Developing games as a qualitative method for researching menstrual hygiene management in rural Bolivia

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The onset of menstruation has proven challenging for girls in school, with absenteeism, missed class time, reduced participation, teasing, fear, shame, and risky adaptive behaviours among the most commonly noted impacts in many settings. In 2012, Emory University and UNICEF conducted a multi-country formative study to gain a global perspective of girls' experiences. A compendium of tools was created to ensure investigation of common themes across all settings. This paper describes the process of adapting the focus group discussion (FGD) tool for Bolivia into a board game as a method to ease girls' discomfort discussing menstruation and elicit richer data. We describe the development of the menstrual hygiene management game, including structure and strategies for adapting FGD questions that increased interaction, stimulated detailed responses, and diversified participatory activities. A discussion of lessons learned will highlight elements of success and areas for improvement in future game adaptations. The paper discusses games as a research method for other topics and their applications for programme design, monitoring, and skills-based learning.

Keywords: menstrual hygiene management, qualitative methods, WASH in schools, child-focused methods, participatory methods

THE ONSET OF MENSTRUATION is challenging for school-aged girls in low-income settings, with absenteeism, missed class time, reduced participation, teasing, fear and shame, and risky adaptive behaviours among the commonly noted impacts in a variety of settings (Ali and Rizvi, 2009; Sommer, 2010b; McMahon et al., 2011; Long et al., 2013; Caruso et al., 2013; Haver et al., 2013; Mason et al., 2013). A lack of knowledge, communication, and practical guidance prior to menarche and during menstruation; inadequate water, sanitation, and hygiene (WASH) facilities;

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http://dx.doi.org/10.3362/1756-3488.2015.007, ISSN: 0262-8104 (print) 1756-3488 (online)

and ineffective or unavailable menstrual management materials contribute to the challenges girls face (Sommer, 2010a; Haver et al., 2013; Long et al., 2013; Caruso et al., 2013; Dolan et al., 2013; Alexander et al., 2014; Sommer et al., 2014).

To gain a global perspective of girls' experiences, Emory University and UNICEF conducted a multi-country menstrual hygiene management (MHM) formative research study (Caruso et al., 2013; Long et al., 2013; Haver et al., 2013). A compendium of tools was created for adaptation and use to ensure comparability of common themes across all settings (Caruso, 2014). The study utilized an ecological framework to structure MHM research activities, considering the societal, environmental, interpersonal, personal, and biological factors believed to influence MHM (Long et al., 2013; Caruso, 2014).

Girl participants were between 14 and 17 years of age and originated from rural communities. These characteristics increased the likelihood that all participants had reached menarche and were discussing MHM with peers. Seeking homogeneity is considered best practice for focus group discussion (FGD) composition (Hennink et al., 2011). When girls proved hesitant to discuss menstruation during the pilot, an intensified participatory learning and action (PLA) approach was undertaken to turn the FGD into an MHM game. This paper documents the game adaptation process (referred to as the MHM Game) so researchers and practitioners can replicate the methodology for their work. First, we describe game development, including structure and strategies for adapting FGD questions. Second, we present examples of the data that resulted from the game. Third, we provide lessons learned and suggest applications for future research and practice.

The Emory Institutional Review Board (IRB) approved this research, including the discussions and activities associated with the MHM Game, after receiving a letter from the Cochabamba District Department of Education providing local approval of the study protocols. The purpose of the research and the game was explained to the girls so that they could decide whether they wanted to participate. MHM Game questions intentionally did not solicit girls' personal experiences with menstruation to prevent the disclosure of personal information.

Development of the game for understanding MHM among Bolivian schoolgirls

Game structure and materials

The game consisted of a six-sided die, animal figurines, and a poster board that had a hand-drawn path with coloured squares and bridges connecting spaces along the path (see Figure 1). Nametags, flip chart paper, coloured pencils, pencils, markers, and paper were used for the game activities. Two digital audio recorders were used to record, transcribe, and translate girls' conversations during the game.

Figure 1 MHM Game

Game rules and administration

A trained female facilitator and female note-taker administered the game. The facilitator explained the purpose of the visit, collected informed assent from girls who agreed to participate, explained the game rules, and oversaw the game proceedings. The note-taker documented the order in which girls spoke and their non-verbal actions.

The goal of the game was to be the furthest along the path when questions ended. Each girl rolled the die to advance along the board; then the facilitator read a question that, if she answered, permitted her to advance again. If girls chose not to answer, they moved backwards three spaces. If they landed on a square with a 'bridge' they could cross it to spaces further along the path. The three leading girls at the end of the game competed for the final prize and were paired with a non-finalist to answer the last question.

All questions were printed onto paper to appear like playing cards. Each card had the main question and probes in Spanish and Quechua. After the girl rolled the die, the facilitator picked a card from the pile and read it to the group. To assure consistency in the flow of the game, playing cards were numbered to be delivered in the same order as the original FGD guide (Caruso, 2014).

The original Emory 18 FGD question guide had two adaptions in Bolivia. The first occurred with the local research team: improving Spanish translations, questioning,

and probes. The new FGD guide, containing 22 questions, was further adapted to the 28-question MHM Game.

The MHM Game questions were not additionally altered, though probes were improved and added over the course of data collection. The same facilitator led every MHM Game activity to ensure continuity across data collection. The facilitator initiated impromptu discussions if she recognized a new or recurring point that was not on the game cards, including practices and beliefs she heard from other girls during previous games (see Long et al. (2013) for practices and study methods). Incorporation of new information is consistent with the iterative process of qualitative methods (Hennink et al., 2011).

Adaptation of FGD questions

The MHM Game aimed to maintain fidelity to the original FGD guide, while rewording questions to increase engagement. The research team wanted all girls to participate and be at similar places along the board, mitigating the risk that any girl lost interest, felt left out, or stopped contributing to the conversation.

FGD questions aimed to achieve the following objectives:

- increase interaction;
- improve the detail of responses;
- integrate a variety of participation methods;
- keep it fair and fun.

Increasing interaction. Interaction was encouraged by having girls discuss questions among themselves before discussing in the group. This was achieved through forming pairs or small groups, or by having a girl play the facilitator role:

- 'Pick a partner to help you answer this question …'
- 'Direct this question to the girl on your right, if she answers well, you both advance three spaces …'
- 'Go in a circle and ask every girl this question …'

Once girls presented a response to the original question, the facilitator followed with probes. Regardless of how a girl responded to follow-up questions, or whether it was originally her turn, she could advance for contributing to the discussion.

Improving detail. Questions gave explicit instructions to provide detailed responses, and to reduce the repetition of answers; though to prevent discouraging girls, facilitators never penalized participants for repetition:

- 'Talk about X for at least 30 seconds …'
- 'You cannot repeat what your classmate says before you …'
- '… the group with the most detailed drawing and explanation of their drawing will advance X spaces …'
- 'For every example/answer you give, you will advance one spot'

Integrating varying group activities. The MHM Game gave girls the opportunity to participate through drawing, brainstorming, and responding to hypothetical

Table 1 A comparison of FGD and MHM Game questions with corresponding activities

Original FGD	*Game FGD*
1. Describe the bathrooms in your school	**Drawing:** You get to draw! Divide yourselves into two groups and in five minutes draw the bathroom in your school. Include all the details you can and then explain the picture to the group. Tell us what is good and bad about the bathroom. The group with the most detailed drawing and explanation advances three spots
2. Tell me about the rules regarding bathroom use	**Scenario:** A new student from another community came to study here. Pick your two classmates in last place to describe the rules around bathroom use to the new girl. If you respond, you go forward one spot
3. What is the first thing Rosita does when this [her period] happens in class?	**Brainstorming scenario group work:** In collaboration with all your classmates, make a list of the first five actions Rosita would do to take care of herself when she realizes she got her period. With each action you name, you advance one spot

scenarios (see Table 1). These activities allowed girls to share their ideas in smaller groups or non-verbally and prevented quieter participants from falling behind in the game.

The first game activity divided girls into two teams to draw their school bathroom. The team that presented the most detailed drawing and explanation advanced, thus encouraging girls to provide more information. Brainstorming activities prompted girls to work in groups to discuss a question, write out their answers on small sheets of paper or flip chart paper, and then present one group response.

Hypothetical situations gave participants a reference point to answer questions, without having to self-identify with specific or taboo practices. Scenarios were woven throughout the MHM Game, touching on WASH, managing menses, and girls' voiced recommendations using a method from previous MHM research (Sommer, 2011). The inclusion of a hypothetical scenario about a girl who gets her period at school was from the original FGD and set the stage for a series of 14 questions that uncover how an ordinary girl feels, her resources, her confidants, her behaviour, and her peers' reactions.

Keeping it fair and fun. One priority of the game was to keep all girls engaged and feeling positive. Girls were given every opportunity to provide additional thoughts or opinions, and were rewarded by moving forward. Strategies to mitigate the risk of falling behind included purposeful pairing of extroverted girls and quiet girls and including questions that served as 'equalizers' such as:

- 'Pick the two girls in last place right now to help you answer this question …'
- 'There are no pads in school – give one to the girl in last place … you move up two spaces and she moves up five spaces'
- 'Direct this question to the quietest girl in the group …'
- 'Pick the person that just smiled to help you answer this question'

Results of the MHM Game

Data type, management, and analysis

The MHM Game resulted in three types of data: audio recordings, written data, and drawings. Audio recordings were the richest data source, but all data required careful management.

Capturing girls' conversation during the game was essential; two recorders were placed in the middle of the group, providing two recordings to reference. Recordings were transcribed verbatim in Quechua. The note-taker provided notes for the transcriptionist to identify speakers and girls' non-verbal actions, which were incorporated into transcripts and translations. Quechua transcriptions were reviewed for errors, then translated into Spanish and reviewed again for errors. The full Spanish translations were analysed by the Emory-Research Fellow for the final report.

All data was labelled to correspond to the game activity, the participants, and school code. All data written by girls was translated, if necessary, into Spanish and photographed (see Figures 2 and 3).

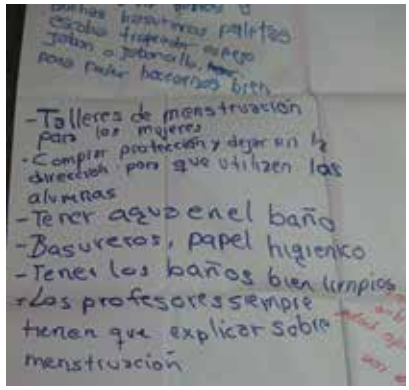

Figure 2 A group brainstorming activity

Figure 3 Picture of a school bathroom

All data were uploaded to MaxQDA, a qualitative data analysis software, and coded. The analysis strategy involved retrieving coded text segments that revealed factors contributing to girls' menstruation-related challenges.

Positive results of the MHM Game adaptation

Adaptation of the MHM Game produced superior results in the Bolivian context, compared with the originally piloted FGD. It enabled girls to be responsive, generated richer data, and created an enjoyable environment.

The strength of the MHM Game is evident when comparing data from similar questions during the pilot FGD (Table 2). In the pilot, girls were withdrawn and conversations were strained. They often responded with repetitive or one-word answers, or remained silent. The facilitator struggled to engage girls, repeating questions several times.

Table 2 Comparison of menstrual materials conversation in FGD pilot and MHM Game

Pilot – School 1	*MHM Game – School 11*
Facilitator (F): Yeah, what could she put on? (at P6)	F: Now it's your turn Flora! Play! Three. Remembering well what your friends, classmates, said during the last question, what will Rosita do with the [menstrual] materials after using them? For each one that you describe you advance one space more. What will Rosita do?
P1: cotex	
P6: cotex	
F: cotex?	
P7: Uh huh (agreement)	P5: She can wash those cloths.
P2: Uh huh (agreement)...	F: What does she wash them with? Where does she wash them? How?
F: What else if there wasn't cotex in that moment? What else could she put on?	P4: She can go to wash them at home.
P2 and P7: (they look at the floor at the same time) ...	P1: with soap, detergent.
F: Rosita would only use cotex? She wouldn't have anything else?	F: OK. While Rosita's washing is she alone or with who?
P?: Toilet paper (low voice)	P5: alone
P7: Toilet paper	P4: she can wash alone
F: aaah, toilet paper too.	F: OK, and what does she do with those sanitary pads?
P6: ummhmm ...	P6: ... you can't wash, you have to throw in the trashcan.
F: OK. So if Rosita goes home, what else might she use? Would she keep on using cotex?	F: OK (hahaha the participants laugh) mmm and you all? What can she do?
P2: no	P4: After putting it in a little bag, she can throw it in the trash ...
F: OK	
P2: No, she would change to another cotex ...	

Girls had markedly different responses in the MHM Game. When asked about menstrual hygiene materials in the pilot, girls focused on 'cotex' or sanitary pad. The facilitator made multiple attempts to discuss menstrual cloth, as it was common knowledge that some women use cloth to manage menses, but girls were unresponsive. A comparison of the pilot and game discussions in Table 2 demonstrates how the game facilitated a natural discussion about both types of menstrual materials.

Creating a fun environment elicited richer data. The quotes in Table 2 and by a girl (P4) playing the game illustrate that, when comfortable, girls shared their ideas, contributed opinions, and provided greater insight into the sensitive behaviours and practices associated with menstruating.

> P4: You have to be careful about the sunrays … They say that we can get cancer if we expose ourselves to the sun. Then, we have to bath ourselves, our parts, when our menstruation ends so that we don't smell … you have to change your underwear three times a day when we're [menstruating] … You're also not supposed to lift … heavy things, or else … there will be more blood… Then we have to … use sanitary pads or cloth so we don't soak our clothes with our blood. When menstruation ends, we shouldn't be with men or else we could get pregnant easily (school 3).

Rosita's scenario was critical to obtaining rich data. When presented with Rosita's challenges, girls reflected and empathized with her, sharing their own thoughts during similar situations:

> P5: … you feel like you've stained yourself … the smell is coming out … a boy comes along and you get nervous and you're afraid that the smell is really strong…
> P2: you're watching for it more than anything, you are looking at yourself all the time …
> P1: you're a little more distant from your classmates, you know, from your family maybe too …
> P5: … since our slip is white you're scared that-that it will stain … (school 6).

Lessons learned

The MHM Game had two overarching outcomes: 1) an environment where girls felt comfortable discussing menstruation; and 2) rich data that enhanced researchers' understanding of girls' menstruation-related challenges. This section outlines successful MHM Game strategies and areas for improvement in future adaptations.

Three factors contributed to the success of the MHM Game: engaging local research assistants in game development and implementation; playing the game in the local language; and the use of a variety of participatory methods.

The RAs' contribution to the MHM Game shaped the methods and enhanced data quality. Tool development and data collection should involve local input to

ensure that tools consider proper colloquial language and cultural norms (Hennink et al., 2011). The MHM Game incorporated RAs' personal experiences working with children during game development and question adaptation. It created a sense of ownership of the process and a deeper understanding of the research goals.

Conducting the MHM Game in Quechua, the girls' first language, supported a trusting environment. Many of the practices and beliefs discussed during the game were learned outside of school, likely in Quechua-speaking environments. Playing in Quechua may have provided a more natural situation to ease game discussions. This strategy was used to investigate menstruation in Kenya where schoolgirls were only permitted to speak English. For the research, girls were encouraged to speak DhuLuo as they felt more at ease with the language (McMahon et al., 2011).

Incorporating a variety of activities into the MHM Game kept the game interactive, avoided monotony, and permitted multiple avenues to participate. Participatory methods were informed by previous research on menstruation (Sommer, 2011) and community mobilization for HIV/AIDS (IHAA, 2006). The success of participatory activities will vary by country, study population, and research topic, but should be connected to a goal within the larger research study, as well as a clear outcome, even simple rapport building. Participatory activities should be piloted to ensure that they engage the participants and generate the information desired.

The MHM Game methodology produced rich data; however, improvements for the game method should be considered for future research. First, small group activities prompted rich interactions among girls, but were difficult to capture on recordings. Researchers can capture these details by limiting group activities to two groups, allowing the facilitator and note-taker to listen to each conversation, or having recorders available for each group.

Second, activities could have been used strategically to provide richer written data for analysis. Among literate populations, adding the instruction for girls to also include 'why' on written activities could make the written data the principal source and reduce the labour-intensive task of transcription.

Finally, consider ways to understand girls' ideals and priorities that do not rely on researchers' norms. A basic assumption was that girls wanted to manage their menstruation in a bathroom, but researchers learned late in the study that there were aspects of the home experience that girls preferred. Instead of asking a girl to draw the perfect bathroom to manage menstruation, it may be more revealing to open the question and ask her to draw her ideal 'space'.

Implications for future research and practice

The MHM Game was developed as a qualitative data collection tool, but it has applications for research and programme development. The game methodology is relevant for researching sensitive topics and facilitating discussions with youth who are not accustomed to speaking openly with adults. With minimal effort, the existing game could also be adapted to focus on other WASH-related behaviours by simply interchanging key questions of the guide.

The MHM Game has potential for development practitioners as a programme design and monitoring tool, or as a skills-based learning method. Games could be used to understand community issues from the children's perspective during a situation analysis. They could also serve to gauge children's knowledge and behaviours around specific health topics.

The game could promote skills-based learning and health messages on an array of topics for various age groups or function as a peer-education tool, with older children posing questions to younger children, or rotating questions so that the players manage their own game. Children are empowered by peer learning in small group dynamics and via participatory learning (Cooper, 2002), increasing learning outcomes (IHAA, 2006).

Conclusion

The MHM Game proved to be an innovative method to engage rural Bolivian girls and understand menstruation-related challenges in school. The strategies incorporated into the game significantly improved the data quality and research findings. The use of interactive games is a viable qualitative data collection method when researching stigmatized or sensitive issues. Games also have great potential for development practitioners to inform child-focused programme strategies and encourage skills-based learning.

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