

Drivers and challenges to use of menstrual cups among schoolgirls in rural Uganda: a qualitative study

MARIA HYTTEL, CAMILLA FALDT THOMSEN, BIANCA LUFF, HALVOR STORRUSTEN, VIOLA NILAH NYAKATO, and MARIANNE TELLIER

Is the menstrual cup a potential solution to address the challenges surrounding menstrual health and management (MHM) for girls and women in low-income contexts? This qualitative study assessed the drivers and challenges for acceptability of the menstrual cup (MC) among schoolgirls in rural Uganda. The study included 36 schoolgirls aged 13–17 recruited from a school-based controlled trial of MCs with 194 participants. After 4 months, 12 follow-up interviews and four focus group discussions were held with study participants. After an initial learning curve the findings indicate that MCs are acceptable among schoolgirls in rural Uganda and suggest that the MC can be an acceptable, sustainable, and environmentally friendly MHM method for girls and women in similar contexts. Most (34 out of 36) participants overcame initial challenges mastering the techniques for insertion and removal and adapted to MC use. The main challenge for following the guidelines for hygienic use was finding equipment to boil the cup for disinfection. Major drivers for acceptability were creating trust in the MC and peer support as well as increased comfort, independence, and mobility due to reduced leakage compared with previous MHM methods, especially when in school.

Keywords: menstrual health and management, menstrual cup, school, adolescent girls, acceptability

MENSTRUAL HEALTH AND MANAGEMENT (MHM) causes several problems among adolescent girls in sub-Saharan Africa (Tegegne and Sisay, 2014; Trinies et al., 2015) related to lack of knowledge surrounding menstruation prior to menarche and limited access to and availability of appropriate and affordable methods to manage menstruation (Crichton et al., 2012; Oche et al., 2012; Adinma and Adinma, 2008). In Uganda, similar to other countries in the region, taboos, lack of knowledge, and risk of leakage often become prevailing challenges for adolescent girls during

Maria Hyttel, MPH (maria@womens.dk) is Deputy Executive Director at WoMena, Denmark; Camilla Faldt Thomsen, MPH (camillathomsen88@gmail.com) is Research Officer at WoMena, Denmark; Bianca Luff, MA Africa Studies (bianca.luff@gmail.com) is Research Officer at WoMena, Denmark; Halvor Storrusten, MA Anth (halvor@storrusten.com) is Culture Officer at UNESCO Tanzania; Marianne Tellier, MPH (marianne@womens.dk) is Executive Director at WoMena, Denmark; and Dr Viola Nilah Nyakato (vnyakato@must.ac.ug) is Senior Lecturer at Mbarara University of Science and Technology, Institute of Interdisciplinary Training and Research, Uganda.

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menstruation (Boosey et al., 2014; Sommer, 2009, 2013). Studies conducted across sub-Saharan Africa have further shown that these issues lead to adolescent girls being exposed to physical and social discomfort while menstruating and may cause school absenteeism (Boosey et al., 2014; Sommer, 2010). Although there is limited evidence of the influence of menstruation on school attendance, several studies have found that menstruation limits girls' mobility as well as physical and social comfort (Grant et al., 2013; Sommer, 2013).

An MHM method that has recently gained increasing popularity, particularly in the USA and Europe, is the menstrual cup (MC). The MC is a bell-shaped device usually made of medical silicone that is inserted in the vagina during menstruation to collect menstrual blood. It can be reused for up to ten years and collects more blood than, for example, tampons or menstrual pads. The MC has therefore been described as a more sustainable, economic, and environmentally responsible method in the long term compared with other MHM methods (Howard et al., 2011; Beksinska et al., 2015). The MC has also been shown to be acceptable in various contexts, such as Canada (Howard et al., 2011) and Nepal (Oster and Thornton, 2011); however, few MC studies have been conducted in sub-Saharan Africa (Mason et al., 2015; Beskinska et al., 2015). Previous MC studies from sub-Saharan Africa are, according to the authors' knowledge, only available from Kenya and South Africa, while no MC studies have previously been published from Uganda. It is thus relevant to explore further the acceptability of MC in this context.

To explore the MC as a potential solution to address the challenges surrounding menstruation for girls and women in low-income contexts, this study aims to assess the acceptability of the MC as an MHM technology among rural schoolgirls in northern Uganda from a low-income socio-economic group. In this study, acceptability is defined as the study participants' willingness and ability to use the MC considering the psychological, cultural, physical, hygienic, and economic factors challenging and driving adaptation to MC use.

Methods

This research is nested within the Gulu Schoolgirl Menstrual Cup Study (GSMCS) investigating acceptability, hygienic safety and impacts on school attendance when introducing MCs as an MHM method to post-menarche schoolgirls aged 13–17 years. The school-based controlled trial was done with a total of 194 schoolgirls from the grade levels P5–P7 in a low-income setting, where cups were distributed for free in two public schools versus no distribution in one public school in Bungatira subcounty, Gulu District. This study used the MC 'Ruby Cup' (no date). Bungatira subcounty was selected as a study site because of the existing collaboration with the Uganda Red Cross Society (URCS), which had previously collaborated with public schools in the subcounty. The schools were identified based on their size, location (within a distance of approximately 10 km from Gulu town), teachers' willingness to participate, and information available on school attendance. Data on toilet facilities was collected prior to intervention at both

schools to assess the availability and conditions of sanitary facilities to inform the MC training, triangulating the analysis on the impact on the MC use at school. Latrines and water were available at all schools although latrines were found to be unclean and lacked toilet paper and light, while water pumps were located 50–100 m from latrines.

Ethical clearance for the study was obtained in May 2013 from the Gulu University Institutional Review Committee and the Uganda National Council for Science and Technology. Schoolgirls at the selected schools and their parents/caregivers were invited to information meetings, where approximately 15 caregivers attended in total at the intervention schools, and were provided with written information about the study in the local language, Acholi. Participants and their caregivers had to provide written consent after having been informed about the study with an explanation of the terms for participation in the local language before being recruited to the study.

Prior to MC distribution all study participants attended training on puberty, the female reproductive system, the menstrual cycle, and hygiene. The first part of the training focused on adolescent development, including menstruation. All boys and girls in the selected grade levels were included in this session to enable a supportive environment for study participants. Only study participants attended the second part of the training on cup use to ensure they felt comfortable sharing personal knowledge and experiences, after which they received an MC. Pictures and role plays were used to illustrate how the cup should be used and disinfected. From each school the female senior teacher, who is responsible for providing sex education for schoolgirls, also participated in the information session and MC training. In addition, they received a cup for personal use to better prepare them to provide support and responses to questions and concerns from study participants.

Qualitative data was collected at baseline in July and after follow-up in October 2013 in the two intervention schools. Study participants were purposely selected for the qualitative component among GSMCS participants who expressed interest to ensure an equal distribution between the grade levels as well as between interviewees and focus group discussion participants. Baseline data on perceptions and experiences of MHM prior to receiving the MC has not been included in the analysis due to the focus on MC acceptability. Thirty-six study participants were included at follow-up four months after the MC distribution. Six semi-structured interviews with a duration of 29–53 minutes and two focus group discussions (FGDs) with six participants each from all three grade levels with a duration of 70–75 minutes were held at each of the two intervention schools (see Table 1). Focus group discussions and interviews were conducted at the schools without others nearby to ensure privacy.

All interviews and FGDs were conducted and recorded by one of the co-authors (CFT) and an experienced local female interpreter. The interpreter was instructed to translate as directly as possible without personal interpretation. To minimize response bias, questions were asked as neutrally as possible and it was continuously



MENSTRUAL CUP USE BY SCHOOLGIRLS IN UGANDA



Table 1 Study participants

<i>School</i>	<i>Grade level</i>	<i>Age</i>	<i>Research activity</i>	<i>Participants in total</i>	<i>Total</i>
Intervention school 1	P5 (No = 5)	13 (No = 1)	12 in two focus group discussions	18	36
	P6 (No = 8)	14 (No = 9)			
	P7 (No = 5)	15 (No = 7)	6 in semi-structured interviews		
		16 (No = 1)			
Intervention school 2	P5 (No = 4)	14 (No = 8)	12 in two focus group discussions	18	
	P6 (No = 12)	15 (No = 9)			
	P7 (No = 2)	17 (No = 1)	6 in semi-structured interviews		

emphasized that there are no wrong or right answers. Follow-up FGDs and interviews were transcribed by the interpreter.

Four researchers with varied academic backgrounds conducted a thematic content analysis of all data to triangulate the analysis by allowing for different academic perspectives on data. Each researcher read all transcripts and developed a list of emerging themes individually, which were discussed and synthesized. Both baseline and follow-up data was reread and coded according to the identified themes, i.e. the subheadings in the Results section, below. The combination of focus group discussion and interviews further strengthened the triangulation of data as some topics were best discussed in private due to the sensitivity of the menstruation topic, while group discussion also allowed participants to talk more generally about the issues. The results are based on the combined data analysis, which supported and complemented each other. Quotes presented in this article were obtained in Acholi and are presented in their translated form. All names used in quotes are fictional.

Results

To assess the acceptability of the MC as an MHM method, the qualitative arm of the study sought to explore the factors challenging and driving adapting to using the MC when introducing this technology to primary schoolgirls in rural northern Uganda. The results point towards acceptability for the MC among study participants, where the majority of girls adapted to cup use.

Fearing the unknown: introducing a new technology

As the MC represents a new technology previously unknown in the study context, participants were initially sceptical before trying the MC themselves. Some participants described at first fearing adverse effects on health and wellbeing, such as cups

disappearing inside the body, cup use causing pain, enlargement of the uterus, and infertility.

We like [the cup] but when we had just received it and went home with it our mothers were saying that thing will destroy our uterus; it is big, it will widen our female organ and enlarge our uterus (Joyce, FGD, School 1).

I still fear because they said that ... [the cup] had been brought to us so that girls don't produce [have children] (Stella, FGD, School 2).

As seen in the above quotes, many participant concerns were reflected and enforced by concerns of family members and rumours in the community. Fears of adverse effects such as infertility were linked to limited understanding of the female physiology, as well as what appeared to be general scepticism of new health technologies. Thus, both study participants and their close family members and friends had difficulties judging rumours from the community.

Adapting to use of the menstrual cup: mastering the techniques

Mastering the insertion and removal of the cup was challenging in the beginning for all participants. Most study participants described having to be courageous to overcome their initial fear of pain and adverse effects when first inserting the cup.

When they distributed the cup I also feared much. My younger sister inserted the thing first, and I then asked her whether it is painful. She replied yes it is painful. I then said if it is painful I will not insert it, but I then took courage and inserted it (Joyce, FGD, School 1).

Mastering the techniques of inserting and removing the cup, i.e. folding to insert and pinching the base of the cup to release the vacuum when removing, were described as difficult the first few times by all study participants. Participants reported in the follow up that the training had helped them anticipate and address these difficulties when using the cup.

The major challenge related to mastering the techniques was related to the initial experience of pain when inserting and/or removing the cup. However, most participants also described that the pain was no longer experienced after using the cup a few times:

The first time, I found it difficult and ... I came back to use pads. Then another month began. I tried [the cup] and felt like my waist was paralyzed. I then used it and the next day I used it and I then found using it became easy and I now use it (Esther, FGD, School 1).

I found it painful. Even inserting [the cup] disturbed me, but then I started thinking of the way we were to fold it. I then inserted it, but I found removing it painful, and sometimes when walking I find the stem piercing me, but [now] I just stay with it freely (Lucy, interview, School 2).

One girl described that pain recurred when the cup was not placed correctly, and she therefore only used the cup at home where she could easily change its position if necessary. Two participants stated that they had given up mastering the techniques. However, both expressed motivation during the follow-up interview to try again.

Adhering to guidelines for hygienic cup use

Overall, study participants in interviews and FGDs reported that they correctly follow the guidelines for hygienic use of the MC as instructed during the training, including washing hands with soap before insertion and removal, disinfecting/boiling the cup between periods, storing the cup in the bag and box provided with the cup, keeping it in a place safe from rats, for example, as well as not sharing the cup with others due to risk of infection.

The main challenge for adhering to the guidelines was finding a suitable container for boiling the cup. Several participants mentioned that ‘there was a problem of getting a tin [container] for boiling [the cup]’ (Samira, interview, School 1), as the container has to be ‘something [we] no longer use’ (Janet, interview, School 1), i.e. could not be a pot currently used for cooking. Most study participants described using an old food can, which they had found or had been given, while a few used an old saucepan and two mentioned using old paint cans after having scrubbed and cleaned the can to remove old paint. ‘I had no tin at first, but then I went to where my mother lived in town. I picked [a tin] came back and began using [the cup]’ (Glory, interview, School 1).

No participants reported lacking water or soap at home, while some described bringing soap to school, where it was not always available. The school sanitary facility assessment, described as well in baseline interviews, showed that school latrines were unclean and with water pumps 50–100 m from toilets may have made emptying the MC during school challenging for some participants. Many reported emptying the cup at home, while some girls reported also emptying the cup at school. Some participants described bringing water in a bottle into the toilet to have water to wash hands and rinse the cup when emptying it.

Keeping periods secret: hiding the cup

Study participants reported having to keep their periods secret, indicating that menstruation is taboo in the study context. Participants often mentioned fearing that others will know that they are ‘in their period’, appearing unhygienic and being teased by especially boys. Stains on clothes from leaked menstrual blood were thus described as very shameful, especially if it happens at school.

Because mine comes much and it makes the pad burst ... I fear because it will spoil behind my cloth and that is why I stay home because ... I fear children will make fun of me (Lucy, interview, School 2).

If we are in the class room ... you get up and you find your skirt is spoilt, that brings much shame (Mary, FGD, School 1).

That [I'm using the cup] must be a secret between me and my mum (Carol, interview, School 2).

Thus, many girls described trying to keep cup use a secret revealed only to close female friends or family members. The need to avoid others seeing their cup was also expressed by participants who noted they sought privacy when boiling it. To avoid people suspecting they had their period, some girls also mentioned avoiding school latrines for fear of leaving traces of blood, fearing to ask the teacher for assistance as they may tell others, as well as avoiding carrying water to the latrines.

Keeping the cup safe

The risk of losing the cup is a challenge for the continuous cup use as described by four study participants, who reported having lost their cup during the follow-up period. Two girls explained that their cups had been stolen, and some participants mentioned being careful not to tell people outside the study about their cups, as they were afraid that they might steal them. 'Some people ... they understand that [the cup] it used like this, so that they get a day and steal it, and indeed for some people [their cup] was stolen because they explained it all' (Shamirah, FGD, School 2).

Another study participant reported having dropped her cup in the latrine. Many girls mentioned this as a challenge, which they adapted to by leaning to the side or putting a cover on top of the latrine when removing the cup. Finally, one girl had melted her cup as it accidentally fell into the fire while boiling it, another challenge related to disinfection. The four girls requested and received at follow-up a new cup to replace their lost cup.

Creating trust in a new technology

The creation of trust in the cup and the girls' ability to use it was an important condition for acceptability of this new technology. The provision of information and training to study participants, family members, and peers appeared to create trust among the study participants.

Why I felt that that thing is good was because of how they explained; how to fold, insert all made me feel that using it is easy and I joined and received it (Faith, interview, School 2).

The way they taught us was that we are supposed to press our lower abdomen, then it won't be painful much when you press the string will come out then you have to hold the stem (Stella, FGD, School 2).

As described by the girls above, the training provided the girls with comprehensive knowledge of both the female reproductive anatomy and menstruation as well as on the practical use of the cup, which helped the girls anticipate the challenges related to using the menstrual cup, and build their skills and confidence to address them. Despite some initial scepticism and fear, initial expectations among participants

were mostly positive, indicating trust in the information provided in the training. The involvement of the female teachers and the use of local research assistants, who all tried the cup themselves, for the training and data collection enabled creation of trust in the information provided, which enabled the creation of initial trust in the technology, making participants willing to try the cup in the first place.

Peer support and knowledge sharing

Knowledge sharing and peer support between study participants was another important driver for acceptability of the menstrual cup. Some participants, the 'early adaptors', tried the cup immediately, adapted quickly to use, and seemed to easily trust the information provided on safety, benefits, and user techniques. These early adaptors indicated high motivation and persistency in adapting to cup use. These participants also described sharing their experiences and encouraging other participants with difficulties or doubts.

Some people who maybe found using [the cup] difficult, maybe fearing, so when you advise them then they may go back and use it (Esther, FGD, School 1).

If she says [the cup] is difficult to use, you tell her that she should try it this way. You tell her how you tried [the cup] and that is why you got used to it (Jane, FGD, School 1).

Other participants appeared to be more sceptical, waiting until others had tried the cup to learn from the lived experiences of their peers. Some expressed having difficulties mastering the techniques. However, many of these participants' fears diminished after hearing about the positive experiences of their peers and subsequently tried the cup themselves. Through sharing their own experiences, the early adaptors thus seem to have an important role in driving the acceptability of the menstrual cup.

Lastly, it seems that assistance from a close friend to help manage, for example with emptying the cup at school facilities (e.g. holding the door shut), helped some girls cope with privacy issues.

Acceptance and support from family and community

Several participants mentioned sharing their experiences of cup use with close friends and family members, who became supportive when hearing about their positive experiences. Such acceptance from family members contributed to participants' menstrual cup acceptability, especially in terms of encouragement and support to overcome challenges related to disinfecting the cup. A number of study participants mentioned that their mother had helped them with soap for hand washing and boiling equipment for disinfecting the cup.

[B]oiling nowadays is easy because my mother also now knows about the cup, so she is the one who gives me the opportunity to boil it ... My mother said, if it is a good thing, you use it and make sure you follow the right teachings they

gave you about using the cup, if you know that it will not bring any problem to you (Victoria, interview, School 2).

A few participants mentioned that family members and friends had requested whether they could have a cup, indicating increasing acceptability and demand for the cup in the study context.

Moreover, a few girls emphasized the supportive role of female teachers, who had also been provided with MCs. These girls described consulting with the teacher regarding concerns about adverse effects and advice about cup use.

I also hear people saying that it enlarges the uterus, so I tried to leave using it, but then I thought that I should first ask the senior woman teacher ... and then she gave me advice on that thing and up to today, I am not using people's words (Julie, FGD, School 2).

Saving money and increased independence

Saving money seemed to be an important driver for cup use as emphasized by several study participants. This included not having to buy pads or reduced need for soap when not having to wash cloths stained with menstrual flow.

It will help you from wasting money monthly on buying pads ... you can just only buy soap and if you use that soap specifically for the cup and your periods, one bar of soap you can use for 4 or 5 months (Lucy, FGD, School 2).

That cup I liked it because they said it will last for 10 years, so I felt that for the 10 years, it will help us not to waste money (Carol, interview, School 2).

Importantly, the girls noted that with the cup, their ability to manage menstrual 'emergencies' did not depend on whether they had money available:

I would say that thing is good because for example your period may get you abruptly when you are not prepared or when you don't know when you don't have pads or even any money so you may be fearing to ask your mother for money so if you have the cup you can just pick it and start using it (Faith, interview, School 2).

As illustrated in the above, being prepared for their periods and independent of others in such emergencies was a relief to some girls.

Reduced leakage and increased comfort

Reduced leakage, increased comfort, and strengthened ability to keep the period secret were important drivers for MC use. Most participants described how methods previously used, mainly old rags (pieces of cloth), pads, and underpants, caused blood leakage and skin discomfort such as wounds, rashes, itch, pain, and peeling. The cup was reported as being a better method because of reduced leakage and because it is inserted, thus not affecting the skin and causing related physical discomfort. This made many girls 'feel free', increasing their physical mobility and

making it easier to engage in social activities. 'I found using it was interesting and easy because once you have inserted it you can play so freely you will not feel that there is something in your body' (Faith, interview, School 2).

As above, some participants explained that now they can play and bicycle freely, which they did not like to do before using the cup for fear of leaking. Due to these benefits, they no longer worry when they have their period. 'Because I come and stay freely you don't worry and even when you don't tell your friends they may not know that you are in your period' (Carol, interview, School 2).

Fewer worries at school

Most study participants reported attending school despite their period, although a few participants noted that before the cup, they had occasionally stayed home due to heavy flow, pain, or lack of money for pads.

That thing is also good because let's say you are using pads and then the pads gets finished before you have finished your periods and there is no money to buy more so for you; you will stay at home but school continues normally; you stay home because you fear the leaking that is where I find the difficulty (Rachel, FGD, School 1).

Others explained that before receiving the cup they went home from school to bathe and change soiled clothes and therefore had missed parts of school days. Many participants also described that before they experienced psychological and social discomfort when they had their period in school.

Many reported that with the cup, less leakage and easy maintenance of the method during periods meant that they were less worried at school:

Staying at school when you have inserted the cup doesn't disturb your head because once you insert it, it collects all the blood inside and it doesn't leak like when you are using the pad, which you have to keep changing, otherwise it leaks (Anna, interview, School 1).

[M]y period used to come so much that it would even prevent me from coming to school. When I used that cup I found it was good because once it is full I would know and go and change. Even now I stay freely among my friends (Lucy, interview, School 2).

Generally the findings suggest that the cup significantly reduced fear of leaking and thus made it easier for the girls to comfortably participate in school activities.

Discussion

Overall, the results of this study indicate a high acceptability of the MC among study participants. This study is one of the first to explore schoolgirls' use of MCs in sub-Saharan Africa and the first MC study in Uganda. These findings are in line with other available studies on MC acceptability from Nepal, Kenya, and South

Africa (Oster and Thornton 2011; Mason et al., 2015; Beksinska et al., 2015, respectively). In Kenya, Mason et al. (2015) compared MCs with disposable pads and traditional methods, while Beksinska et al. (2015) compared MCs with sanitary pads and tampons in South Africa. Both study populations preferred the MC as an MHM method. The study from South Africa concludes that the MC has a pool of potential users in low-income contexts despite limited experience with tampons. Similarly, in this study context the MC was acceptable despite no reported prior tampon use.

Mason et al. (2015) similarly found initial fear and scepticism among Kenyan girls as well as pain and difficulties mastering the MC user techniques, which the girls overcame with time and practice. Their findings also highlight the importance of training to create trust and overcome the initial challenges with MC use. The initial learning curve is common for MC users as also highlighted by MC acceptability studies from high-income countries (Howard et al., 2011). Strategies to address these initial challenges should therefore be included in MC training.

Similar to findings from Nepal by Oster and Thornton in their study on peer effects on MC uptake, the early adaptors were important drivers for acceptability by providing support and sharing knowledge with their doubting peers (Oster and Thornton, 2012). The importance of the lived experiences of peers as a source of knowledge on health technologies is in line with other research from Uganda pointing towards peer experiences being perceived as a more trusted source of knowledge than scientific 'facts' provided by health professionals (Hyttel et al., 2012).

In this study, the main hygiene challenge for MC acceptability related to finding a suitable container for boiling the cup, which most adapted to by reusing an old tin container often provided by their mother, highlighting the importance of family support. Some containers may be less suitable for boiling the cup: for example cans that had previously been used for materials that may be harmful for the body, such as paint cans as mentioned by two girls. Although no evidence exists that we are aware of, appropriate boiling equipment should be included in MC interventions where they are not easily affordable, to ensure that the MC is not contaminated by harmful substances when boiled. These issues have not been described before in the MC studies from sub-Saharan Africa (Mason et al., 2015; Beksinska et al., 2015). Lack of clean school latrines did not seem to be a significant barrier for participants' adherence to the hygiene guidelines for MC use. However, lack of adequate sanitary school facilities would likely strengthen MC uptake and needs to be addressed to ensure appropriate hygiene practices for students in general.

In line with the results of this study, the MC studies from Kenya and South Africa also associate MC use with reduced fear of leaking, increased confidence, comfort, mobility, and independence, as well as more focused and active school attendance during menstruation using the MC compared with commonly used MHM methods (Mason et al., 2015; Beksinska et al., 2015). This study furthermore reports that economic benefits from MC use from not having to buy other MHM products is an important driver for MC acceptability. Although there are many similar challenges in relation to MHM as highlighted in the above studies, the perception and

practices of menstruation may vary considerably in different cultures and contexts (Buckley and Gottlieb, 1988), and it is thus also important that MHM programmes are contextualized and culturally sensitive, especially in cultures where notions of the hymen and virginity are of more importance, such as in most Arabian cultures (Abboud et al., 2015).

This study experienced challenges in assessing whether menstruation causes school absenteeism among study participants, as some girls who had reported not missing out on school due to their period in questionnaires later said during the interview that they had missed half a day or more. Asking direct questions regarding whether they missed school due to their period thus did not seem to be a reliable method for assessing MHM-related school absenteeism when collecting self-reported data. Despite the challenges related to measuring the effect of MHM on school absenteeism, the effect of MC use on the quality of school attendance, i.e. girls being more active and focused in school, may in the long term have a positive effect on learning and reduce risk of dropout. It would thus be relevant to further explore the long-term effects of MHM on school performance and dropout.

Due to the nature of the study, only self-reported data were collected on MC use as it was not possible to observe MC use directly, including hygiene practices. As positive feedback on the MC and adhering to hygiene guidelines are likely to be perceived as more socially desirable answers, self-reporting may have led to over-reported acceptability of MC and under-reporting of challenges and discontinued use. To limit self-reporting bias, study participants were continuously reminded that there are no wrong answers. Although it is possible that girls less favourable to the MC were more reluctant to participate in the study, two study participants did report not having adapted to use of the cup. Participants may have felt less willing to openly express themselves due to the sensitivity of the topic related to menstruation, as well as due to the researcher being non-Ugandan, although six months' fieldwork and use of local research assistants allowed for some trust creation with study participants. To avoid slowing the conversation flow due to translation, most responses were summarized by the translator during FGDs and then later transcribed in full. Long-term acceptability or discontinuation could not be assessed from the three-month follow-up period, as this would require studies with longer follow-up periods.

Conclusions and recommendations

The results indicate a high acceptability of the MC among this group of school-girls in northern Uganda. The majority adapted to the MC despite initial challenges mastering the techniques, which they overcame with practice, as well as challenges related to disinfecting, hiding, and losing the cup. The major drivers for acceptability of the MC were increased comfort, independence, and feeling free because of reduced leakage compared with previously used methods. Further, creating trust in the cup and peer knowledge sharing and support played an important role.

The study concludes that the MC would likely be an acceptable MHM solution for many girls and women in similar settings. Furthermore, the findings emphasize the importance of the following in MC programming: 1) comprehensive and contextualized training on user techniques, hygiene safety, and benefits of MC use; 2) promotion of peer knowledge-sharing and support; and 3) culturally appropriate and hygienically safe solutions and environments for using the MC, including appropriate boiling equipment and latrine management. To ensure family and peer support, it is recommended that relevant persons including parents, teachers, community leaders, and boys are involved in MC interventions, and that the opportunity is used to break down taboos surrounding menstruation. Finally, MC interventions should take into account the potential need for replacement of lost MCs, especially in contexts when MCs are not accessible.

References

- Abboud, S., Jemmott L.S. and Sommers M.S. (2015) 'We are Arabs: the embodiment of virginity through Arab and Arab American women's lived experiences', *Sexuality & Culture* 19(4): 715–36 <<http://dx.doi.org/10.1007/s12119-015-9286-1>>.
- Adinma, E.D. and Adinma, J.I.B. (2008) 'Perceptions and practices on menstruation amongst Nigerian secondary school girls', *African Journal of Reproductive Health* 12(1), 74–83.
- Beksinska, M.E., Smit, J., Greener, R., Todd, C.S., Lee, M.T., Maphumulo, R.M. and Hoffmann, V. (2015) 'Acceptability and performance of the menstrual cup in South Africa: a randomized crossover trial comparing the menstrual cup to tampons or sanitary pads', *Journal of Women's Health* 24(2): 151 <<http://dx.doi.org/10.1089/jwh.2014.5021>>.
- Boosey, R., Prestwich, G. and Deave, T. (2014) 'Menstrual hygiene management amongst schoolgirls in the Rukungiri district of Uganda and the impact on their education: a cross-sectional study', *Pan African Medical Journal* 19: 1 <<http://dx.doi.org/10.11604/pamj.2014.19.253.5313>>.
- Buckley, T. and Gottlieb, A. (1988) *Blood Magic: The Anthropology of Menstruation*, Berkeley, CA: University of California Press.
- Crichton, J., Okal, J., Kabiru, C.W. and Zulu, E.M. (2012) 'Emotional and psychosocial aspects of menstrual poverty in resource-poor settings: a qualitative study of the experiences of adolescent girls in an informal settlement in Nairobi', *Health Care for Women International* 34(10): 891–916 <<http://dx.doi.org/10.1080/07399332.2012.740112>>.
- Grant, M., Lloyd, C. and Mensch, B. (2013) 'Menstruation and school absenteeism: evidence from rural Malawi', *Comparative Education Review* 57(2): 260–84 <<http://dx.doi.org/10.1086/669121>>.
- Howard, C., Rose, C., Trouton, K., Stamm, H., Marentette, D., Kirkpatrick, N., Karalic, S., Fernandez, R. and Paget, J. (2011) 'FLOW (finding lasting options for women): multicentre randomized controlled trial comparing tampons with menstrual cups', *Canadian Family Physician Médecin de Famille Canadien* 57(6): 208–15.
- Hyttel, M., Rasanathan, J.J.K., Tellier, M. and Taremwa, W. (2012) 'Use of injectable hormonal contraceptives: diverging perspectives of women and men, service providers and policy-makers in Uganda', *Reproductive Health Matters* 20(40): 148–157 <[http://dx.doi.org/10.1016/S0968-8080\(12\)40654-1](http://dx.doi.org/10.1016/S0968-8080(12)40654-1)>.

- Mason, L., Laserson, K.F., Oruko, K., Nyothach, E., Alexander, K.T., Odhiambo, F.O., Eleveld, A., Isy, E., Ngere, I., Omoto, J., Mohammed, A., Vulul, J. and Philips-Howard, P.A. (2015) 'Adolescent schoolgirls' experiences of menstrual cups and pads in rural western Kenya: a qualitative study', *Waterlines* 34(1): 15–30 <<http://dx.doi.org/10.3362/1756-3488.2015.003>>.
- Oche, M., Umar, A.S., Gana, G.J. and Ango, J.T. (2012) 'Menstrual health: the unmet needs of adolescent girls in Sokoto, Nigeria', *Scientific Research and Essays* 7(3): 410–8.
- Oster, E. and Thornton, R. (2011) 'Menstruation, sanitary products and school attendance: evidence from a randomized evaluation', *American Economic Journal: Applied Economics* 3: 91–100 <<http://dx.doi.org/10.1257/app.3.1.91>>.
- Oster, E. and Thornton, R. (2012) 'Determinants of technology adoption: peer effects in menstrual cup up-take', *Journal of the European Economic Association* 10: 1263–93 <<http://dx.doi.org/10.1111/j.1542-4774.2012.01090.x>>.
- Ruby Cup (no date) 'Why you should switch to Menstrual Cups' [website] <www.ruby-cup.com/menstrual-cups/> [accessed 8 August 2016].
- Sommer, M. (2009) 'Ideologies on sexuality, menstruation and risk: girls' experiences of puberty and schooling in northern Tanzania', *Culture, Health and Sexuality* 11(4): 383 <<http://dx.doi.org/10.1080/13691050902722372>>.
- Sommer, M. (2010) 'Where the education system and women's bodies collide: the social and health impact of girls' experiences of menstruation and schooling in Tanzania', *Journal of Adolescence* 33(4): 521 <<http://dx.doi.org/10.1016/j.adolescence.2009.03.008>>.
- Sommer, M. (2013) 'Structural factors influencing menstruating school girls' health and well-being in Tanzania', *Compare: A Journal of Comparative and International Education* 43(3): 323 <<http://dx.doi.org/10.1080/03057925.2012.693280>>.
- Tegegne, T.K. and Sisay, M.M. (2014) 'Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia', *BMC Public Health* 14: 1118 <<http://dx.doi.org/10.1186/1471-2458-14-1118>>.
- Trinies, V., Caruso, B.A., Sogoré, A., Toubkiss, J. and Freeman, M.C. (2015) 'Uncovering the challenges to menstrual hygiene management in schools in Mali', *Waterlines* 34(1): 31 <<http://dx.doi.org/10.3362/1756-3488.2015.004>>.