2000 and 2005 ➤ The increase in unmet need for limiting was consistent with an increase in the proportion of women who did not want any more children and with a wider gap between total fertility wanted and actual total fertility

Rwanda	2009 [85]	To identify factors associated with desiring to stop child bearing and having unmet need	All women and women currently in-union; 15-49 years	Analysis of DHS 2005 data	Limiting future birth	<ul style="list-style-type: none"> ➤ 87% of the women aged 15-49yrs approve use of family planning and 67% think their partners approve use of family planning ➤ High unmet need for limiting future birth (58% of women who want to limit future birth do not use contraception) ➤ Unmet need was higher among women who do not approve or think their partner do not approve family planning or have not discussed with their partners
Rwanda	2012 [86]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Married women or in-union aged 15-49 years	Rwanda DHS 2010	Spacing and limiting	<ul style="list-style-type: none"> ➤ 45% of currently married women were using modern contraceptive method and most commonly used contraception were injectables (26 %), the pills (7 %), and implants (6%) ➤ 19% of currently married women had an unmet need for family planning services, (10% for spacing and 9% for limiting) ➤ Knowledge of at least one contraceptive method among women and men age 15-49was universal
Rwanda	2013 [87]	To identify reasons for non-use of modern family planning in Rwanda, to examine specific barriers to contraception, and to explore psychosocial factors influencing modern contraceptive use	Married or in-union women aged 21-49 years , not pregnant and who had at least one child; and men aged 21+ years	Community-based cross-sectional survey and qualitative study	Users and non-users of contraception	<ul style="list-style-type: none"> ➤ Overall, 50% of survey respondents were using a modern method ➤ Fertility- and partner-related variables were key correlates of non-use and the most commonly reported reasons for non-use were related to perceived fecundity ➤ Men were mostly supportive of contraceptive use and had an important role in a woman’s decision to use contraception ➤ Women’s IDIs revealed misperceptions about fertility leading to gaps in contraceptive coverage, particularly postpartum ➤ The IDIs also highlighted how provider practices, including screening for pregnancy through direct observation of menses, may hamper contraceptive use

Rwanda	2015 [88]	To explore community perceptions of reproductive health and family planning; quality of services; adherence to and discontinuation of contraception; and barriers to accessing family planning and reproductive health services	Male and female community members, community health workers and health facility nurses	Qualitative study undertaken between October 2011-December 2012	Spacing and limiting	<ul style="list-style-type: none"> ➤ Fertility belief: Community members and health workers recognised the value of spacing and limiting births but often desired larger families for cultural and historical reasons ➤ Social pressures and gender roles: young and unmarried women faced significant stigma and husbands exerted decision-making power, but many husbands did not have a good understanding of family planning because they perceived it as a woman's matter ➤ Barriers to accessing high-quality services: Limited method choice, transportation fees, stock-outs, long wait times, and hidden service costs ➤ side effects: poor management and rumours and fears of side effects also inhibited contraceptive use
Rwanda	2015 [89]	to identify the barriers to the use of contraceptives by women who want to space births	Married/partnered women aged 15-35+ years who have at least one child and want another	Rwanda DHS, 2005 and 2010	Spacing and by survey year	<ul style="list-style-type: none"> ➤ Demand to postpone the next birth was correlated with desired family size, the health status of the index child and the experience of infant mortality ➤ Socio-economic factors had a limited role in the demand for spacing ➤ The level of unmet need had dramatically declined between 2005 and 2010, especially among women with less education and cultivators ➤ Bio demographic factors, such as being in amenorrhea, and cultural factors, especially religious attitudes, still hampered the use of contraception

Rwanda	2016 [90]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Married or in-union women aged 15-49 years	DHS 2014-15	Spacing and limiting	<ul style="list-style-type: none"> ➤ More than half of currently married women were using a contraceptive method (53%), with most women using a modern method (48%) ➤ Most commonly used contraception by married women were injectables (24 %), the pills (8 %), and implants (8 %) ➤ Use of modern methods had increased from 45% in 2010 to 48% in 2014-15. ➤ Public health sector remained the major provider of contraceptive methods (91%) ➤ 28% of family planning users discontinue use of a method within 12 months of starting its use due to side effects and health concerns (34 %) ➤ 19% of currently married women had an unmet need for family planning services, (11% for spacing and 8% for limiting) ➤ Knowledge of at least one contraceptive method among women and men age 15-49 was nearly universal
Rwanda	2016 [91]	To analyse the shift in contraceptive use by investigating the contribution attributable to the FP program and that resulting from socio-economic progress	All women in-union aged 15- 35+ years	Rwanda DHS, 2005 and 2010	Survey year	<ul style="list-style-type: none"> ➤ The contraceptive increase was mainly attributable to contraceptive behaviour change (78%) ➤ Contributing factors were women's education, experience of child mortality and place of residence ➤ Limited contribution of change in population composition (12%) ➤ Effects were relatively higher for exposure to family planning messages and husband's desire for children compared to that of his wife's ➤ Uptake of contraceptive improved mostly in low SES, among the rural and less educated population

Tanzania	2000 [92]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning and sources of contraception	Married women or in-union aged 15-49 years	Tanzania reproductive and health survey 1999	Spacing and limiting	<ul style="list-style-type: none"> ➤ Contraceptive prevalence rate doubled from 10 to 22% of all women since 1991-92 and use of modern methods had grown from 6 to 16% of all women ➤ 17% of all women were in need of services in the 1999 TRCHS, compared to 19% in 1991-96 TDHS. Two-thirds of the unmet need was for spacing , while just one third was for limiting future births ➤ There was large increase of women using injectables from less than 0.5% in 1991-92 to 5% in 1999 ➤ Knowledge of at least one contraceptive method among men and women increased from over 75% in 1991-92 to over 90% in 1999
Tanzania	2000 [93]	To examine the relationship between common objective measures of quality and perceptions of the quality of family planning facilities	Men (mean age 35.5) and women mean (age 30)	Analysis of 1993 Tanzania accessibility survey and 1994 Tanzania knowledge, attitude and practices data	Health facility levels and by men and women	<ul style="list-style-type: none"> ➤ Perceived travel time to the facility, availability of immunizations and availability of maternal and child health services were the important determinants of perception of quality among men and women. The ratio of number of staff to outpatients was important to men

Tanzania	2000 [94]	To analyse the prevalence of medical barriers by type of provider, by type of facility and by urban-rural location	Providers and facility types	Analysis of 1996 Tanzania services availability survey	type of provider, by type of facility and by urban-rural location	<ul style="list-style-type: none"> ➤ Relatively high proportions of providers restrict eligibility by age, particularly for oral contraceptives ➤ Between 79% and 81% of medical aides, trained midwives, maternal and child health aides and auxiliary staff (the most common types of family planning service providers in rural Tanzania) impose age restrictions for the pill ➤ Among all providers, 10 to 13% report that there was at least one modern method they would never recommend, and 13% report having sent a client home until her next menses—an inappropriate process hurdle for the provision of most hormonal methods ➤ Young, unmarried women who were not menstruating at the time of their visit would encounter one or more barriers or process hurdles at more than 70% of urban facilities and at 80% of rural facilities
Tanzania	2004 [95]	To describe fertility in the area, to identify the concerns of women during the process of family formation and to identify how best they would like to be served	Married and unmarried women aged 15-55 years (do not specify whether they were sexually active or not)	Qualitative study using FGDs ; a Survey and a review of demographic surveillance System data	Married and unmarried women; and younger and older group of women	<ul style="list-style-type: none"> ➤ Current use was influenced by rising parity, educational level, age of last born child, breastfeeding status, a preference for longer than the mean birth interval (32 months), not being related to the household head, and living in a house with a tin roof ➤ Principal concerns among women were: large unmet need for family planning services in their area particularly among teenagers for whom it was associated with induced abortion; Family planning was being used predominantly for spacing but fears associated with it often curtailed effective use; and service provision was perceived to be lacking in two main areas — regularity of supply, and addressing rumours and fears associated with family planning

Tanzania	2005 [96]	Among other topics, the survey collected information on fertility levels and preferences, awareness, use of family planning and sources of contraception	Married women or in-union aged 15-49 years	Tanzania DHS 2004-2005	Spacing and limiting	<ul style="list-style-type: none"> ➤ 96% of women and 97% of men knew at least one modern method- an increase from 91% of women and 92% of men in the 1999 TRCHS ➤ Pills, injectables, and male condoms were the most commonly known methods among both men and women ➤ 26% of married were currently using any method and 20% were using modern contraception. Injectables were the leading method used by 8% where pills and traditional methods both 6% were also common ➤ 41% of sexually active unmarried women and 26% of married women were using contraceptive. The male condom was favoured among sexually active unmarried women ➤ Use of modern method had increased from 17% in 1999 to 20% in 2004-05 ➤ Government or parastatal facilities were the most common sources ➤ of contraceptives, especially dispensaries ➤ The demand for spacing was almost twice as high as the demand for limiting (32 and 18%, respectively). ➤ 22% of currently married women had an unmet need for family planning (15% for spacing and 7% for limiting)
Tanzania	2007 [97]	To analyses the demand and supply factors determining contraceptive use in Tanzania	Health facilities and women aged 15-49 years	Analysis of TSA Survey (1996) and TDHS (1996) data sets	Urban and rural area	<ul style="list-style-type: none"> ➤ access to family planning services and quality of care of services were important determinants of contraceptive use in Tanzania

Tanzania	2011 [98]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Women 15-49 years and men	Tanzania DHS 2010	Spacing and limiting	<ul style="list-style-type: none"> ➤ The TFR in Mainland was 5.4 and ranged from 3.9 in the Eastern zone to 7.1 in the Western zone ➤ 34% of currently married women were using a method of contraception, including 27% who were using a modern method ➤ Injectables were the leading method, used by 11% of married women ➤ Current contraceptive use was higher among sexually active unmarried women than among married women (51% and 34%, respectively) ➤ 25% of currently married women have an unmet need for family planning (16% spacing and 9% for limiting) ➤ Government and parastatal facilities were the most common sources of contraceptives ➤ Knowledge of contraception was almost universal. The most commonly known methods among both men and women were pill, injectables, and male condoms
Tanzania	2013 [99]	To explore family planning decisions, perceptions and gender dynamics among couples in Mwanza region of Tanzania	Male and female aged 18-49 years	Qualitative study (FGDs & IDIs)	Age (young vs older), area of residence, male and female	<ul style="list-style-type: none"> ➤ Four main themes that emerged from the study were: risks and costs; male involvement; gender relations and communication; and urban–rural differences
Tanzania	2014 [100]	To find out the determinants of contraceptive use among married women and policy implication in Tanzania.	The analysis used couples file in DHS	Analysis of TDHS 2004-2005	all	<ul style="list-style-type: none"> ➤ husband disapproval of contraceptive use, women education, husband and women approval of family planning, discussion of family planning with partners, wealth index, and religion, were the determinants of contraceptive use

Tanzania	2015 [101]	to determine factors influencing modern contraceptive use among women aged 15 – 49 years in Tanzania	Married or in-union women aged 15-49 years	Analysis of Tanzania DHS 2010	All married or in-union women 15-49 years	<ul style="list-style-type: none"> ➤ Predictors of modern contraceptive use were women empowerment (OR = 1.4; 95% CI: 1.13 – 1.63), male-female age difference of less or equal to nine (OR = 1.6; 95 CI: 1.01 – 2.66), and advice given at health care facilities on family planning (OR = 1.6; 95 CI: 1.37 – 1.96) ➤ Women sexual violence was not associated with contraceptive use
Tanzania	2016 [102]	To explore the quality aspects of family planning services and barriers to adoption, using data from providers, clients of family planning services, and the perceptions of men and women in the catchment areas of health facilities	Women, men and health facility providers	Exit interview with FP users clients (women), Key informant interviews with providers and FGD (women-users and nonusers of FP, and men)	selected quality of FP indicators (e.g. information given, technical competence, privacy etc)	<ul style="list-style-type: none"> ➤ Although family planning services were generally available, the range of options available to users at the primary healthcare level tend to be limited, limiting the ability of users to switch methods ➤ proper management of clients, including protection of clients' privacy and ensuring that necessary tests and counselling are done before any method is prescribed was weak ➤ Inadequate information on modern contraceptives (benefits, efficacy, side effects, and how to deal with them), misunderstandings on possible side effects, distrust among spouses, and problems of male inclusion were important constraints to adoption
Tanzania	2016 [103]	To understand factors influencing reproductive preferences and behaviours in a rural, Tanzanian society, with the broader goal of developing a more nuanced measure for reproductive health status and change	Men and women aged 15-49 years (for FGDs); Key informants	Qualitative study (FGDs and IDIs)	Themes and interview groups (i.e. young, older, health provider, etc.)	<ul style="list-style-type: none"> ➤ Key factors were found to exert their influence on both fertility desires and family planning at multiple levels ➤ Individual, spousal, organisational and societal factors influenced the implementation of childbearing preferences

Tanzania	2016 [104]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Married women or in-union aged 15-49 years	Tanzania DHS/MIS 2015-16	Spacing and limiting	<ul style="list-style-type: none"> ➤ Modern contraceptive use by currently married women increased steadily from 20% in 2004-05 to 27% in 2010 and 32% in 2015-16 and Injectables were the most popular contraceptive, used by 13% of currently married women ➤ Six in 10 modern contraceptive users obtain their methods from government/parastatal suppliers. ➤ Among women who started using a contraceptive method in the 5 years preceding the survey, one in four discontinued the method within 12 months and Pill (34%), injectable and withdrawal (32% each), and male condoms (28%) had high discontinuation rate ➤ Unmet need for family planning among currently married women has remained between 22% and 24% since 1999.
Uganda	2000 [105]	To describe the nature of decision to stop childbearing and to question the simplifying assumption of consensus decision making implicit in much demographic research on unmet need	Married women or in a stable relationship for at least six months; 20-44 years and married men or living with a woman	Survey and focus group discussion collected under Negotiating Reproductive Outcome Project	Limiting future birth	<ul style="list-style-type: none"> ➤ Indirect forms of communication between partners predominated and contributed to the tendency of both men and women to overestimate each other's demand for additional children ➤ Partner's opposition was found to cause a significant increase in unmet need reported by women and a shift in contraceptive mix favouring use of tradition methods over modern methods ➤ Overall, partners' opposition accounted for 15% of unmet need

Uganda	2007 [106]	Among other topics, the survey collected information on fertility levels and preferences, awareness, use of family planning and sources of contraception	Married women or in-union aged 15-49 years	Uganda DHS 2006	Spacing and limiting	<ul style="list-style-type: none"> ➤ 24% of currently married women age 15-49 were currently using a method of contraception, up from 19% in the 2000-2001 ➤ 52% of currently married women obtain methods of contraception from private medical sources, while 35% obtained their method from government facilities ➤ 97% of all women and 98% of all men age 15-49 had heard of at least one method of contraception ➤ Pills, injectables, and condoms were the most widely known modern methods among both women and men ➤ 41% of currently married women had an unmet need for family planning services (25% for spacing and 16% for limiting)
Uganda	2008 [107]	To examine unmet need in Uganda from 1995 to 2006. To provide levels, trends, and differentials for unmet need; the factors associated with unmet need; reasons for contraceptive non-use; and the likely impact of reducing unmet need	Currently married women aged 15-49 years	Uganda DHS from 1995 to 2006	Spacing and limiting	<ul style="list-style-type: none"> ➤ unmet need was highest among currently married women, women in rural areas, and women in the Northern region ➤ Unmet need was increasing among the all-women group, currently married women, all sexually active women, and never-married sexually active women ➤ Unmet need for spacing was more prevalent than for limiting ➤ Total unmet need was associated with higher parity (two or more children) and living in the Northern region

Uganda	2008 [108]	The study documented providers' perceptions of quality of care and of barriers to quality services at the organisational and societal levels	Family planning providers and managers	FGDs and In-depth interviews	Organisational and societal factors	<ul style="list-style-type: none"> ➤ Participants felt that organisational factors, such as supply availability, workload and their own knowledge and skills, affected their abilities to offer quality care ➤ The providers were also challenged by societal factors such as male partner participation, financial constraints, misconceptions and leadership support
Uganda	2010 [42]	The study aims at exploring reasons for low contraceptive use among young people	Married and unmarried young people aged 15-24 years	Focus group discussions	Marital status and age group	<ul style="list-style-type: none"> ➤ Multiple obstacles to contraceptive use were described by the young men and women ➤ The obstacles were misconceptions and fears related to contraception, gender power relations, socio-cultural expectations and contradictions, short term planning, and health service barriers ➤ Enabling factors recounted by the young people included female strategies to overcome obstacles, changing perceptions to contraceptive use, and changing attitude towards a small family size

Uganda	2011 [51]	To explore providers' perspectives on factors influencing contraceptive use and service provision to young people aged 15-24 in two rural districts in Uganda	Facility contraceptive services providers	Face to face interviews with using a semi structured questionnaire and open-ended questions	Health facility type	<ul style="list-style-type: none"> ➤ Constraints to contraceptive use and provision to young people were sporadic contraceptive stocks, poor service organisation, and the limited number of trained personnel, high costs, and unfriendly service ➤ Most providers were not competent enough to provide long acting methods ➤ private for-profit providers' competence was limited for most contraceptives as compared to providers in the public owned facilities ➤ Providers had had negative attitudes towards the provision of contraceptives to young people, and they imposed non-evidence-based age restrictions and consent requirements-Thus, most providers were not prepared or were hesitant to give contraceptives to young people ➤ Short-acting methods were considered acceptable for young married women and those with children
Uganda	2011 [52]	The study assessed quality of contraceptive services for young people aged 15–24 in two rural districts in Uganda	Simulated clients (Male and female aged 15-24 years)	Facility based cross-sectional study	By facility type (public, private not for profit and private for profit)	<ul style="list-style-type: none"> ➤ In both public and private facilities means and categorised quality scores for all aspects of quality were low. Private for profit had the lowest quality scores whereas, Private not for profit facilities had medium scores ➤ The choice of contraceptive methods and interpersonal relations quality scores were slightly higher in public facilities. ➤ Information given to users was suboptimal and providers promoted specific contraceptive methods ➤ A few providers offered preferred method of choice and showed respect for privacy

Uganda	2012 [109]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Current married women aged 15-49 years	DHS 2011	Spacing and limiting	<ul style="list-style-type: none"> ➤ Awareness of at least one method of contraception was nearly universal ➤ Three in ten currently married women were using a method of Contraception ➤ Most women were using a modern method (26%) ➤ Injectables remained the most commonly used method (14%) ➤ The government sector remained the major provider of contraceptive methods (47%) ➤ 43% of family planning users in Uganda discontinue use of a method within 12 months of starting its use ➤ Fear of side effects was the main reason for discontinuation (16%) and pills had the highest discontinuation rate (54%) ➤ 34% of currently married women had an unmet need for family planning services-(21% for spacing and 14% for limiting)
Uganda	2013 [110]	To further explore the factors associated with contraceptive use among young and older married, fecund, sexually active, non pregnant women in Uganda, for which existing literature does not provide concrete evidence	Sexually active, fecund, non-pregnant married women aged 15-34 years	Analysis of 2006 and 2011 Uganda DHS	Survey year and age group	<ul style="list-style-type: none"> ➤ The findings suggested that increasing secondary education for women and improving the livelihood of the population overall was important
Uganda	2013 [54]	To understand how social norms about	Adolescents aged 10-19 years	Qualitative study (life	Male and female	<ul style="list-style-type: none"> ➤ Social changes brought about by the conflict, combined with cultural values and gender norms, were found to

gender and
reproduction shape
fertility desires and
use of family
planning among
adolescents in post-
conflict northern
Uganda

history and
IDIs)

strongly influence fertility desires and contraceptive use
➤ Gendered barriers to adolescent use of family planning
and access to services were significant, even among
married couples despite support for smaller, spaced
families

Uganda	2013 [111]	To establish the effect of age cohort on contraceptive use in Uganda and to find out the extent to which contraceptive uptake is affected by other micro- and macro level factors	Currently married or cohabiting women aged 15-49 who were born between 1957 and 1991	2006 Uganda DHS	Age cohort (young 1982-1991, middle 1972-1981 and older cohort 1957-1971)	<ul style="list-style-type: none"> ➤ older age cohorts were more likely to use contraceptives than younger cohorts aged 15–24 years ➤ Contraceptive use increased with increased schooling and was highly significant with secondary and higher education than with primary education ➤ Contraceptive use increased with increased parity ➤ Urban residence was also associated with increased contraceptive use ➤ The results called for interventions that target young women to reduce fertility and reproductive health challenges associated with too many or too closely spaced births
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Uganda	2014 [112]	To provide an assessment of trend and patterns of modern contraceptive use among women in the country.	Sexually active non pregnant women aged 15-49 years	Analysis of Uganda DHS data for year 1995, 200/01, 2006 and 2011	By survey year	<ul style="list-style-type: none"> ➤ an upward trend in modern contraceptive use – from 11.6% in 1995 to 32.1% in 2011 ➤ There were increased odds of modern contraceptive use across the study period among women with primary and post-primary education, those in urban areas, women in the higher wealth quartiles and those with a higher number of surviving children ($p < 0.01$) ➤ There was a reduced odds of modern contraceptive use across the study period among married women and those in cohabiting relationships ($p < 0.05$)
Uganda	2014 [113]	To assess the reproductive aged women's knowledge, attitudes, and factors associated with use of LARC	Women aged 15-49 years attending private and public health facilities	Health facility-based, cross-sectional study	All and current users	<ul style="list-style-type: none"> ➤ Mean age (SD) and current use of LARC was 26.34 (5.35) and 31.7% respectively ➤ Previous use adj.PRR 2.89; (95% CI 2.29, 3.81), knowledge of implant administration site adj.PRR 1.83; (95% CI 1.17, 2.87), and perception that; male partner decisions positively influence their contraceptive choices adj.PRR 1.49; (95% CI 1.18, 1.88) were the factors associated with current use of LARC ➤ Perception that LARC should be used by married women was negatively associated with use of LARC adj.PRR 0.63; (95% CI 0.44, 0.90)
Uganda	2015 [114]	to explore whether or not the predictors of contraceptive use differ by age	fecund, non pregnant married women age 15–34 years	Analysis of 2011 Uganda DHS	Age group	<ul style="list-style-type: none"> ➤ key factors found to be associated with use of modern contraceptives varied among young and older married women age 15–24 and 25–34 respectively ➤ Perception on distance to health facility, listening to radio and geographical differences exhibited significant variability in contraceptive use among the young and the older women ➤ Desire to have children after two years and education level were key factors that were found to be important for both age groups in explaining contraceptive use

Uganda	2015 [115]	To assess community perspectives, attitude and factors that influence use of family planning (FP) services in post conflict Gulu district	Head of households, women 18-49 years and men 18-60 years and health workers	Survey and Qualitative study using FGDs and IDIs	Male and Female and health workers	<ul style="list-style-type: none"> ➤ Contraceptive prevalence rate was 47.5 % ➤ Communities perceive FP as acceptable, beneficial and geographically, temporally and financially accessible ➤ Factors associated with FP use were age 26–35 years (AOR 1.92, 95 % CI 1.18-3.10, p = 0.008), and 36–45 years (AOR 2.27, 95 % CI 1.21-4.25, p = 0.010), rural residence (AOR = 0.41, 95 % CI 0.24-0.71, p = 0.001), cohabitation (AOR = 2.77, 95 % CI 1.15-6.65, p = 0.023), and being a farmer (AOR 0.59, 95 % CI 0.35-0.97, p = 0.037) ➤ The main reason for non-use of FP was fear of side effects 88.2% ➤ The main source of FP services was government health facilities 94.2 %
Uganda	2015 [116]	To ascertain whether the place of residence is a major factor in determining the use of contraceptives in Uganda	All women aged 15-49 years	Analysis of 2011 Uganda DHS	Urban vs rural area	<ul style="list-style-type: none"> ➤ Education, status of women, and the desire for children by husbands played a significant role in determining rural-urban differences in the use of contraceptives in Uganda ➤ Place of residence was, an important factor in determining use of contraceptive, especially among rural women
Uganda	2015 [117]	To identify factors influencing family planning service uptake and contraceptive use among postpartum women in rural Uganda	Postpartum women aged at least 18 years and above	Facility-based cross-sectional survey	All women	<ul style="list-style-type: none"> ➤ Statistically significant predictors of uptake of family planning services were: education (AOR = 3.03, 95 % CI 1.57–5.83), prior use of contraceptives (AOR = 7.15, 95 % CI 1.58–32.37), partner communication about contraceptives (AOR = 1.80, 95 % CI 1.36–2.37), and perceived need of contraceptives (AOR = 2.57, 95 % CI 1.09–6.08) ➤ Statistically significant predictors of contraceptive use since delivery were: education (AOR = 2.04, 95 % CI 1.05–3.95), prior use of contraceptives (AOR = 10.79, 95 % CI 1.40–83.06), and partner communication about contraceptives (AOR = 1.81, 95 % CI 1.34–2.44)

Uganda	2016 [118]	To examine the influence history of a previous birth and age at first birth would have on young women's use of contraception.	Female aged 15-24 years	Analysis of 2011 Uganda DHS	Age (young 15-19 years vs older 20-24 years)	<ul style="list-style-type: none"> ➤ only 12% of the adolescents were using contraception at the time of the survey ➤ The key predictors of contraceptive use among young women in Uganda were age at first birth, history of previous birth, current age, and place of residence, education and socioeconomic status ➤ Respondents who had a birth in the 5 years prior to the survey had five times (OR = 5.0, 95% CI = 3.7-6.5) the odds of contraceptive use compared to those who had never had a birth. ➤ Adolescent females with at least a secondary education were more likely to use contraceptives (OR = 1.55, 95% CI = 1.2-2.0) than those with primary education ➤ The odds of contraceptive use were least among adolescents from Northern region (OR = 0.39, 95% CI = 0.2 0.6) compared to those from central region of Uganda ➤ Muslim adolescent females were more likely to use contraceptives compared to Catholics (OR = 1.59, 95% CI = 1.1-2.3).
Uganda	2016 [119]	To examine the role of socio-cultural inhibitions in the use of modern contraceptives in rural Uganda	men aged 15-64 and women aged 15-49	Qualitative study (FGDs and IDIs)	Men, women and age	<ul style="list-style-type: none"> ➤ Three themes central in hindering the uptake of modern contraceptives emerged were: (i) persistence of socio-cultural beliefs and practices promoting births (such as polygamy, extending family lineage, replacement of the dead, gender-based violence, power relations and twin myths). (ii) Continued reliance on traditional family planning practices and (iii) misconceptions and fears about modern contraception

Uganda	2016 [120]	To determine the rate of unmet need for family planning among women of reproductive age in the population local of Kisiizi hospital and to use the successful USHAPE model to train health workers to address this need	Patient women of reproductive age attending ANC clinic	Facility-based survey and screening	Patients who visited family planning clinic	<ul style="list-style-type: none"> ➤ The screening for unmet need for contraception revealed that 51% have an unmet need, higher than the national average of 38% ➤ Sixty-eight members of staff at Kisiizi trained to a basic level and a further 32 staff have been trained to Level 2 higher level
Uganda	2016 [121]	To assess knowledge, sources and use of FP methods among women of reproductive age in rural Uganda	Women aged 15-49 years (marital status and sexual activity not specified)	Analysis of secondary data collected between July-September 2012	All, current users and non-users	<ul style="list-style-type: none"> ➤ Majority of the women were less than 30 years of age (64.3%) ➤ 73% were married, 51.1% had primary education and 57% were engaged in employment ➤ Knowledge of FP methods was universal (98.1%) ➤ The most trusted sources of contraceptive information were clinic providers (60.4%), friends (56.9%) and the media (51.3%) ➤ The main sources of modern FP methods were Government (27.6%) and private (21.1%) health facilities ➤ 62% of women were currently using any FP method ➤ Among non-users of FP, injectables (50.4%), implants (22.8%) and pills (20.2%) were the most preferred FP methods

Uganda	2016 [122]	To explore healthcare providers' (HCPs) perceptions and practices regarding contraceptive counselling to young people	Health facility staff (doctors and midwives)	Qualitative study using in-depth interviews	Staff cadres (doctors and midwives)	<ul style="list-style-type: none"> ➤ Health care providers echoed the societal norms regarding sexual practice among young people ➤ Providers expressed a self-identified lack of skill, limited resources, and inadequate support from the health system to successfully provide appropriate services to young people ➤ Providers were unsure whether oral contraceptives, DMPA, and IUDs were suitable and safe for young women ➤ Providers felt frustrated with the consultations, especially when meeting young women seeking post-abortion care
Uganda	2017 [123]	Among other topics, the survey collected information on fertility levels and preferences, awareness and use of family planning	Married women or in-union aged 15-49 years	Uganda DHS 2016	Spacing and limiting	<ul style="list-style-type: none"> ➤ Overall, 39% of currently married women were using a method of family planning (35% were using a modern method and 4% were using a traditional method) and the most popular methods used were injectables (19%) and implants (6%) ➤ Among sexually active unmarried women, 51% were currently using a contraceptive method (47% were using a modern method and 4% were using a traditional method) and injectables (21%) and male condoms (14%) were the popular methods used ➤ 28% of currently married women had an unmet need for family planning services, 67% had a demand for family planning, 58% of the total demand was being met, almost entirely by modern methods (52 percent of total demand) ➤ Among sexually active unmarried women, 32% had an unmet need for family planning, 83% had demand for family planning and 61% of the demand was met

Uganda	2016 [50]	To describe young peoples' experiences of contraceptive care, client provider interactions and its aftermath on choice, access and satisfaction	Simulated clients (Male and female aged 14-24 years)	Quantitative and qualitative studies	Facility type (public, private not for profit and private for profit)	<ul style="list-style-type: none"> ➤ 60% of the providers choose a contraceptive method for the client ➤ Clients reported satisfaction with contraceptive services in 29% of the consultations ➤ Privacy was reported to be observed in 42% and clients felt respectfully treated in 50% of the consultations ➤ Most clients would not recommend the visited facility to others ➤ Younger clients seemed to be treated differently than older clients; contraceptives were provided after a prolonged debate ➤ Inaccurate information about contraceptives was provided and costs were high ➤ Providers conveyed potential adverse effects of contraceptives to young people in a way that indicated providers own fears and doubts
Tanzania, Ghana and Zimbabwe	2004 [124]	to identify the poorest and other vulnerable sub-groups being served least by family planning providers	Sexually active , non pregnant women aged 15-49 years	DHS from each country	By country and women's socio-demographic characteristics of the woman	<ul style="list-style-type: none"> ➤ There were some similarities among the countries in those using modern methods the least, but a number of groups were country specific ➤ In Tanzania, use of a modern method of contraception was lowest among women aged 15—19 years (OR = 0.61) as compared to those aged 30-39 years ➤ In Tanzania, never married women were more likely to being using a modern method than those of any other marital status but women living in the Lake zone used modern contraception the least ➤ In Tanzania, modern contraceptive use increased strongly with a woman's level of education

Rwanda and Madagascar	2007 [125]	to assess and describe the magnitude of met and unmet need for family planning and to identify the key characteristics that differentiate those women who have met or unmet need to space or limit and those with no need	Married or in-union women aged 15-49 years	Analysis of Rwanda DHS 2000 and Madagascar DHS 2004 data	Spacing and limiting; and by country	<ul style="list-style-type: none"> ➤ Differentials in contraceptive needs (met or unmet to space or limit) was accounted for by differences in socioeconomic and demographic characteristics of women in each of these groups ➤ The key distinguishing factors of women who were using or who had unmet needs for family planning to space or limit births included economic status, discussions with partner (partner participation in FP), woman's previous exposure to any method, woman's age and education, total number of children, and other demographic factors. ➤ These relationships were different for Rwanda and Madagascar
53 countries, 4 from East African community members	2007 [126]	To provide donors, policymakers and program planners the evidence and analyses needed to determine how to best direct resources toward meeting needs for family planning in the developing world limited	Current married and sexually active never-married women aged 15-49 years	Each countries' recent DHS data	Spacing and limiting; and by country	<ul style="list-style-type: none"> ➤ 24% of married women and 9% of never married women had an unmet need for contraception in Sub-Saharan Africa and there were variations by country. ➤ For East African community country members, unmet need for spacing and limiting among current married women were higher in Rwanda ➤ Access to supplies and services were the most common reasons given by married women for not using contraception, other reasons were breastfeeding and not having sex frequently ➤ Infrequent sex was the common reason cited by never-married women
51 LMICs, 4 from East African community members	2010 [127]	To examine the extent to which the use of contraception for spacing leads to its use for limiting	Ever married women	Analysis of DHS data from 51 countries	Spacing and limiting	<ul style="list-style-type: none"> ➤ Significant proportions of women who currently limit their fertility were Spacers in the past. There was no direct evidence that spacing experience reduces the number of children desired

Tanzania, Kenya and Ghana	2011 [128]	To quantify differences in the quality of family planning (FP) services at public and private providers in the three representative sub-Saharan African countries to assess how these quality differentials impact upon FP clients' satisfaction, and to suggest how quality improvements can improve contraceptive continuation rates	Facilities, providers and FP clients	Service Provision Assessments	By attributes of quality of care and by facility ownership	<ul style="list-style-type: none"> ➤ Private health facilities had higher (interpersonal) process quality than public facilities but not necessarily higher technical quality in the three countries. The differentials were considerably larger at lower level facilities (clinics, health centres, dispensaries) than at hospitals ➤ Family planning client satisfaction was higher at private facilities - both hospitals and clinics – most likely attributable to both process and structural factors such as shorter waiting times and fewer stock outs of methods and supplies.
12 literature from LMICs, 1 from East Africa community member countries	2009 [48]	To examine the limits to modern contraceptive use identified by young women in developing countries	Women aged 11–24 years	Review of published qualitative Literature from 1970–2006	Age and country	<ul style="list-style-type: none"> ➤ Use of hormonal methods was limited by lack of knowledge, obstacles to access and concern over side effects, especially fear of infertility ➤ Condom use was limited by association with disease and promiscuity, together with greater male control ➤ As a result young women often relied on traditional methods or abortion
4 African countries, 1 from East African community members	2012 [129]	To examine different dimensions of women's empowerment and contraceptive use in African countries	Married or cohabiting women aged 15-49 years	DHS conducted between 2006 & 2008	By country	<ul style="list-style-type: none"> ➤ There was a positive associations between the overall empowerment score and method use in all countries (relative risk ratios, 1.1–1.3) ➤ Household economic decision making was associated with the use of either female-only or couple methods (1.1 for all), as was agreement on fertility preferences (1.3–1.6) and the ability to negotiate sexual activity (1.1 1.2)

52 developing countries, 4 from East Africa community members	2012 [130]	To document current levels and trends since 1990 in the unmet need for modern family planning methods	Current married and sexually active unmarried women aged 15-49 years	DHS since 2001	Spacing and limiting	<ul style="list-style-type: none"> ➤ The use of modern contraception had been rising, but the changes were slight in West and Middle Africa, where contraceptive use for spacing rather than for limiting births continued to dominate ➤ In Latin America and the Caribbean and in East and Southern Africa, about one-third of unmarried sexually active women were classified as having an unmet need, while in West and Middle Africa about half were in this category ➤ The main reasons offered by women with unmet need for not using modern contraception are health concerns and side effects, lack of exposure to the risk of pregnancy and opposition to contraception because of husbands' objections or religious reasons
169 DHS data, 4 from East African community members	2012 [60]	To present a new standard definition of unmet need that can be consistently applied over time and across countries, and shows the impact of the revising the definition on estimated levels of unmet need	Current married and sexually active unmarried women aged 15-49 years	169 DHS data	Spacing and limiting	<ul style="list-style-type: none"> ➤ The revised definition of unmet need for family planning produced similar, although slightly higher, levels of unmet need compared with the Original definition. In contrast to the Original definition, the revised definition can be applied consistently to compare estimates across countries and to reliably measure trends over time

18 sub-Saharan African countries, 4 from East Africa community members	2013 [131]	To understand the characteristics of women wishing to limit childbearing	All women 15-49 years (do not specify whether sexually active or not)	Analysis of DHS data from 18 sub-Saharan African countries	Spacing and limiting	<ul style="list-style-type: none"> ➤ A sizable number of women nearly 8 million—have demand for limiting future births ➤ Among all women aged 15-49 years demand to space births was 25% and 14% was for limit, but among married women, demand for limiting nearly equals that for spacing (26% versus 31%, respectively) ➤ Demand to limit births begins to exceed demand to space births, on average, at age 33 and many limiters have met or exceeded ideal parity (28% & 30%, respectively), ➤ Mean age at which demand for limiting future births meets or exceeds demand to space is 31 in Kenya and Rwanda, 33 in Uganda and 34 in Tanzania ➤ Contraceptive users who want to limit births are more likely to use short-acting or traditional methods than more effective long-acting or permanent methods ➤ Fear of side effects and health concerns continue to be major barriers to contraceptive use and many contraceptive users report that they were not informed about potential side effects with their method or about other methods that they could use
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Rwanda and Nepal	2013 [132]	to identify determinants of women's use of modern contraceptives in two diverse settings, Nepal and Rwanda	Currently married rural women aged 15-49 years who do not wish to have a child in the next two years	Analysis of 2010 Rwanda DHS and 2011 Nepal DHS	By country	<ul style="list-style-type: none"> ➤ Community level variables in each of the four spheres (socioeconomic development, women's empowerment, fertility norms, and access to family planning information and services) remained significant predictors of women's current use of modern contraception in the final model for both Rwanda and Nepal ➤ The community's level of socioeconomic development, the extent to which women in the community participate in decisions around family planning, prevailing small-family size norms, and the community's access to modern methods appeared to be positively associated with women's contraceptive use after adjusting for women's individual characteristics
Tanzania, Uganda and Ethiopia	2013 [133]	To explore the use of family planning among married adolescent girls in three East African countries: Ethiopia, Tanzania and Uganda	Married adolescent girls aged 12-17 years	Population-based baseline survey for early marriage intervention undertaken in 2011	By country and parous and nulliparous	<ul style="list-style-type: none"> ➤ 8% of married Ethiopian girls were using a method at the time of survey, compared to 21% of married girls in Tanzania and 26% of girls in Uganda ➤ Ethiopian girls were reported to be mainly using injectables (89%), while Tanzanian and Ugandan girls were mainly using condoms (84% and 85%, respectively) ➤ Many users had never given birth and were using FP to delay the first birth ➤ Among married girls using FP in Ethiopia, 86% had no children; compared to 20% in Uganda and 31% in Tanzania ➤ Partner refusal in both Tanzania (55% of non-users) and Uganda (48% of non-users) was the primary reason for not using contraception among non-users who wanted to use FP, largely reflecting the preponderance of condoms, a male-controlled method, among this

						<p>population</p> <ul style="list-style-type: none"> ➤ Among girls in Ethiopia, the reason for non-use when they wanted to was because they felt they were too young or not eligible for FP (39%) ➤ In multivariate analysis, partners' education, partners' approval and having received FP information in the last year was significantly association with use
51 countries, 5 from East Africa community member countries	2014 [134]	to provide an updated review of the reasons why many married women having unmet need are not practicing contraception	Current married women aged 15-49 years	Analysis of DHS data collected since 2006	By region and country	<ul style="list-style-type: none"> ➤ The most widespread reasons for non-use, were infrequent sex and concerns regarding side effects or health risks
57 DHS from Low and middle income countries, 3 from East Africa community member countries	2015 [135]	To examine the sector of provision, by women's socio-economic position; and to assessed method mix and whether women were informed of side effects	Women aged 15-49 years	57 nationally representative DHS (2000–2013)	By region, source of contraception and women's socio-economic position	<ul style="list-style-type: none"> ➤ Modern contraceptive use among women in need was lowest in sub-Saharan Africa (39%), with other regions ranging from 64% to 72% ➤ The private sector share of the family planning market was 37–39% of users across the regions and 37% overall ➤ Private retailers played a more important role in sub-Saharan Africa (14%) than in other regions (3–5%) ➤ NGOs and FBOs served a small percentage ➤ Privileged women (richest wealth quintile, urban residents or secondary-/tertiary-level education) used private sector services more than the less privileged ➤ Contraceptive method types with higher requirements (medical skills) for provision were less likely to be acquired from the private sector, while short-acting methods/injectables were more likely ➤ The percentages of women informed of side effects varied by method and provider subtype, and were higher among public than private medical providers

36 countries, 5 from East Africa community member countries	2015 [136]	To examine trends in the source of modern contraception (public versus private sector); method choice (long acting or permanent methods versus short-acting methods); and method and source combined.	Married women or in-union aged 15-49 years	Analysis of DHS data collected during 1992–2012	Time period of data collection (992–2000 (period 1), 1998–2006 (period 2), and 2005–2012 (period 3))	<ul style="list-style-type: none"> ➤ Between 40% and 49%—of modern contraceptive users relied on the private sector in Asia and LAC in the last 20 years, but in Sub-Saharan Africa it was between 27% and 30% ➤ Increased contraceptive prevalence in Sub-Saharan Africa reflected the increased use of short-acting methods obtained mainly through the public sector, with only limited use of long-acting or permanent methods through the private sector
70 Developing countries, 5 from East Africa community member countries	2015 [137]	This report focused on providing a comprehensive overview of adolescent women’s need for and use of sexual and reproductive health services	Current married adolescent women and sexually active unmarried adolescent women aged 15-19 years	DHS (52 countries) and MICs (16 countries)	by country or region, wealth	<ul style="list-style-type: none"> ➤ In a third of countries in Africa, more than 40% of recent births to mothers younger than 20 were unplanned ➤ Unmet need for contraception in 5 East African countries ranged from 6% in Rwanda to 32% in Uganda ➤ Main reported reasons for non use of contraception among the adolescent women who have an unmet need for contraception are infrequent sex and not being married. Other important factors include, lack of access, health concerns and worry about side effects
Burundi, Kenya, Rwanda, Tanzania and Uganda	2016 [138]	To examine the relationship between pregnancy history and the use of contraception among women of reproductive age (15–49 years) in East Africa	Women aged 15-49 years (marital status and sexual activity not specified)	DHS data from Burundi (2010), Kenya (2008-09), Rwanda (2010), Tanzania (2010) & Uganda (2011)	Country	<ul style="list-style-type: none"> ➤ In Kenya, Rwanda, Burundi and Uganda, women who had experienced a mistimed pregnancy were more likely to use a modern contraceptive method during their most recent sexual encounter ➤ Other significant correlates of women’s contraceptive use were: desire for more children, parity, household wealth, maternal education and access information through radio ➤ In-country regional differences on use of modern contraceptive methods were noted across the five East African countries

Kenya and Nigeria	2016 [139]	To explore the role that drug shops and pharmacies play in the provision of contraceptive methods in selected urban areas of Nigeria and Kenya as well as factors associated with women's choice of where to obtain these methods	Women and men of reproductive age, pharmacies, and drug shops	Measurement, Learning & Evaluation (MLE) Project	Women's source of short-acting methods and by country	<ul style="list-style-type: none"> ➤ In urban Nigeria and Kenya, drug shops and pharmacies were the major source for the family planning methods of oral contraceptive pills, emergency contraceptives, and condoms ➤ The majority of injectable users obtained their method from public facilities in both countries, but 14% of women in Nigeria and 6% in Kenya obtained injectables from drug shops or pharmacies ➤ Harder-to-reach populations were the most likely to choose these outlets to obtain their short-acting methods. For example, among users of these methods in Nigeria, younger women (<25 years old) were significantly more likely to obtain their method from a drug shop or pharmacy than another type of facility. ➤ In both countries, family planning users who had never been married were significantly more likely than married users to obtain these methods from a drug shop or a pharmacy than from a public-sector health facility ➤ There was low levels of family planning-related training (57% of providers in Kenya and 41% in Nigeria had received training) and lack of family planning promotional activities in pharmacies and drug shops in both countries
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52 countries, 5 from East Africa community member countries	2016 [140]	To examine the reasons why women do not use contraception despite wanting to avoid a pregnancy	Current married and sexually active never-married women aged 15-49 years and highlighted the situation of young women aged 15-24 years	Analysis of 2005 to 2014 DHS data	Delaying first birth, spacing and limiting future births for current married separately and for sexually active never married separately	<ul style="list-style-type: none"> ➤ Larger proportions of women now cite side effects and infrequent sex as reasons for non-use compared with earlier studies on women's reasons for not using contraception ➤ Unmet need was highest in Uganda, Ghana and Haiti where the use of contraceptive is still very low ➤ Married women rarely had unmet need for delaying first birth: 0% (Tanzania, Rwanda & Burundi), 1% (Uganda & Kenya), ➤ Sexually active unmarried women were mostly likely to have unmet need: 29% (Tanzania), 34% (Kenya), 36% (Uganda), 37% (Rwanda%),
LMICs including 3 from East Africa community member countries	2016 [141]	To analyze quantitative, qualitative and mixed method studies to summarize factors influencing unmet need among women in LMICs	Different ages and marital status	Reviewed studies that applied quantitative and qualitative methods retrieved from online data bases	Individual level, household or community level, partner level, couple level and health service level	<ul style="list-style-type: none"> ➤ Woman's age was negatively associated with total unmet need for FP, meaning as women get older the unmet need for FP decreases ➤ The number of children was found to be a positively associated determinant for a woman's total unmet need ➤ Woman's level of education was negatively associated – as a woman's education improves, her total unmet need decreases ➤ Frequently reported reasons for non-contraception use were opposition from husband or husbands fear of infidelity, woman's fear of side effects or other health concerns related to contraceptive methods

58 literature from Sub Saharan Africa, 4 from East Africa community member countries	2017 [142]	To systematically review the literature regarding factors influencing contraceptive use in sub-Saharan Africa between 2005 and 2015.	Respondents age ranged from 15 to 58 years	Review of literature published 2005 and 2015.	Themes and studies	<ul style="list-style-type: none"> ➤ Negative factors prohibiting or reducing contraceptive use were women's misconceptions of contraceptive side-effects, male partner disapproval, and social/cultural norms surrounding fertility ➤ Positive factors included education, employment, and communication with male partner
Kenya and Ethiopia	2012 [143]	To examine how perceptions of community norms differentially shape contraceptive use among men and women	Men and women	Results Initiative Baseline Data, collected by CARE International and Emory University in 2009	By country and gender	<ul style="list-style-type: none"> ➤ Women whose current number of sons was lower than their perception of the community ideal had lower odds of reporting contraceptive use, while women whose own personal ideal number of son was lower than the community ideal had greater odds of reporting contraceptive use. ➤ Men and women in Kenya were influenced more by their perception of their social network's approval of family planning than by their own approval of family planning.
4 case studies were from East Africa community member countries	2014 [144]	To provide new estimates, for 2014, of the needs for and costs and benefits of sexual and reproductive health interventions in three key areas: i) contraceptive services; ii) Maternal, newborn and other pregnancy-related care; iii) Selected services related to HIV and other STIs for women of reproductive age	Current married and sexually active unmarried women aged 15-49 years	Recent DHS, and MICs	Spacing and limiting	<ul style="list-style-type: none"> ➤ Unmet need is generally higher among women in the poorest households, those with less education and those living in rural areas, compared with wealthier, better-educated and urban-dwelling women ➤ It is higher among married women aged 15–19 than among married women aged 20 and older ➤ It is higher in poorer regions than wealthier regions and is particularly concentrated in Sub-Saharan Africa and Southern Asia ➤ Spending one dollar for contraceptive services reduces the cost of pregnancy related care by \$1.47

Kenya, Rwanda, Tanzania and Uganda	2012 (145)	To examine the extent to which contraceptive use was associated with the regional family planning supply and service environment and to assess the regional variability in contraceptive use that was explained by these two factors	Current married women aged 15-49 years	Analysis of DHS and SPA data collected between 2003-2010	By country and year of survey	➤ Multivariate regression analysis found that an average increase of one contraceptive method available in a region increased women's odds of using modern contraception by 50% if FP facility density in the region and other individual-level variables were held constant. Women in regions with a more favourable service environment (as measured by a higher service environment score) in facilities were more likely to use a modern contraceptive method
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RESEARCH ARTICLE

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Delaying first birth: an analysis of household survey data from rural Southern Tanzania

Yovitha Sedekia^{1,2*}, Rose Nathan¹, Kathryn Church³, Silas Temu¹, Claudia Hanson^{2,4}, Joanna Schellenberg² and Tanya Marchant²

Abstract

Background: Currently, family planning metrics derived from nationally-representative household surveys such as the Demographic and Health Surveys (DHS) categorise women into those desiring to space or limit (permanently stop) births, or according to their age in the case of young women. This conceptualisation potentially ignores a large and growing group of young women who desire to delay a first birth. This study uses household survey data to investigate the characteristics and needs for family planning of women who want to delay their first birth.

Methods: The research was conducted in two rural districts in southern Tanzania (Tandahimba and Newala), and nested within the Expanded Quality Management Using Information Power (EQUIP) study. Data were collected as part of a repeated cross sectional household survey conducted between September 2013 and April 2014. The socio-demographic characteristics, including parity, contraceptive practices and fertility intentions of 2128 women aged 13–49 were analysed. The association between women's life stages of reproduction (delayers of first birth, spacers of subsequent pregnancies and limiters of future birth) and selected contraceptive outcomes (current use, unmet need and demand for modern contraceptives) was assessed using the point estimates and 95% confidence intervals for each indicator, adjusted for the survey design.

Results: Overall, four percent of women surveyed were categorised as 'delayers of first birth', i.e. sexually active but not started childbearing. Among this group, the majority were younger than 20 years old (82%) and unmarried (88%). Fifty-nine percent were currently using a modern method of contraception and injectables dominated their contraceptive use. Unmet need for contraception was higher among delayers (41%; 95% CI 32–51) and limiters (41%; 95% CI 35–47) compared to spacers (19%; 95% CI 17–22).

Conclusions: Delayers of first birth have very high unmet needs for modern contraceptives and they should be routinely and separately categorised and measured within nationally-representative surveys such as Demographic and Health Survey and Multiple Indicator Cluster surveys. Acknowledging their unique needs could help catalyse a programmatic response.

Keywords: Adolescents, Contraceptives, Delayers of first birth, Family planning use, Maternal and child health, Unmet need, Tanzania

* Correspondence: Yovitha.sedekia@lshtm.ac.uk

¹Ifakara Health Institute, P.O BOX 78373, Dar-es-Salaam, Tanzania

²Department of Disease Control, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK

Full list of author information is available at the end of the article



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Background

Evidence that family planning affects the life course of women from the moment of their own birth through to menopause is abundant and compelling [1–6]. Since family planning improves perinatal and child survival outcomes through lengthening the inter-pregnancy interval [3], children born to parents who had the power and means to decide on the number and spacing of pregnancies tend to be healthier, do better in school and get opportunities to earn higher incomes [4]. Furthermore, use of contraceptives can help both adolescent and post-adolescent women to start child-bearing later, thus allowing them to complete their education and offering opportunities to engage in income-producing activities [4, 7].

Currently, family planning metrics derived from nationally-representative household surveys such as the Demographic and Health Surveys categorise women into those desiring to space or limit (permanently stop) birth [8–11], or according to their age (particularly for young women aged 15–24 years). Those wishing to delay their first birth are not readily identifiable as a group with a distinct profile and their specific reproductive needs may be neglected even though this group of women are likely to become increasingly important. For example, an analysis of DHS data revealed unmet need for family planning to be highest amongst young married women with no children than those with a child [12]. In sub-Saharan Africa this finding is consistent with evidence that age at first sex is falling [13], age at first marriage is increasing [14] and women are more empowered to demand education and rights to determine the timing of a pregnancy [15, 16].

In Tanzania, public policies and strategies are in place for the achievement of universal access to family planning, backed-up by strong political commitment [17–20]. Men and women in the country including young people (10–24 years of age) regardless of parity, marital status, creed, race, or sexual preference are legally eligible to access accurate and complete family planning information, education and services without the need for parental or spousal consent [21]. Tanzania is also a Family Planning 2020 focus country, a global initiative that aims to expand contraceptive use to 120 million additional women and girls by 2020 [22, 23]. Girl's enrolment into secondary school has increased over the last decade as a consequence of government commitment to provide free primary and secondary education [24, 25].

In the context of increased global attention to family planning and reproductive rights, and to the education of girls, it is important to understand the needs of girls and women who are sexually active but who wish to

delay their first birth. Using data from the high fertility setting of Tanzania, we estimated how many sexually active married or unmarried women aged 13–49 years expressed a preference to delay their first birth, described their characteristics and examined the family planning outcomes for this group of 'delayers', contrasting them to spacers of subsequent pregnancies and limiters of future birth.

Method

Study setting

Detailed information about the study setting is provided elsewhere [26, 27]. Briefly, this research was carried out in two rural districts of Mtwara region in southern Tanzania: Tandahimba and Newala. The research was nested within the Expanded Quality Management Using Information Power (EQUIP) study [26, 27].

Tandahimba and Newala districts in Mtwara region-Southern Tanzania, where this study was carried out, cover an estimated population of over 400,000 people served by 63 health facilities [26–28], and is characterised as predominantly rural, having limited infrastructure [29] and high maternal and newborn mortality rates of 712 per 100,000 live births [30] and 31 deaths per 1000 live births respectively [31]. Makonde is the dominant ethnic group in the study area and over 90% of the population depends on agricultural activities which include cash (cashew nuts, sesame and groundnuts) and food crops (cassava, maize, rice and sorghum) [29]. The most recent Demographic and Health Survey (2010) estimated the Mtwara region to have a total fertility rate of 4.4, median age at first birth of 19 years, and high estimates for use of modern family planning methods (37%) in comparison to the rest of Tanzania mainland (27%) in 2010 [31], measured among married women aged 15–49 years. Among current users of any family planning method, 25% were using for spacing and 13% for limiting; and among those with unmet need (24%), half was for spacing and half for limiting (at 12% respectively) [31].

Study design and participants

Data were collected as part of the repeated cross sectional household surveys conducted by the EQUIP study between September 2013 and April 2014. Full details about the survey methods are reported elsewhere [26]. In short, each month, in each district, a representative sample of 10 household clusters (defined as sub-villages) each of 30 households was drawn. For each district, sub-villages were listed and the number of households in each sub-village cumulated then 10 clusters selected with probability proportional to the total number of households in the district. The survey applied modular

survey tools compatible with DHS and Multiple Indicators Cluster surveys to estimate indicators across the reproductive, maternal and newborn health continuum among resident women aged 13–49 years. All household heads and resident women (aged 13 to 49 years) who gave consent were interviewed. Household heads were interviewed about residents and household characteristics; whereas, women aged 13–49 years were interviewed about maternal and newborn health care and family planning knowledge and services.

Data processing and analysis

Data were analysed using STATA 13 [32]. For the purpose of this analysis, sexually active women included married (including cohabiting) and unmarried women aged 13–49 years who reported having had sexual intercourse in the past three months. Women's life stages of reproduction were categorised as follows: (1) delayers of first birth (nulliparous who on survey day reported a preference to delay their first birth for at least two years or more), (2) spacers of subsequent pregnancies (parous who on survey day desired to wait for at least two years or more before having another child), (3) limiters of future birth (parous who had reached their desired family size and on survey day reported that they did not desire any subsequent children), (4) desire child soon (nulliparous and parous who on survey day desired to have a child within two years), and (5) infecund (women who on survey day reported that cannot get pregnant or had never been pregnant in the past five years and had never used contraceptives) as indicated in Table 1.

Modern contraceptives were defined according to Hubacher, [33] and included short acting contraceptives (pills, injectables and condoms), long acting reversible

contraceptives (implants and intrauterine devices and systems (IUDs) and permanent contraceptive methods (male and female sterilization). We applied the definition of unmet need for contraceptives as per Bradley S et al. [34], but restricted to modern contraceptive methods as per Westoff [10]. Delayers of first birth who on survey day reported a preference to delay their first birth for at least two years or more but were currently not using modern contraceptives were classified as having unmet need.

Percentages and 95% confidence intervals were used to show distribution of women in various background characteristics including quintiles of socio-economic status that was derived from a wealth index constructed using principal components analysis of asset ownership. The association between women's life stages of reproduction (delayers of first birth, spacers of subsequent pregnancies and limiters of future birth) and selected contraceptive outcomes (current use, unmet need and demand for modern contraceptives) was assessed using the point estimates and 95% confidence intervals for each indicator, adjusted for the survey design using "svy" commands in STATA.

Results

Study population

Between September 2013 and April 2014 a total of 4723 households were sampled across both districts, 3820 resident women aged 13–49 years identified, of whom 3578 were interviewed. Among the 3578 respondents, 2128 (59%) were sexually active in the last three months and included in this analysis. Of these, 1772 (83%) were currently married or cohabiting, mean parity was 3 births (range 0–11), 13% had no education, 97% were Muslim, and 92% were of the Makonde ethnic group (Table 2).

Table 1 Women's life stages of reproduction

Women's life stages of reproduction	Sexually active (married and unmarried) women aged 13–49 who at the time of the interview: (N = 2128)	N	% (95% CI)
Delayers of first birth ("delayers")	• Were nulliparous (including women who reported previous pregnancy but no live birth), not currently pregnant, and their preference was to delay their first birth for at least two years or more	83	4 (3–5)
Spacers of subsequent pregnancies ("spacers")	• Had started child bearing (including current pregnant women) and desired to wait at least for two years or more before having another child	790	37 (35–40)
Limiters of future birth ("limiters")	• Had reached their desired family size (including current pregnant women) and did not desire any subsequent children	409	19 (17–21)
Desire child soon	• Have started childbearing, had at least one child and at the time of interview wanted a child within two years	675	32 (30–34)
	• Have never had a child and at the time of interview they were not pregnant and wanted child within two years	108	5 (4–6)
Infecund	• Self-reported that cannot get pregnant or married for the past five years and never been pregnant, never used contraceptives, currently not pregnant and currently not using contraceptives	63	3 (2–4)

Table 2 Characteristics of study sample

Background characteristics	All women 13–49 years (<i>N</i> = 3578)		Sexually active (married and unmarried) women 13–49 years included in the analysis (<i>N</i> = 2128)	
	<i>n</i>	% (95% CI)	<i>n</i>	% (95% CI)
Age groups (yrs)				
13–14	205	6 (5–7)	10	<1 (0–1)
15–19	529	15 (14–16)	182	9 (7–10)
20–24	491	14 (12–15)	297	14 (12–16)
25–29	466	13 (12–14)	312	15 (13–17)
30–34	527	15 (13–16)	355	17 (15–18)
35–39	519	15 (13–16)	344	16 (15–18)
40–44	504	14 (13–15)	361	17 (16–19)
45–49	337	9 (8–11)	267	13 (11–14)
Median age				
Median	3578	30 (IQR 21–39)	2128	33 (IQR 25–41)
Marital status				
Currently married	2344	66 (64–67)	1713	80 (79–82)
Cohabiting	82	2 (2–3)	59	3 (2–4)
Divorced/separated	439	12 (11–13)	212	10 (9–11)
Widow	22	1 (0–1)	4	<1 (0–0)
Single	691	19 (18–21)	140	7 (6–8)
Education				
No education	463	13 (11–15)	286	13 (12–16)
Some primary	474	13 (12–15)	243	11 (10–13)
Completed primary	604	17 (16–18)	355	17 (15–18)
Some secondary or higher	30	1 (0–2)	20	1 (0–2)
Religion				
Muslim	3459	97 (95–98)	2054	97 (95–98)
Others	119	3 (2–5)	74	3 (2–5)
Ethnicity				
Makonde	3338	93 (91–95)	1965	92 (90–94)
Others	238	7 (5–9)	162	8 (6–10)
Household socio-economic status				
Q1 (most poor)	420	12 (10–13)	306	10 (8–11)
Q2	586	16 (15–18)	334	16 (14–18)
Q3	692	19 (18–21)	414	19 (18–21)
Q4	914	26 (23–28)	561	26 (24–29)
Q5 (least poor)	966	27 (24–30)	613	29 (26–32)
Parity				
Mean parity	3578	3 births (range 0–11)	2128	3 births (range 0–11)
Total	3578	100	2128	59

IQR Inter-quartile range, 25th and 75th percentiles

Women's life stages of reproduction

The distribution of women across the life stages of reproduction is shown in Table 1. Four percent (95% CI 3–5) had never had a child and reported a preference to delay their first birth for at least two years or more (“delayers”), 37% (95% CI 35–40) had started child bearing and desired to wait for at least two years or more before having another child (“spacers”), 19% (95% CI 17–21) did not desire any subsequent children (“limiters”), 32% (95% CI 30–34) had at least one child and wanted another child in the next two years, 5% (95% CI 4–6) had never had a child and wanted a child in the next two years and 3% (95% CI 2–4) were infecund.

Characteristics of the delayers, spacers and limiters

Table 3 shows selected background characteristics of delayers of first birth and contrasts these to those of spacers and limiters. As expected, women categorised as delayers were younger on average than spacers and limiters, although of interest was that 18% of them were 20 years or older and 12% (95% CI 7–20) of the delayers were currently married or cohabiting. We found no difference in distribution by level of education attained, or other key socio-demographic characteristics (religion, ethnicity or socio-economic status of households) between women's life stages of reproduction (delayers, spacers and limiters).

Current use, unmet need and demand for modern contraceptives among delayers, spacers and limiters

Table 4 presents current use, unmet need and demand for modern contraceptives by women's life stages of reproduction (delayers, spacers, limiters). Fifty nine percent (95% CI 49–68) of delayers were currently using a modern method of contraception, similar to the proportion among spacers (65%; 95% CI 62–68) and limiters (53%; 95% CI 47–59). However, the proportion of unmet need for modern contraceptives was higher among delayers (41%; 95% CI 32–51) and limiters (41%; 95% CI 35–47) than spacers (19%; 95% CI 17–22). Total demand for modern contraceptives was high for all groups being universal amongst delayers (as indicated by their definition of not wanting a birth), 94% amongst limiters (95% CI 91–96) and 84% among spacers (95% CI 81–86).

Types of modern contraceptives used

Figure 1 presents the different types of modern contraceptives currently used by women according to their reproductive stage. Injectables (26%; 95% CI 23–29) and pills (25%; 95% CI 22–28) were the most commonly used methods, followed by implants (5%; 95% CI 4–7),

Table 3 Characteristics of the delayers, spacers and limiters aged 13–49 years

Background Characteristics	Sexually active ^a (married and unmarried) women 13–49 years who are: (N = 2128)					
	Delayers (N = 83)		Spacers (N = 790)		Limiters (N = 409)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Age group (yrs)						
13–14	9	11 (6–18)	0	0	0	0
15–19	59	71 (61–79)	60	8 (6–10)	0	0
20–24	10	12 (6–23)	168	21 (18–25)	11	3 (2–5)
25–29	1	1 (0–8)	157	20 (17–24)	25	6 (4–9)
30–34	3	4 (1–11)	170	22 (18–25)	41	10 (7–13)
35–39	1	1 (0–8)	121	15 (13–18)	57	14 (11–18)
40–44	0	0	73	9 (7–12)	126	31 (27–35)
45–49	0	0	39	5 (4–7)	148	36 (31–42)
Median age						
Median	83	16 (IQR 15–18)	790	30 (IQR 24–36)	409	42 (IQR 37–46)
Marital status						
Currently married	9	11 (6–19)	647	82 (79–85)	354	87 (82–90)
Cohabiting	1	1 (0–8)	23	3 (2–4)	15	4 (2–7)
Divorced/separated	3	4 (1–10)	90	11 (9–14)	40	10 (7–13)
Widow	0	0	0	0	0	0
Single	70	84 (77–90)	30	4 (3–5)	0	0
Education						
No education	6	7 (3–15)	99	13 (10–15)	79	19 (15–24)
Some primary	5	6 (3–14)	90	11 (9–14)	54	14 (10–17)
Completed primary	72	87 (77–93)	590	75 (71–78)	272	67 (62–71)
Some secondary or higher	0	0	10	1 (0–3)	2	<1 (0–2)
Religion						
Muslim	80	96 (89–99)	768	97 (96–98)	388	95 (92–97)
Others	3	4 (1–11)	22	3 (2–4)	21	5 (3–8)
Ethnicity						
Makonde	78	94 (84–98)	730	92 (89–95)	376	92 (87–95)
Others	5	6 (2–16)	60	8 (5–11)	33	8 (5–16)
Household socio-economic status						
Q1 (most poor)	10	12 (7–20)	85	11 (9–13)	37	9 (6–13)
Q2	18	22 (14–31)	126	16 (13–19)	58	14 (11–18)
Q3	18	22 (14–31)	144	18 (16–21)	97	24 (19–29)
Q4	20	24 (16–35)	220	28 (24–32)	107	26 (22–31)
Q5 (least poor)	17	20 (13–30)	215	27 (24–31)	110	27 (22–32)
Parity						
Mean parity	83	n/a	790	3 births (range 1–8)	409	4 births (range 1–11)
Total	83	4 (3–5)	790	41 (39–43)	409	19 (18–21)

n/a not applicable

IQR Inter-quartile range, 25th and 75th percentiles

^a Characteristics of sexually active women desiring a child/another child soon within 2 years and infecund women are excluded from the table

female sterilization (3%; 95% CI 2–4) and condoms (2%; 95% CI 1–3). Use of injectables was higher among delayers (43%; 95% CI 34–53) than spacers (28%; 95% CI 24–31) or limiters, (17%; 95% CI 15–24). Condoms were also more commonly used by delayers (7%; 95% CI 3–15) than limiters (1%; 95% CI 1–3) or spacers (2%; 95% CI 1–3).

Table 4 Percentage of current use, unmet need and demand for modern contraceptive methods among delayers, spacers and limiters aged 13–49 years

Contraceptive Outcome	Delayers (N = 83)		Spacers (N = 790)		Limiters (N = 409)	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Current use of modern contraceptive	49	59 (49–68)	512	65 (62–68)	218	53 (47–59)
Unmet need for modern contraceptives	34	41 (32–51)	152	19 (17–22)	167	41 (35–47)
Demand for modern contraceptives	83	100	664	84 (81–86)	385	94 (91–96)

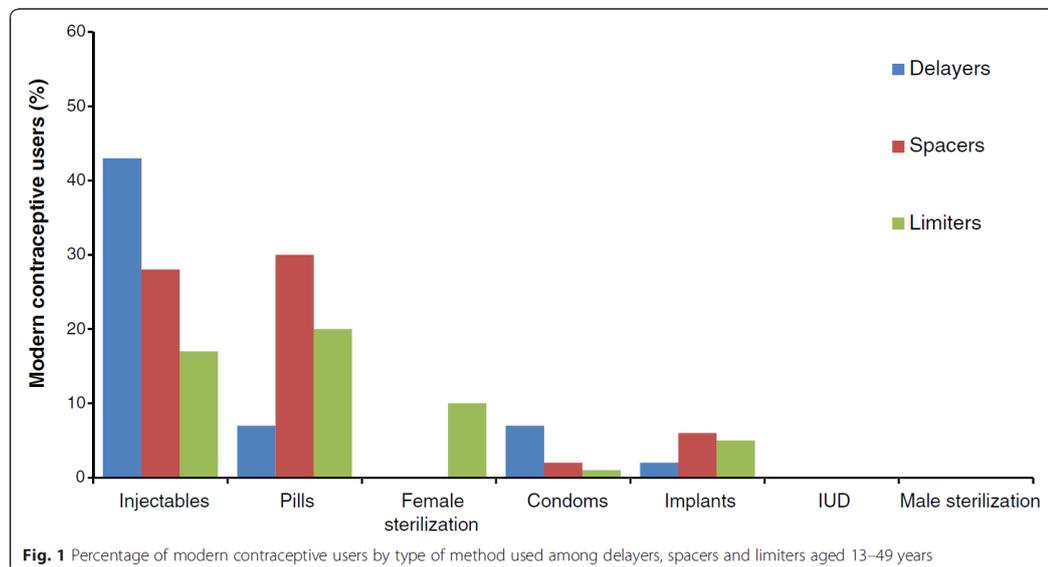
Discussion

In this study we highlighted a small but important group of sexually active women aged 13–49 years who had not started childbearing and wanted to delay their first birth. The majority of this group are younger than 20 years old and unmarried. More than half were currently using a modern method of contraception, and injectables dominated their contraceptive use. Despite the fact that in our findings, only four percent of women were delayers of first birth, this is equivalent to approximately 281,778 women aged 13–49 years in the whole country of Tanzania in 2010 [35]. Taking our findings on 41% of delayers having unmet need for family planning, this equates to 115,529 women in the whole country of Tanzania who want to delay their first birth but have an unmet need for modern contraceptives.

Delayed first birth, delayed marriage or delayed sexual debut all have the potential to lead to lower fertility [36]. In high and middle income countries, where secondary education is universal, women delay their first birth well beyond the adolescent years [37–39].

For example, in the United Kingdom the average age of women at first birth in 2013 was 30 years [40], and data suggests that first births to women aged 35–39 years and 40–44 years continue to rise [41]. While important cultural differences should persist, similar trends in delayed childbearing are likely to occur in sub-Saharan Africa as school enrolment and income-earning opportunities for women increase, and the continent moves away from widespread high fertility norms that places high expectations on young women to start childbearing, maintain family lineage and provide labour [24, 42].

Injectables are the most commonly used contraceptive method in East Africa (including Tanzania) accounting for over 40% of contraceptive use [43, 44], and were the most commonly used method by delayers of first birth in our study. Of concern is that contraceptive discontinuation rate for users of injectables and pills has been reported to be high, leading to part of the explanation for increases in unmet need in women who have tried either injectables or pills but discontinued their use without switching to another [45]. For young people



who may engage in intercourse infrequently, there is clearly a need to provide alternatives, including long-acting reversible contraceptives such as implants or IUDs which can offer long-term contraceptive protection. But currently in Tanzania long-acting reversible contraceptives are not widely available throughout the country [46].

One of the strengths of our study was that it included women aged 13–14 years who are typically not included in the sampling frame of surveys such as DHS. Our analysis indicated that 11% of the sexually active delayers were aged 13–14 years and available data suggests that age at first sex is decreasing [13] and unintended pregnancies continue to exist among young teenage women in Tanzania [47, 48]. This is not a problem for Tanzania alone. The State of World Population report 2013 stated that of 7.3 million (19%) births to women under 18 years in developing countries, two million (3%) were to girls who were 14 years or younger [49] and who are most at risk of grave long-term health and social consequences from pregnancy. They are also likely to be excluded in the family planning policies and other reproductive health services [7].

Our study had three important limitations. First, with regard to definition of family planning indicators used by DHS, in addition to including women aged 13–49 not 15–49 years, we also included a recall period of three months not four weeks for sexual activity because of concerns that young unmarried people may have less frequent sexual relations than other women but still be at risk because of a lack of protection, and ignored because of a lack of attention. However this may have had the effect of over-estimating the number of women classified as recently sexually active, although our findings on family planning use for spacing and limiting were consistent with existing estimates. Further, we did not have data with which to directly categorise women as menopausal or not, although this was unlikely to affect our findings on delaying first birth.

Second, despite intensive training and supervision of enumerators the risk of social desirability bias cannot be eliminated, particularly with regards to reporting sexual activities among unmarried and young women, which may have led to an underestimation of the number of women at risk. A study from Ethiopia suggested that unmarried women aged 13–24 years might only report half of sexual activities but over exaggerated on contraceptive and condom use [50]. Third, recall bias on timing for last sexual activity may also have been present, especially among unmarried women; and errors in age reporting cannot be discounted.

Conclusions

In conclusion, our study demonstrates that even in this rural environment a small but important proportion of sexually active women would like to delay their first birth. Nearly all these women had some formal education, and all had a demand for modern contraceptives, but nearly half had an unmet need for contraception suggesting they are not currently well served by family planning programmes. We propose that delayers of first birth should be consistently categorised, using nationally representative survey data, preferably from a younger age than currently assessed, and their needs addressed in policy and programme formulation.

Abbreviations

CI: Confidence interval; DHS: Demographic health surveys; FP: Family planning

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Availability of data and materials

Anonymised data table can be available upon request to the corresponding author.

Authors' contributions

YS and TM were responsible for the study concept and design and statistical analysis. YS wrote the first draft of the manuscript. All authors were involved in the interpretation of findings and revision of the manuscript. All authors read and approved the final manuscript.

Competing interests

The authors have declared that they have no competing interests.

Consent for publication

Not applicable. All individual details were anonymised.

Ethics approval and consent to participate

Ethical approval for the study was granted by review boards at the London School of Hygiene and Tropical Medicine (UK), Ifakara Health Institute (Tanzania) and the National Institute for Medical Research in Tanzania through the Tanzanian Commission of Science and Technology. Written, informed consent from household heads and women aged 13–49 years was obtained, including from caregivers of women younger than seventeen.

Author details

¹Ifakara Health Institute, P.O BOX 78373, Dar-es-Salaam, Tanzania. ²Department of Disease Control, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK. ³Department of Population Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK. ⁴Department of Public Health Science (Global Health), Karolinska Institutet, Stockholm, Sweden.

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References

- Brown W, Ahmed S, Roche N, Sonneveldt E, Darmstadt GL. Impact of family planning programs in reducing high-risk births due to younger and older maternal age, short birth intervals, and high parity. *Seminars in perinatology*. 2015;39(5):338–344.
- Singh S, Darroch J, Ashford L. *Adding It Up: The Costs and Benefits of Investing in Sexual and Reproductive Health 2014*. New York: The Guttmacher Institute; 2014.
- Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. *Lancet*. 2012;380(9837):149–56.
- Ganning D, Schultz TP. The economic consequences of reproductive health and family planning. *Lancet*. 2012;380(9837):165–71.
- Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet*. 2012;380(9837):111–25.
- Stover J, Ross J. How increased contraceptive use has reduced maternal mortality. *Matern Child Health J*. 2010;14(5):687–95.
- Girls Count: A Global Investment & Action Agenda (Washington, DC: Center for Global Development, A Girls Count Report on Adolescent Girls) [<http://www.icrw.org/publications/girls-count-global-investment-and-action-agenda>] (Last accessed 08 Aug 2015)
- Cleland J, Harbison S, Shah IH. Unmet need for contraception: issues and challenges. *Stud Fam Plann*. 2014;45(2):105–22.
- Understanding the Adolescent Family Planning Evidence Base. Available at <https://pdfs.semanticscholar.org/8d5e/1367eda7ffe117caa0cd89dc22db91286a61.pdf>. Accessed Jan 2017.
- Westoff CF. Unmet need for modern contraceptive methods: DHS Analytical Studies No.28. Calverton: ICF International; 2012.
- Woog V, Singh S, Browne A, Philbin J. Adolescent Women's Need for and Use of Sexual and Reproductive Health Services in Developing Countries. New York: Guttmacher Institute; 2015.
- MacQuarrie KLD. Unmet Need for Family Planning among Young Women: Levels and Trends. DHS Comparative Reports No. 34. Rockville: ICF International; 2014.
- Doyle AM, Mavedzenge SN, Plummer ML, Ross DA. The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. *Trop Med Int Health*. 2012;17(7):796–807.
- Shapiro D, Gebreselassie T. Marriage in sub-Saharan Africa: Trends, determinants, and consequences. *Population Res Policy Rev*. 2014;33(2):229–55.
- You D, Hug L, Anthony D. UNICEF report: Generation 2030 Africa calls upon investing in and empowering girls and young women. *Reprod Health*. 2015;12(1):18.
- Cottingham J, Germain A, Hunt P. Use of human rights to meet the unmet need for family planning. *Lancet*. 2012;380(9837):172–80.
- The United Republic of Tanzania, Ministry of Health and Social Welfare: National Health Policy (in Swahili language) [http://www.tanzania.go.tz/egov_uploads/documents/sera_wizarafnl2_en.pdf] (Last accessed 08 Aug 2015)
- The United Republic of Tanzania, Ministry of Health and Social Welfare: The National Family Planning Costed Implementation Programm 2010–2015, updated July 2013 [<http://www.fhi360.org/sites/default/files/media/documents/national-fp-costed-implementation-plan-tanzania-main-text.pdf>] (Last accessed 08 Aug 2015)
- The United Republic of Tanzania, Ministry of Health and Social Welfare: Health Sector Strategic Plan III, July 2009 – June 2015: "Partnership for Delivering the MDGs" [<http://www.mamaye.org/evidence/tanzania-health-sector-strategic-plan-iii-july-2009-%E2%80%93-june-2015>] (Last accessed 08 Aug 2015)
- The United Republic of Tanzania, Ministry of Finance and Economic Affairs: National Strategy for Growth and Reduction of Poverty II [www.unpei.org/sites/default/files/PDF/TZ-MKUKUTA-Nat-Strategy.pdf] (Last accessed 08 Aug 2015)
- The United Republic of Tanzania, Ministry of Health and Social Welfare: National Family Planning Guidelines and Standards. 2013. <https://sites.google.com/a/fhi.or.tz/fhi-main-site/announr/ministryofhealthreleasesnewfamilyplanningguidelines>. Accessed 8 Aug 2015.
- FP2020. Progress Report 2012–2013: Partnership in Action. Washington DC: FP2020, 2013. [<http://www.mamaye.org/en/evidence/fp2020-partnership-action-2012-13>] (Last accessed 08 Aug 2015)
- FP2020: Achieved Commitments for Tanzania: Progress Reports [<http://www.familyplanning2020.org/entities/143/commitments>] (Last accessed 4th Jan 2016)
- Hoogeveen J, Rossi M. Enrolment and grade attainment following the introduction of free primary education in Tanzania. *J Afr Econ*. 2013;0(0):1–19.
- Tanzania Regional Administration and Local Government: Pre- Primary, Primary and Secondary Education Statistics 2013 [<http://www.pmoralg.go.tz/noticeboard/tangazo-1023-20141229-Basic-Education-Statistics-BEST/FINAL-NATIONAL-27-MAY-2014.pdf>] (Last accessed 11 Mar 2016)
- Marchant T, Schellenberg J, Peterson S, Manzi F, Waiswa P, Hanson C, Temu S, Darios K, Sedekia Y, Akuzi J. The use of continuous surveys to generate and continuously report high quality timely maternal and newborn health data at the district level in Tanzania and Uganda. *Implement Sci*. 2014;9(1):112.
- Hanson C, Waiswa P, Marchant T, Marx M, Manzi F, Mbaruku G, Rowe A, Tomson G, Schellenberg J, Peterson S. Expanded Quality Management Using Information Power (EQUIP): protocol for a quasi-experimental study to improve maternal and newborn health in Tanzania and Uganda. *Implement Sci*. 2014;9(1):41. doi:10.1186/1748-5908-1189-1141.
- National Bureau of Statistics: 2012 Tanzania Population and Housing Census. Ministry of Finance, Dar es Salaam and President's Office, Finance, Economy and Development Planning. Zanzibar [<http://www.meac.go.tz/sites/default/files/Statistics/Tanzania%20Population%20Census%202012.pdf>] (Last accessed 04 Apr 2016)
- The Planning Commission Dar es Salaam and Regional Commissioner's office Mtwara: Mtwara Regional Socio-economic Profile 1997 [www.tzonline.org/pdf/Mtwara.pdf] (Last accessed 08 Aug 2015)
- Hanson C, Cox J, Mbaruku G, Manzi F, Gabrysch S, Schellenberg D, Tanner M, Ronsmans C, Schellenberg J. Maternal mortality and distance to facility-based obstetric care in rural southern Tanzania: a secondary analysis of cross-sectional census data in 226 000 households. *Lancet Glob Health*. 2015; 3(7):e387–395. doi: 310.1016/S2214-1109X(1015)00048-00040. Epub 0215 May 00021.
- National Bureau of Statistics, Tanzania Demographic and Health Survey 2010. Dar es Salaam, Tanzania: NBS and ICF Macro [[http://dhsprogram.com/pubs/pdf/FR243/FR243\[24June2011\].pdf](http://dhsprogram.com/pubs/pdf/FR243/FR243[24June2011].pdf)] (Last accessed 04 Apr 2016)
- StataCorp. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP; 2013. Available on <http://www.stata.com/support/faqs/resources/citing-software-documentation-faqs/>. Accessed June 2016.
- Hubacher D, Trussell J. A definition of modern contraceptive methods. *Contraception*. 2015;92(5):420–1.
- Bradley S, Croft TN, Fishel JD, Westoff CF. Revising Unmet Need for Family Planning. DHS Analytical Studies No. 25. Calverton: ICF International; 2012.
- National Bureau of Statistics: 2012 Tanzania Population and Housing Census. Population Distribution by Age and Sex. Ministry of Finance Dar es Salaam and Office of Chief Government Statistician President's Office, Finance, Economy and Development Planning Zanzibar [http://ihi.eprints.org/2169/1/Age_Sex_Distribution.pdf] (Last accessed 04 Apr 2016)
- Delayed marriage, contraceptive use, and breastfeeding. United Nations University 2016, WIDER Working Paper 2016/43. Available at <https://www.wider.unu.edu/sites/default/files/wp2016-043.pdf>. Accessed Jan 2017.
- Changing families in the European Union: Trends and policy implications. Available on <http://www.familiesandsocieties.eu/wp-content/uploads/2015/09/WP440Iah2015.pdf>. Accessed Jan 2017.
- Zeitlin J, Mohangoo A, Delnorn M, Alexander S, Blondel B, Bouvier-Colle M, Dattani N, Gissler M, Macfarlane A, Pal K. European perinatal health report. The health and care of pregnant women and babies in Europe in 2010. 2013.
- Mathews T, Hamilton B. Mean Age of Mothers is on the Rise: United States, 2000–2014. NCHS Data Brief. 2016(232):1–8.
- Childbearing across the EU28: 4 Facts [<http://www.ons.gov.uk/ons/re/vsob1/birth-summary-tables-england-and-wales/2013/childbearing-across-the-eu28-4-facts.html>] (Last accessed 04 Apr 2016)
- First births to older women continue to rise. NCHS Data Brief 152. Hyattsville MD: National Center for Health Statistics; 2014. Available at <https://www.cdc.gov/nchs/data/databriefs/db152.pdf>. Accessed Jan 2017.
- Dyer SJ. The value of children in African countries—insights from studies on infertility. *J Psychosomatic Obstet Gynecol*. 2007;28(2):69–77.
- United Nations, Department of Economic and Social Affairs, Population Division: The World Contraceptives Patterns 2013 [<http://www.un.org/en/development/desa/population/publications/pdf/family/worldContraceptivePatternsWalChart2013.pdf>] (Last accessed 11 Mar 2016)
- United Nations, Department of Economic and Social Affairs, Infochart: World Contraceptive Patterns 2015 [<http://www.un.org/en/development/desa/population/publications/family/contraceptive-infochart-2015.shtml>] (Last accessed 04 Apr 2016)

45. Ali MM, Cleland JG, Shah IH, Organization WH. Causes and consequences of contraceptive discontinuation: evidence from 60 demographic and health surveys. 2012.
46. Ministry of Health and Social Welfare (MoHSW) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International 2015. Tanzania Service Provision Assessment Survey (SPA) 2014–2015. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHSW, MoH, NBS, OCGS, and ICF International [<http://dhsprogram.com/pubs/pdf/SPA22/SPA22.pdf>] (Last accessed 04 Apr 2016)
47. Nyalali K, Maternowska C, Brown H, Testa A, Coulson J, Gordon-Maclean C. Unintended pregnancy amongst teenagers in Arusha and Zanzibar, Tanzania: a situation analysis. London: Marie Stopes International; 2013.
48. Calvert C, Baisley K, Doyle AM, Maganja K, Changalucha J, Watson-Jones D, Hayes RJ, Ross DA. Risk factors for unplanned pregnancy among young women in Tanzania. *J Fam Plan Reprod Health Care*. 2013;39(4):re2. [jfprhc-2012-100389](https://doi.org/10.1186/1742-7265-100389).
49. State of world population 2013. Motherhood in childhood. Facing the challenge of adolescent pregnancy [<http://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP2013-final.pdf>] (Last accessed 08 Aug 2015)
50. Lindstrom DP, Belachew T, Hadley C, Hattori M, Hogan D, Tessema F. Survey estimates of non-marital sex and condom knowledge among ethiopian youth: improved estimates using a non-verbal response card. *Stud Fam Plann*. 2010;41(4):251.

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