

RESEARCH

Open Access



# Acceptability of and experiences with menstrual hygiene cups among adolescent girls and young women aged 15–24 in two communities in Lusaka, Zambia: an exploratory study nested in the Yathu Yathu trial

Melleh Gondwe<sup>1\*</sup>, Melvin Simuyaba<sup>1</sup>, Mwelwa Phiri<sup>1</sup>, Chisanga Mwansa<sup>1</sup>, Albertus Schaap<sup>1,2</sup>, Lucheka Sigande<sup>1</sup>, Kwame Shanaube<sup>1</sup>, Sian Floyd<sup>2</sup>, Sarah Fidler<sup>3</sup>, Helen Ayles<sup>1,4</sup>, Musonda Simwinga<sup>1</sup> and Bernadette Hensen<sup>4,5</sup>

## Abstract

**Background** Menstrual cups could be a sustainable menstrual material for adolescent girls and young women (AGYW) in sub-Saharan Africa. Yathu Yathu was a cluster-randomized trial of community-based delivery of HIV and sexual and reproductive health services to young people in Lusaka, Zambia. Among services available through the intervention were menstrual products, including menstrual cups. We explored knowledge of menstruation and menstrual products, acceptability, and experiences of using cups among AGYW aged 15–24. We share lessons learned on how to distribute cups through community-based strategies to AGYW in urban communities.

**Methods** Through community-based, peer-led spaces (hubs), AGYW could access menstrual products, including pads and menstrual cups. We conducted four focus group discussions, two with AGYW aged 15–19 (n = 9) and 20–21 (n = 8) who had accessed different menstrual products through Yathu Yathu and two with AGYW aged 15–19 (n = 5) and 20–24 (n = 9) who had accessed menstrual cups. Four interviews were conducted with four AGYW (15–19, n = 2; 20–24, n = 2) who had accessed cups, and four with two AGYW who were enrolled in a qualitative cohort. Data were analyzed thematically.

**Results** ‘Surprise’ and ‘fear’ were initial reactions from most AGYW who saw the cups for the first time at Yathu Yathu hubs. Misconceptions that cups cause cancer and fears that they could get stuck in the vagina, cause sore, vagina enlargement, and loss of virginity were raised by AGYW. The desire to try the cup, use an alternative menstrual product and information gained at the hubs facilitated access. Use of the cup was comfortable, and cups were said to be cost-effective and durable. Advantages over pads included: the absence of odor, easy to maintain, and environmentally friendly: “*it is hygienic, and it is even easy to maintain*”. Challenges included pain, discomfort, and failure to or incorrectly inserting the cup at initial use. When faced with challenges using the cup, AGYW reported going back to the hub for additional information and demonstrations on use.

\*Correspondence:

Melleh Gondwe

melleh@zambart.org.zm; mellehgondwe18@gmail.com

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



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

**Conclusion** Despite concerns, misconceptions and initial challenges, cups were acceptable among AGYW. Free distribution of cups provides an opportunity to address menstrual health challenges among AGYW. However, as a new product, there is need to increase awareness and provide detailed information on use.

**Keywords** Adolescent girls and young women, Menstruation, Menstrual health, Menstrual cup, Sexual and reproductive health, Peer support workers, Hubs, Zambia

## Introduction

Menstruation is an important biological milestone, marking the onset of the reproductive phase of a woman's life [1]. Achieving good menstrual health requires the use of clean and absorbent materials to manage menstruation and use of soap, water and access to safe and convenient facilities to dispose of menstrual materials [2, 3]. However, achieving menstrual health remains a challenge for many adolescent girls and women (AGYW), especially in low- and middle-income countries [4–7]. In Sub-Saharan Africa, where menstruation is often seen as taboo, adolescent girls do not have adequate information on menstruation, thus making them unprepared for menarche [8]. Lack of money and access to menstrual products is also a challenge, as a result AGYW often resort to using inappropriate materials, such as pieces of cloth, rags, and toilet paper [8–11]. Use of inappropriate materials results in leaks and stains on garments and uniforms, [12] which can have psychological effects, such as anxiety, and stigmatization and can predispose AGYW to reproductive tract infections [9, 10]. Girls who cannot manage their menstruation risk missing school, falling behind and consequently dropping out of school [13–15]. Additionally, limited privacy, inadequate sanitation facilities, including lack of water and soap and waste disposal mechanisms, are a major hindrance for proper menstrual health [3, 7, 10, 16, 17].

In Zambia, the few studies on menstrual health have shown that girls find it difficult to access products to manage their menstruation due, in part, to lack of funds, and thus skip school due to fear of embarrassment and teasing [11, 15, 18]. A 2013 pilot study conducted by the Ministry of Education, revealed that 81% of girls reported missing school for the entire period of their menstruation because they could not manage their menstruation [19, 20]. A formative study in two Zambian districts in 2017 reported similar findings and recommended that sanitary pads be provided in schools and that further research into more sustainable products be conducted [18]. An alternative, reusable product is the menstrual cup. Menstrual cups have recently received attention despite being available for decades [7, 21–23]. As cups are reusable, they may prove an ideal option for AGYW in low- and middle-income countries [5, 24]. Menstrual cups are relatively new in Zambia, to our knowledge, there are few

studies exploring acceptability of and experiences with cups among AGYW.

In response to the broader sexual and reproductive health (SRH) needs of adolescents and young people (AYP) aged 15–24, a cluster-randomized trial (CRT) of the impact of delivering comprehensive HIV and SRH services to AYP, was conducted in Lusaka, Zambia. Menstrual products, including sanitary pads, and menstrual cups, were among the services offered to AGYW. Nested within the Yathu Yathu trial, we conducted exploratory qualitative research to understand the acceptability of the cups among AGYW, including acceptability of access through community-based services, and experiences using cups. The study aimed to share lessons learnt on how to distribute cups through community-based strategies to AGYW in urban communities in Zambia and neighboring countries.

## Methods

### Study population and location

Yathu Yathu (“For us, by us”) was a CRT that evaluated the impact of delivering community-based, peer-led SRH services, including HIV services, on knowledge of HIV status and coverage of key SRH services among AYP aged 15–24 [25]. The CRT was conducted in two high density, urban communities comprised of multilingual ethnic groups, with Nyanja being the predominant language. Socio-economic status and housing structures are mixed, but the majority of residents are poor. The communities are dominated by the informal economy systems and residents rely on livelihood options that entail mobility [26].

The two communities were divided into ten geographical areas each, forming the clusters for the CRT. Each cluster had a population of approximately 2,350 AYP. In each community, five clusters were randomized to Yathu Yathu and five to control [25].

For this study, we recruited AGYW who had accessed sexual and reproductive health services, including menstrual products, through the Yathu Yathu community-based hubs.

### Yathu Yathu intervention and availability of menstrual cups

In clusters randomized to Yathu Yathu, peer support workers (PSW) delivered comprehensive SRH services

through centrally located spaces, called hubs. Among the services delivered through the hubs were: HIV testing, comprehensive sexuality education (CSE), information and provision of contraceptives, condom use demonstrations and provision of condoms, information on menstruation and menstrual products (disposable pads and menstrual cups). Management of daily activities at the hub was supported by a hub supervisor and two nurses. To incentivize service use, a prevention point card (PPC) system was integrated within Yathu Yathu [25]. A census was conducted in the two study communities before implementation of Yathu Yathu and AYP aged 15–24 were offered a PPC. The PPC allowed AYP to accrue points for services accessed and use these points to “buy” rewards, including reusable pads, higher quality disposable pads, tampons, soap, and toothbrush/paste.

AGYW could access menstrual cups as a service and gain points for collecting a cup. The cups were donated by *Chicashana*, ‘a Zambian owned company whose primary purpose is to cater for the menstrual health needs of vulnerable and marginalized women. *Chicashana* donated six hundred cups, in two different sizes, trained the PSW on how to use and sterilize the cup, and provided fliers for distribution in the hubs. Of the 600 cups donated, 34 were provided to female staff to learn how to use them. Additionally, each hub had two cups for demonstration purposes.

At the hubs, information on cups was provided in groups during CSE sessions on menstruation and during one-on-one sessions when AGYW decided to access a cup or other services. The information given included the benefits of cups, demonstrations of use and conversations to address myths and misconceptions about the cup.

### Qualitative data collection

Qualitative data collection was conducted from March 2020 to September 2021. Four focus group discussions (FGD), two with AGYW aged 15–19 (n=9) and 20–24 (n=8) who had accessed different menstrual products (disposable pads, reusable pads, tampons, cups) and two with AGYW aged 15–19 (n=5) and 20–24 (n=9) who had accessed the menstrual cups. The first two FGDs explored acceptability of the different menstrual products. The last two explored acceptability and experiences using the cups among the AGYW who had accessed a cup. Four in-depth interviews (IDI) were conducted at different time points with two AGYW aged 19 and 24 who had accessed the cup and were recruited to a qualitative cohort. An additional four IDIs were conducted with AGYW (15–19, n=2; 20–24, n=2) who accessed the cups. Eleven informal discussions were conducted

with the female staff to understand how the cups were being offered to AGYW.

A narrative research approach was used to explore acceptability and experiences. Study participants were purposively selected among AGYW with a PPC who had accessed menstrual products at the hubs. Study participants were recruited with support from hub staff. Two FGDs were conducted at the local health facility and two in a centrally located community place. IDIs were conducted at the hubs, homes of the participants or on the phone as described. To facilitate ease of communication and to allow participants to express themselves freely, the research activities were conducted in Bemba, English or Nyanja depending on participants preference. MG is fluent in all the three languages.

### Data analysis

FGDs and IDIs were audio-recorded, and field notes were taken during the FGDs. Audio recordings were transcribed verbatim and checked for accuracy against audio recordings. Audio recordings were transcribed in English regardless of the language. Data were analyzed using inductive thematic analysis. The transcripts were read several times for familiarity with the raw data. Codes were identified and a code framework developed. Themes were developed from key topic areas from the guides including: knowledge, acceptability of and experiences with the cups, and new themes were identified during the familiarization process. Hence similar codes were developed, and themes identified. Thick quotes from the transcripts were extracted and assembled according to the age groups [(15–19, 20–24) and each theme had its own matrix table. The themes were reviewed, reorganized, similar themes were merged, and subthemes developed and supported with quotes. Findings were triangulated between different activities (FGDs and interviews), age groups and communities.

Using data collected on the PPC, we describe the characteristics of AGYW, including their age and marital status, who collected a cup from the hub.

### Positionality statement

For this study, an interdisciplinary team of researchers (social scientists and epidemiologists) developed the data collection guides. FGDs and interviews were led by a young Zambian woman familiar with the community to allow AGYW to feel comfortable and free to express themselves when discussing menstruation and personal experiences using the cup and perspectives. The researcher reflected on how being female affected how AGYW responded during data collection. Such reflections enabled the researcher to explore responses in-depth without assuming or inferring based on prior

knowledge of the products and AGYW challenges with access to products. At the time of the study, menstrual cups were relatively new in Zambia and not widely available. Menstrual cups were also new to the researcher; therefore, the researcher was inquisitive about the topic and explored it without any prejudice and the semi-structured data collection guides shaped the inquiry. Likewise, the study participants were not restricted to those that had used the menstrual cups hence the discussions were diverse. Notable findings from the discussions were explored more in other discussions to gain insight from other AGYW. The researcher checked the transcripts against the FGD recordings and read through the transcripts several times to ensure accurate presentation and interpretation of the data. To this effect, thick descriptions of the AGYW's narratives are given through quotes to represent AGYW voices.

### Ethical considerations

Yathu Yathu was approved by the University of Zambia Biomedical Research Ethics Committee (ref: 007-04-19) and the London School of Hygiene and Tropical Medicine ethics committee (ref: 17104). Written consent was obtained from AGYW aged 18–24, parental consent from parents/ guardians and assent from AGYW aged 15–17. Verbal consent was also obtained for one phone interview conducted with an AGYW aged 19 due to COVID-19.

### Results

The paper explores four overarching themes: 1) knowledge of menstruation and menstrual products, 2) uptake and acceptability of the menstrual cups, 3) experiences using the cup and 4) perceived advantages and disadvantages and disadvantages of using the cup.

### Knowledge of menstruation and menstrual products

Most AGYW were knowledgeable about menstruation. However, AGYW had limited knowledge about the cause of menstruation, with many AGYW stating that menstruation is when a woman washes, cleans her stomach/womb, and the body; therefore, she bleeds, which was described by some as dirty.

*"I: What do you think causes us young women, you, me, and others to be experiencing periods? R: What causes that? I: Yes R: Chuckles. That question, I also ask myself..." (AGYW, 20 years old, menstrual cup, IDI, community 2)*

Some AGYW acknowledged that they did not know what was happening when they first experienced menstruation. Out of fear, some did not tell their parents, who later found out through their stained clothes. One

AGYW hid her menstruation for five years, thinking it was a 'disease':

*"...I never told anyone. I just kept it to myself...I: What did you think was going on? R3: I don't know. Maybe it is a disease, maybe it is for children. (AGYW, 20–24 years old, menstrual cups, FGD, community 2).*

AGYW were knowledgeable about pads, as they were a commonly used product in addition to pieces of cloth, which were used in the absence of money and at menarche. Other materials used included cotton wool and diapers. Some AGYW were familiar with reusable pads. Menstrual cups and tampons were new to most of AGYW, who learnt of them for the first time at the Yathu Yathu hubs.

*"I didn't know it (cup) as well. I first saw it (cup) at Yathu Yathu" (AGYW, 15–19 years old, menstrual cups, FGD, community 1)*

*"I also learnt about the menstrual cup from the hub, Yathu Yathu. Then the pads, they are common, they are the ones I was using all this time before I learnt about the menstrual cup" (AGYW, 20–24 years old, menstrual cups, FGD, community 1)*

### Acceptability of the menstrual cups and of distribution through Yathu Yathu

All donated cups were distributed by the end of the study. Among the women who accessed a cup, 44.4% were aged 20–24, 83.0% had some or complete secondary education and 76.0% were single and had never been married. The majority (84.8%) of AGYW who collected a cup had also collected free pads from the hubs at least once.

AGYW were "surprised" and "scared" when they first saw the cup, expressing concerns that the cup would break their virginity, be painful to use, would not fit in the vagina and risk enlarging or damaging their vagina. Worries that it would cause cancer and sores were also expressed. There were also concerns about practicalities of the cup, including potential for leaking. Some participants reported that their partners were concerned that the cup would enlarge the vagina and affect their sexual life.

*"Laughs. Yes, that is what I thought. I thought the ones who can use it are those who are not virgins. But we were told even virgins can use..." (AGYW, 17 years old, menstrual cup, IDI, community 2)*

*"R1: I am scared that maybe it (vagina) may become big, looking at how it is in the front. I: Just a bit, let us wait for number 1 to talk. What did you say you are afraid of? R1: Because it looks big, "can it fit here*

(vagina)? It might expand (the vagina expanding) ... R3: But it does look big to be honest. Like it wouldn't fit (in the vagina), that is why we get pads because it looks big" (AGYW, 15–19 years old, menstrual products, FGD, community 2)

One young woman described how the cup raised suspicions of pregnancy.

"...I explained what it was. At first, she (mother) asked me, "are you okay? Are you pregnant?" I said, "no". I told her that it is for pees (periods). Then she said, ... "won't you break your own virginity? I told her that I would still try and that I didn't know, laughs (AGYW, 20–24 years old, menstrual cups, FGD, community 2)

Despite concerns, most AGYW who decided to collect a cup did so because of a desire to "try it". The decision to access the cup was also based on information received at the hubs. Some AGYW were compelled to use the cup due to challenges with sanitary pads, such as developing sores, and as an alternative product to use when they do not have pads.

"My decision came from the hub after they taught us. The way they taught us, I just like it. And then they said that you can use it for 10 years and then you think, how many pads do we buy in 10 years, you find that you are spending more than that." (AGYW, 20–24 years old, menstrual products, FGD, community 1)

"... when you do not have money for pads, you will not start searching, plus Yathu Yathu where to get pads from, it will come to an end. If you do not have money for pads, you will use that one forever as long as you are keeping it clean..." (AGYW, 20 years old, menstrual cup, IDI, community 2)

Most AGYW made the decision to access the cup on their own, some consulted their parent (mothers) for their permission and opinion. One young woman narrated that at first her mother did not allow her to access the cup until they did further research.

"R: At first when I told her (about the cups), she said no...I think she was not comfortable, she refused. I: But what made her to change her mind the second time...? R: ...we did a search on them, we searched on google and she saw the advantages" (AGYW, 17 years old, menstrual cup, IDI, community 2)

The hubs were an acceptable place to collect cups and the PSW were cited as a valuable source of information. AGYW narrated that the PSW gave them instructions on use and some AGYW returned to the hubs to share their

experiences of using the cup or when they had challenges with its use.

"R6: ...Because even when they explained, at first, they told us how to insert it. So let me say, I wanted to give up because I tried it, mmh I realized it that it might be difficult for me to use, like when I was, I would feel, it was doing this (demonstrating). R: Friction R6: Yes. So, then I stopped using it. The next time I went back to the hub, ... (Name of female supervisor), I have failed to use it (cup). "How did you put it?" Then I explained how I inserted it, then she said no, okay she gave me proper instructions on how to insert it properly. ...Then I started my period again... I followed those instruction and, in the end, it was inserted" (AGYW, 20–24 years old, menstrual products, FGD, community 1)

During discussions, AGYW recommended sensitization of cup use and its benefits be done with AGYW and parents/guardians to increase acceptability. The need to provide adequate information influenced the choice of places they preferred cups be distributed from, hubs were acceptable, but AGYW also mentioned clinics, pharmacies, drug stores with some advocating for free provision through schools. While some said they (AGYW and parents) could purchase a cup, considering it as a one-off investment, some AGYW acknowledged selling cups could be a barrier to access because buying pads was already a challenge.

"I think our parents really need intensive training (to be educated). Already you had heard that others said that they say that it breaks your virginity. They need to understand the benefits and what not, that is when they can buy. You tell them that this thing has a 10-year guarantee because they could prefer pads..." (AGYW, 20–24 years old, menstrual cups FGD, community2)

"I think, as she has said, a lot of people are school children...For instance, the very K50 they have mentioned, where will a grade 5 get it from? Or grade 6 where will she get it from? So just like she said, you teach them, for instance you go to a Girls' school, in schools and teach the girl child and then (##) and then they give them for free. I think that could help" (AGYW, 20–24 years old, menstrual cups, FGD, community2)

### Experiences using the cup

AGYW described cups as a nice product, appreciated it and recommended it to others during FGDs. However, some AGYW (11) recounted that they did not initially use the cup but rather kept it for weeks and sometimes

months. For some (8), fears around the cup size and the cup getting stuck remained.

*"Aah, I do not have any question, but what I can say is that this cup is nice whereby it makes one to feel comfortable. That comfort is there"* (AGYW, 19 years old, menstrual cup, IDI, community 1)

*"R4: I was scared after I had been given at Yathu Yathu. I went to keep it at home first...When I got it, I would look at it and think, "But all this? Still more, even if they are saying you fold it." I would look at it and put it back. Until I said, "Let me just try it" ...R4: 3 months passed. I: 3 months? R4: Yes. I: Before you used it? R4: Yes...R4: I was scared"* (AGYW, 15-19, menstrual cups, FGD, community 1)

Some experienced pain and discomfort when inserting the cup on the first and second day of their menstrual cycle, with no pain reported on the subsequent cycles. Discomfort included feeling like their step was irregular, hence inadvertently revealing use of a cup, and feeling like the cup was coming out. Some AGYW failed to insert the cup at initial use and or incorrectly inserted it. Removing the cup was not a challenge, however two AGYW experienced pain when they forcefully tried to pull it to remove it.

*"I only like, I only experienced pain like for 2 days and the following day the pain stopped"* (AGYW, 15-19 years old, menstrual cups, FGD, community 1)

*"R: When I try to insert it, it would fail to go in .... When I try to insert it, I was like (Name of supervisor), I went back and said, "I have failed to use this thing of yours" what you gave me. That is how she explained to me properly. And I was like let me try it today. Ah it is a good experience ..."* (AGYW, 15-19 years old, menstrual products, FGD, community 2)

Some AGYW narrated that when the cup is full, they could feel it on the lower abdomen, giving them a feeling described as "kulema" (heavy) and discomfort. To sterilize the cup, AGYW would either boil or dip it in hot water using a designated tin, bowl, small pot, shomeka (metallic dish) or clean bucket. Time spent sterilizing or cleaning the cup varied from 3 to 10 min. AGYW said that they did not share the cup with their sibling or friends as it is unhygienic and could contract fungal infection and sexually transmitted infections.

*"R6: ...you just feel, you are not just comfortable. I feel like it is like heavy here (lower abdomen). Like you can even feel that it is full, only those*

*who have used it can understand R1: It gives a sign..."* (AGYW, 20-24 years old, menstrual products, FGD, community 1)

*"When I rinse it properly with cold water, I put hot water and dip it for 3 minutes or so and then I wipe it down properly, clean it and then I put it back in its bag. I take care of it properly myself"* (AGYW, 20-24 years old, menstrual cups, FGD, community 2)

### Perceived advantages and disadvantages of the cup

Relative to pads, AGYW said that cups were more comfortable, gave them a new sense of freedom and confidence. They could freely walk without experiencing burns and could do activities restricted by use of pads, such as swimming. Using the cup was also a relief to AGYW, as they could wear it with any type of clothing without worrying about leaks and stains. In addition, the cup brought a sense of secrecy, making it preferable for use during the rainy season, as they would not stain if they were caught in the rain, hence avoid shame and embarrassment.

*"When I am on my period, I feel like I am not even experiencing my periods when wear it. I just feel free and comfortable, that is how it is with thing (cup)... So a lot of people just see this and think that it is difficult to insert and everything but the idea that is there is that this is a very good thing. If you get to know it and get used to it, you will never want to wear pads again"* (AGYW, 15-19 years old, menstrual products, FGD, community 2)

*"We stopped doing those things, you are coming out of the bus looking behind to see maybe you have messed up, we stopped. From the time, I remember I even went to swim, wearing this same one. I even went in the water, I was expecting that the water would be red, chuckles, it is just fine, no problem"* (AGYW, 20-24 years old, menstrual products, FGD, community 1)

The cup was considered durable and economical, and, unlike the pads, they could also be worn for longer without smelling. Cups were considered easy to maintain, hygienic and environmentally friendly compared to the pads, which in the absence of pit latrines, must be burnt or disposed in a bin, and could be disposed carelessly.

*"So, the disadvantage is that pads are expensive. It will require you buying 2 or 3 packs in a month if it is those with heavy flows. But with the cup, there is nothing like I am going to buy another one"* (AGYW, 26 years old, menstrual cup, IDI, community 1)

*"... it is hygienic, and it is even easy to maintain. Because like a pad, you will wear it, then when you*

*remove it, you will fold it on the tissue, you will not throw it direct, they do not allow to throw pads in the toilet, you will wait for them to dry so that you can burn them, or you first wait to finish the cycle so that you can burn them. ...But for a cup, you just remove it, you dispose in the toilet and clean it. You clean, wipe it, and put it to dry" (AGYW, 26 years old, menstrual cup, IDI community 1)*

One disadvantage for few AGYW was using it towards the end of the cycle, when the menstrual flow is lighter, as it was challenging to insert and remove the cup, requiring them to revert to pads. AGYW with heavy flows recounted how they had to frequently remove the cup to dispose the waste, and AGYW also reported challenges with finding a space to change from when they go out as well as privacy at home and in public toilets due to overcrowding.

*"Yes. So, when I am approaching the end, I can see that I am almost finishing, when I remove it and find that it (waste) is there (low- demonstrating), then I will know, okay let me switch. Then I will switch and go to pads" (AGYW, 20-24 years old, menstrual products, FGD, community 1)*

## Discussion

AGYW had limited knowledge of the process underlying menstruation, and, during menstruation, reported using pieces of cloth in the absence of money. Menstrual cups were new to most AGYW, who saw and learnt about them at the Yathu Yathu hubs. Despite initial concerns and misconceptions about the cup, AGYW who had used cups considered cups acceptable and preferable to pads. With increased awareness and knowledge of cups and continued support for AGYW to use cups, cups could be another sustainable approach to menstrual health among AGYW. Distribution, free-of-charge, through community-based locations, including schools, should be considered in settings where AGYW have limited access to effective menstrual products.

Our findings show that most AGYW learnt about the cup for the first time at the Yathu Yathu hubs and expressed concerns about the consequences of using the cup. These findings are similar to a study in Malawi, in which AGYW felt that the cup could break their hymen and widen their vagina [9]. As a result, similar to participants in a Kenyan study, [27] some AGYW were apprehensive about using the cup. AGYW made their own decision to access the cup and, as a new product, most AGYW were enthused to try it. Other motivating factors were information acquired about the cup, challenges with using disposable pads and the cost

of pads. Similar to other studies, some AGYW encountered difficulty at first use due to difficult insertion and improper technique of insertion [7, 24, 28]. A systematic review and meta-analysis on menstrual cup use, leakage, acceptability, safety and availability, found that only 3% of participants reported they could not insert the menstrual cup [21].

Knowledge about cups and their use among AGYW in our study was facilitated by PSW. In addition to providing instruction and demonstrating use at initial access, our findings show that the PSW were critical in addressing challenges AGYW faced with using the cup. Providing information and support to AGYW as they get accustomed to the cup, will enhance acceptability and support continued use. Our findings are similar to other studies which reported influence and ongoing support of peers as critical and an important contributor in successful adoption of the cup [21, 27, 29–32]. Distribution through community-based spaces that also delivered broader SRH services was acceptable among AGYW. Community-based spaces where services are delivered by peers should be considered as spaces to provide free cups alongside an opportunity to educate AGYW on menstruation and menstrual health. Future distribution should ensure that support is available and to consider use of vivid pictorial illustrations with instructions in simple languages for reference; as well as follow up visits [7, 31] to offer support and address challenges arising. Future implementation research to evaluate whether they can be implemented in other community-based spaces for free.

Despite initial challenges, AGYW were able to use the cup, found it acceptable, and recommended it to others. These findings are similar to a CRT examining the acceptability, use and safety of cups and pads in Kenya, which revealed that those using the cup reported advantages over sanitary pads [32]. Comparable to other studies [5, 7, 21, 24, 27], AGYW in our study preferred the cup for reasons of comfort, freedom, maintenance, hygiene, and the absence of odor. Acceptability in relation to comfort and in comparison to other products is also seen in a study conducted in South Africa that revealed that, compared to other products, the cup was better in terms of comfort, quality, and blood collection capacity [33]. The cup was also favored for its economic and environmental benefits over disposable pads [5, 6, 9, 21]. However, the cost of menstrual products, including cups, could be a barrier to access [11, 21]. Considering use of effective products is critical to menstrual health, there is need for free distribution of menstrual products, including cups considering their acceptability and preference among AGYW [3]. To support access, governments should provide support for national manufacturing companies to increase production and reduce cost for the consumers.

## Strengths and limitations

Our study highlights the perspective of AGYW who accessed the cups and those who did not, giving us insight into acceptability among AGYW of different age groups and who had and had not used the cups. However, we cannot generalize our findings to all AGYW who accessed the cups through Yathu Yathu as they may have different, including negative, experiences of cup use among AGYW who did not participate in discussions. AGYW were intrinsically motivated to access cups; earning points, a core component of Yathu Yathu, was not mentioned as a motivating factor as such, some AGYW may have accessed the cup purely for the purpose of earning points for rewards. Another limitation of our study was the inclusion of AGYW who had accessed menstrual products at the hubs, acceptability of the cups among AGYW who had not accessed any menstrual products may have differed. Despite limitations, our study includes an important population of AGYW who have limited access to menstrual products and provides critical insights into how cups could support AGYW in managing their menstruation.

## Conclusion

Limited knowledge and lack of resources influence AGYW menstrual health. To meet their menstrual health needs, it is important that AGYW have adequate information and free access to menstrual products. Considering the acceptability of the menstrual cup, there is a need to increase awareness of cups to promote their use among AGYW in low- and middle-income countries alongside free provision. Messages promoting cups should dispel fears, concerns, and misconceptions, provide guidance on proper use, and promote their economic and environmental benefits. Community-based locations, including schools, pharmacies, and hubs like those established in the Yathu Yathu trial, should be considered as spaces to distribute cups, alongside information and instructions on use. Involving peers in cup distribution could increase acceptability and continued use. Any strategy to distribute cups should engage AGYW and parents in the design and evaluation of the intervention to explore acceptable community-based forms of distribution considering different contextual settings to enhance acceptability.

## Abbreviations

|      |                                   |
|------|-----------------------------------|
| AGYW | Adolescent girls and young women  |
| SRH  | Sexual and reproductive health    |
| AYP  | Adolescents and young people      |
| CRT  | Cluster-randomized trial          |
| PSW  | Peer support workers              |
| CSE  | Comprehensive sexuality education |
| PPC  | Prevention point card             |
| FGD  | Focus group discussion            |
| IDI  | In-depth interviews               |

## Acknowledgements

Sincere thanks to the study community leaders, the health facility in-charges and the study participants and *Chicashana* limited for donating the cups.

## Author contributions

MG, MeS, CM developed the data collection guides; MP, MS and BH provided feedback on them. LS managed data collected routinely through PPC and generated lists of AGYW based on the inclusion criteria. MG collected data with support from MP. MG transcribed the data with support from CM. MG led the analysis of the data with input from MeS and wrote the first draft of the manuscript with support from BH. BH and MP analysed quantitative data. MeS, MP, AS, KS, SF, SFi, HA, MS and BH were all lead investigators of the Yathu Yathu trial. All authors reviewed the manuscript, read, and approved the final manuscript.

## Funding

This work was supported by the Medical Research Council, the Department for International Development, and the National Institute for Health Research (Grant number: MR/R022216/1).

## Availability of data and materials

Data collection tools and datasets for this work are available from the corresponding author upon reasonable request.

## Declarations

### Ethics approval and consent to participate

The Yathu Yathu study was approved by the University of Zambia Biomedical Research Ethics Committee (ref: 007-04-19) and the London School of Hygiene and Tropical Medicine (ref: 17104). Parents for adolescents and young people aged 15–17, provided written informed consent and adolescents written assent. Adolescents 18–24 provided written consent form. Verbal consent form was obtained for an adolescent aged 19 due to COVID-19.

### Consent for publication

Study participants consented to anonymous publication of the information they provided.

### Competing interests

The authors declare no competing interests.

### Author details

<sup>1</sup>Zambart, Ridgeway Campus, Nationalist Road, P.O Box 50697, Lusaka, Zambia. <sup>2</sup>Department of Infectious Disease Epidemiology and International Health, London School of Hygiene and Tropical Medicine, London, UK. <sup>3</sup>Imperial College and Imperial College NIHR BRC, London, UK. <sup>4</sup>Clinical Research Department, London School of Hygiene and Tropical Medicine, London, UK. <sup>5</sup>Sexual and Reproductive Health Group, Department of Public Health, the Institute of Tropical Medicine, Antwerp, Belgium.

Received: 23 August 2022 Accepted: 29 October 2024

Published online: 06 February 2025

## References

1. Kaur R, Kaur K, Kaur R. Menstrual hygiene, management, and waste disposal: practices and challenges faced by girls/women of developing Countries. *J Environ Public Health*. 2018. <https://doi.org/10.1155/2018/1730964>.
2. Gibson L, Yamakoshi B, Burgers L, Alleman P. Menstrual Health and Hygiene. Real Reli Website. 2019.
3. Hennegan J, Winkler IT, Bobel C, Keiser D, Hampton J, Larsson G, et al. Menstrual health: a definition for policy, practice, and research. *Sex Reprod Heal Matters*. 2021;29(1):1–8.
4. Budhathoki SS, Bhattachan M, Castro-Sánchez E, Sagtani RA, Rayamajhi RB, Rai P, et al. Menstrual hygiene management among women and adolescent girls in the aftermath of the earthquake in Nepal. *BMC Womens Health*. 2018;18(1):1–8.

5. Madziyire MG, Magure TM, Madziwa CF. Menstrual cups as a menstrual management method for low socioeconomic status women and girls in Zimbabwe: a pilot study. *Women's Reprod Heal*. 2018;5(1):59–65. <https://doi.org/10.1080/23293691.2018.1429371>.
6. Pokhrel D, Bhattarai S, Emgård M, von Schickfus M, Forsberg BC, Biermann O. Acceptability and feasibility of using vaginal menstrual cups among schoolgirls in rural Nepal: a qualitative pilot study. *Reprod Health*. 2021;18(1):1–10. <https://doi.org/10.1186/s12978-020-01036-0>.
7. Kakani CR, Bhatt JK. Study of adaptability and efficacy of menstrual cup in managing menstrual health and hygiene. *Int J Reprod Contraception, Obstet Gynecol*. 2017;6(7):3045.
8. Guya E, Mayo AW, Kimwaga R. Menstrual hygiene management in secondary schools in Tanzania. *Ijst*. 2014;3(1):27–40.
9. Kambala C, Chinangwa A, Chipeta E, Torondel B, Morse T. Acceptability of menstrual products interventions for menstrual hygiene management among women and girls in Malawi. *Reprod Health*. 2020;17(1):1–12. <https://doi.org/10.1186/s12978-020-01045-z>.
10. Ssewanyana D, Bitanihirwe BKY. Menstrual hygiene management among adolescent girls in sub-Saharan Africa. *Glob Health Promot*. 2019;26(1):105–8. <https://doi.org/10.1177/1757975917694597>.
11. Henseen B, et al. Access to menstrual hygiene products through incentivised, community-based, peer-led sexual and reproductive health services before and during the COVID-19 pandemic: findings from the Yathu Yathu trial. *BMC Public Health*. 2022;22(1):1–11. <https://doi.org/10.1186/s12889-022-12915-5>.
12. Montgomery P, Hennegan J, Dolan C, Maryalice W, Laurel Steinfield LS. Menstruation and the cycle of poverty: a cluster quasi-randomised control trial of sanitary pad and puberty education provision in Uganda. *PLoS ONE*. 2016;11(12): e0166122.
13. Hennegan J, Brooks DJ, Schwab KJ, Melendez-Torres GJ. Measurement in the study of menstrual health and hygiene: a systematic review and audit. *PLoS ONE*. 2020;15:1–32. <https://doi.org/10.1371/journal.pone.0232935>.
14. Boosey R, Prestwich G, Deave T. Menstrual hygiene management amongst schoolgirls in the Rukungiri district of Uganda and the impact on their education: a cross-sectional study. *Pan Afr Med J*. 2014;19:1–13.
15. Chinyama J, Chipungu J, Rudd C, Mwale M, Verstraete L, Sikamo C, et al. Menstrual hygiene management in rural schools of Zambia: a descriptive study of knowledge, experiences and challenges faced by schoolgirls. *BMC Public Health*. 2019;19(1):1–11.
16. The Lancet Child & Adolescent Health. Normalising menstruation, empowering girls. *Lancet Child Adolesc Heal*. 2018;2(6):379. [https://doi.org/10.1016/S2352-4642\(18\)30143-3](https://doi.org/10.1016/S2352-4642(18)30143-3).
17. Mohammed GH. Menstrual hygiene management practices and associated factors among secondary school girls in East Hararghe Zone Eastern Ethiopia. *Adv Public Heal*. 2020. <https://doi.org/10.1155/2020/8938615>.
18. Management MH, Districts R. Advancing Girls' Education through WASH Programs in Schools. 2017.
19. UNICEF/UKaid. 1 | MHM National Guidelines – Zambia 2016. 2016;1–29.
20. Sommer M, Schmitt M, Yamakoshi B, Serrano M. WASH in schools empowers girls' education: proceedings of the 6th annual virtual conference on menstrual hygiene management in schools. UNICEF Columbia Univ New York. 2017.
21. van Eijk AM, Zulaika G, Lenchner M, Mason L, Sivakami M, Nyothach E, et al. Menstrual cup use, leakage, acceptability, safety, and availability: a systematic review and meta-analysis. *Lancet Public Heal*. 2019;4(8):e376–93.
22. Babagoli MA, Benshaul-Tolonen A, Garazi Z, Elizabeth N, Clifford O, David O, Linda M, Emily K, Isaac N, Kayla F. cost-effectiveness of providing menstrual cups and sanitary pads to schoolgirls in rural Kenya. *Women's Health Rep*. 2020. <https://doi.org/10.1089/whr.2021.0131>.
23. Howard C, Rose CL, Trouton K, Stamm H, Marentette D, Kirkpatrick N, et al. FLOW (finding lasting options for women): multicentre randomized controlled trial comparing tampons with menstrual cups. *Can Fam Physician*. 2011;57(6):208–15.
24. Sb K, Bhandary A. Menstrual cup: awareness among reproductive women. *Int J Reprod Contraception, Obstet Gynecol*. 2020;9(4):1382.
25. Hensen B, Phiri M, Schaap A, Floyd S, Simuyaba M, Mwenge L, et al. Yathu ("For us, by us"): design of a cluster-randomised trial of the impact of community-based, peer-led comprehensive sexual and reproductive health services for adolescents and young people aged 15 to 24 in Lusaka Zambia. *Contemp Clin Trials*. 2021. <https://doi.org/10.1016/j.cct.2021.106568>.
26. Bond V, Chiti B, Hoddinott G, Reynolds L, Schaap A, Simuyaba M, et al. "The difference that makes a difference": highlighting the role of variable contexts within an HIV prevention community randomised trial (HPTN 071/PopART) in 21 study communities in Zambia and South Africa. *AIDS Care - Psychol Socio-Medical Asp AIDS/HIV*. 2016;2(28):99–107.
27. Mason L, Nyothach E, Van Eijk AM, Obor D, Alexander KT, Ngere I, et al. Comparing use and acceptability of menstrual cups and sanitary pads by schoolgirls in rural Western Kenya. *Int J Reprod Contraception Obstet Gynecol*. 2019;8(8):2974.
28. Manley H, Hunt JA, Santos L, Breedon P. Comparison between menstrual cups: first step to categorization and improved safety. *Women's Heal*. 2021. <https://doi.org/10.1177/17455065211058553>.
29. Van Eijk AM, Laserson KF, Nyothach E, Oruko K, Omoto J, Mason L, et al. Use of menstrual cups among school girls: Longitudinal observations nested in a randomised controlled feasibility study in rural western Kenya. *Reprod Health*. 2018;15(1):1–11.
30. Hennegan J. Inserting informed choice into global menstrual product use and provision. *Lancet Public Heal*. 2019;4(8):e361–2. [https://doi.org/10.1016/S2468-2667\(19\)30126-4](https://doi.org/10.1016/S2468-2667(19)30126-4).
31. Gharacheh M, Ranjbar F, Hajinasab N, Haghani S. Acceptability and safety of the menstrual cups among Iranian women: a cross-sectional study. *BMC Womens Health*. 2021;21(1):1–8. <https://doi.org/10.1186/s12905-021-01259-8>.
32. Mason L, Laserson KF, Oruko K, Nyothach E, Alexander KT, Odhiambo FO, et al. Adolescent schoolgirls' experiences of menstrual cups and pads in rural western Kenya: a qualitative study. *Waterlines*. 2015;34(1):15–30.
33. Beksinska M, Smit J, Greener R, Maphumulo V, Mabude Z. Better menstrual management options for adolescents needed in South Africa: what about the menstrual cup? *South African Med J*. 2015;105(5):331.

## Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.