An Integral Approach to Menstrual Hygiene Management - Understanding adolescent girls' experiences of menstruation in Sri Puram, India.

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Abstract

Background: Menstruation and menstrual hygiene management are central to the lived experiences of most girls and women around the world for much of their lives, yet is often under researched and ignored on the development agenda.

Research objectives: This study sought to explore adolescent girls' experiences of menstruation in Vellore, India, through looking at resources available, the use of these resources, coping strategies, and social and emotional wellbeing.

Data materials and methods: This was a qualitative study. Photovoice and three individual in-depth interviews with female adolescent students, one group in-depth interview with health experts, and one focus group discussion with female teachers were the methods of data gathering. The data were coded in Atlas.TI and analysed using thematic network analysis.

Findings: This study found that the lived experiences of menstruation were complex and interconnected. Availability of, and access to resources such as sanitary pads plays a role in menstrual hygiene management, and is connected to structural and environmental factors. Access to such resources was not a problem for the participants in this study. Use of the resources and strategies developed by the participants were influenced both by personal motivations, and information and knowledge passed down through both formal and informal structures, such as school, health services, friends and mothers. Social wellbeing was found to be connected to the relationships of the participants with the people in the community. Relationships with women often act as a support, while relationships with men were found to be a source of stress. Social wellbeing was also found to be connected to the relationship to culture and traditions. Emotional wellbeing is connected to both individual and communal factors, and shaped by structures, environments and relationships.

Conclusion: Emotional responses, actions and behaviours, social norms and relationships, and structures and environments all interact and influence one another, and must be understood together to form a complete picture of the complexity of the menstrual experience. As menstruation and MHM are central to women's health, they are also central to health promotion and understanding these lived experiences is essential to moving forward, and promoting positive change.

Key worlds: Menstruation, menstrual hygiene management, adolescent girls, India, integral theory, AQAL model

Acronyms and abbreviations

AQAL - All quadrants, all levels

FGD - Focus group discussion

GOI - Government of India

IDI - In-depth interview

LMIC - Low and middle income country

MHM - Menstrual hygiene management

RKSK - Rashtriya Kishor Swasthya (Adolescent health initiative)

SHINE - Sanitation and Hygiene Innovation in Education

WASH - Water, sanitation and hygiene

1. Introduction and background

Most women will experience menstruation for a period of their lives, and will have to make choices about menstrual hygiene practices, that in turn will affect their health and well-being more broadly. Menstrual health is a problem for girls and women globally. In low and middle income countries (LMICs) women face limited choices regarding their hygiene practices due to lack of sanitation facilities and access to sanitary products. Stigma attached to menstruation, and a lack of access to knowledge and information are also factors that constrain women's choices. As a result, poor menstrual hygiene management (MHM) is common (Sommer, Hirsch, Nathanson & Parker, 2015). Menstrual health and experiences of menstruation are multi-faceted issues, which require addressing from multiple angles. It is a water, sanitation and hygiene (WASH) issue, an education issue, a health promotion issue and wider social and political issue. For the purposes of this study MHM is defined in terms of the access to safe menstrual absorbents, which can be changed and disposed of privately and without shame, as often as needed, both at home and in school. Awareness, understanding and access to knowledge is also integral to MHM.

MHM in India is similarly multi-faceted. Lack of access to safe and private sanitation facilities is a major issue, especially in schools. Economic limitations on access to absorbents such as sanitary pads also exist. Sanitary pad disposal is a major infrastructure issue. Lack of information prior to menarche, and sexual education in general is also a problem. These issues all link to an underlying stigma surrounding menstruation and menstrual blood (Sumpter & Torondel, 2013). Feelings of shame are common, and can affect girls' school attendance, health and wellbeing. Links between poor MHM and gynaecological morbidity, especially reproductive tract infections (RTIs) have also been found (Juyal, Kandpal & Semwal, 2014). In 2010 the Government of India started addressing the issue of MHM through an initiative to heavily subsidise sanitary pads[1] in rural areas (Garg, Goyal & Gupta, 2012). This initiative was not accompanied by educational supplements, and thus focused on only the material aspect of MHM. In 2015 the Ministry of Drinking Water and Sanitation, Government of India published national guidelines for MHM (Ministry of Drinking Water and Sanitation, 2015). In the guidelines factors influencing MHM are identified, among them knowledge and information, infrastructure and supportive policies. Focus is placed on access to information, education, and breaking the taboo. This suggests a more holistic take on MHM, and tackling the related issues.

[1] I will mainly use the term sanitary pad, some of the participants use the term napkins. Both these terms refer to mass-produced disposable sanitary pads.

In addressing the complex issues surrounding MHM in India it is vital to look to the experiences and perceptions of the adolescent girls who's reality it is. Not only are they invaluable sources of information, needed to understand how to best develop the MHM agenda, they also have the potential to be health promotors and agenda setters in their communities. To facilitate this process, a more holistic understanding of the experiences of menstruating girls must be developed. An integral approach is especially suited for gaining insight into such multi-faceted issues as MHM, as it aims to look at all the different aspects of an experience and how they interconnect. In this study this will be achieved through looking at experiences of menstruation using a socio-ecological model called the AQAL model (Esbjörn-Hargens, 2010). Adolescence is an especially important and vulnerable time, where behaviours and beliefs are developed, and thus requires extra attention. As MHM gains traction as a policy issue, attention is often given to infrastructure, materials and education, but less focus is placed on lived experiences and social and emotional wellbeing. The integral approach is not commonly used in MHM research, and aims to develop holistic understandings of experiences, including both individual and collective aspects, as well as internal and external factors. This approach adds a different perspective from the typically problem oriented quantitate literature on MHM in India. Menstruation is a central part of health for most women across the world, and understanding the experience and the different determinants for menstrual health is essential to continued improvements to our understanding of female health.

1.2 Problem statement

Menstruation, menstrual health and menstrual hygiene management are often ignored topics in development discourse, despite affecting half the world's population. There are many factors that must be considered when discussing menstrual health; physical resources such as access to clean water, private sanitation facilities, waste disposal and absorbents, as well as knowledge and educational resources. Social and emotional wellbeing must also be considered, alongside strategies and use of resources to manage menstrual health. In India, menstruation is a taboo topic and a lot of stigma is attached to it. A combination of shame and lack of sanitation facilities means that many girls lack access to both social and physical resources. Menstruating girls may be prevented from taking part in religious activities, washing and eating certain foods. Use of disposable pads is limited, and cloth is still commonly used as an alternative absorbent among some populations. School absenteeism is another issue which is often linked to menstrual hygiene management. In order to improve menstrual health among adolescent girls it is essential to understand the entirety of their experience.

2. Literature review

The vast majority of the literature used in this study is peer-reviewed and published in academic journals. The literature was found through Oria and Web of Science, using combinations of search terms such as 'adolescent', 'menstruation', 'hygiene', 'MHM', 'India', 'development' and 'health'. Some resources published by the Indian government have also been used, these were found on the Government of India's websites.

Menstrual health is gaining attention globally as a development issue. Studies have found that adolescent girls in LMICs lack adequate knowledge about menstruation and menstrual hygiene prior to menarche (Sommer et al., 2016; Mahon & Fernandes, 2010). Shame and stigma are also commonly connected to the issue. This lack of information, combined with the taboo surrounding menstruation leads to unhygienic practices, school absenteeism and other social restrictions (Chandra-Mouli & Patel, 2017; Sommer, Hirsch, Nathanson & Parker, 2015). Other common themes found in relation to menstrual health are lack of access to proper and private sanitation facilities, clean water and access to hygienic absorbents, such as sanitary pads (Sommer & Sahin, 2013). Menstrual health is a multifaceted problem, which can have both social and health related consequences for adolescent girls in LMICs.

In India much of the research on MHM literature focuses on hygiene practices, such as the type of absorbent used, how often it is changed and washing habits and, dysmenorrhoea and menstrual morbidity, school absenteeism, pre-menarche awareness of menstruation, the main sources of information and restrictions faced during menstruation (van Eijk et al., 2016; Sumpter & Torondel, 2013). Findings vary across urban and rural populations, caste and socioeconomic status and state lines. In Uttarakhand it was found that 27.6% of urban and 48.1% rural adolescent girls used sanitary pads (Juyal et al., 2014). Among rural adolescent girls residing in tribal and social welfare hostels in Andhra Pradesh sanitary pad use was found to be 78.5% (Udayar, Kruthika & Devi, 2016). Mothers emerged as the main source of information in many of the studies, followed by friends and siblings, yet many reported being unaware of menstruation prior to menarche (Akanksha, Aswar, Domple, Doibale & Barure, 2014; Verma, Ahmad & Srivastava, 2013). The majority of adolescent girls faced some restrictions during menstruation, according to several studies. The most common restriction was exclusion from religious activities, but some studies also found that girls slept in a separate place during menstruation, could not enter the kitchen or touch male family members (Akanksha et al., 2014; Verma et al., 2013). Restrictions also vary depending on religious, caste and socioeconomic background (Garg & Anand, 2015; Kumar & Srivastava, 2011). Though studies across India have found varying results regarding MHM and its

consequence, some trends emerge. Mothers being the main sources of information for the majority of girls suggests that this may be a neglected issue in school. This could be part of a system that reproduces misconceptions and taboos, and consequently poor hygienic practices.

It is clear that MHM has long been a problem in India, and in 2010 the Government of India introduced the Union Health and Family Scheme. Prior to the introduction of the scheme sanitary pad use was very rare, and the overwhelming majority of menstruating women used cloths, especially in rural areas. The scheme provides highly subsidised sanitary pads to adolescent girls, both above and below the poverty line, in rural areas of the country (Garget al., 2012). This addresses the availability, accessibility and affordability, but fails to address acceptability, appropriateness and awareness, which are also central to sustainability. It also shows that sanitary pad use is the main policy for promoting better menstrual hygiene, without providing health education. Pretest-posttest studies have found increased use of sanitary pads and reusable falafil pads, and a drastic decrease in use of old cloth after the introduction of the scheme (Shah et al., 2013). Preference for sanitary pads has been found to be high among adolescent girls, especially among those who reached menarche after the introduction of the scheme (Verma et al., 2013). This suggests that the scheme has influenced MHM practices. However, as previously discussed, knowledge about menstruation is still found to be lacking across the country.

Some interventions are addressing this, and are mainly focused on education and spreading information to counteract misconceptions and poor MHM practices. Reshmi, Gupta, Kumar and Visengrawala (2014) used an Information Education Communication model targeting women's self help groups through workshops. The intervention saw increased use of sanitary pads, as well as burning as the preferred mode of disposal, but much smaller changes in terms of misconceptions regarding menstruation. Socially entrenched taboos and stigma were found to be difficult to counteract, without a long-term intervention. Another intervention combined a psychosocial resilience curriculum with a health curriculum in schools. The intervention saw significant improvements in both health knowledge and gender equality attitudes, as well as behaviours such as hand washing, menstrual hygiene and health communication, as compared to the control group, which received neither curriculum, and the group that received only the health curriculum (Leventhal et al., 2016). A final intervention employed a structured teaching program in the outpatient department of a medical college in Vellore, and again found a significant increase in knowledge about menstruation in the experimental group (Dhanalakshmi, 2015). These interventions all used different approaches for increasing knowledge and changing behaviours, and had positive, but varying results.

Some criticism of the current MHM policy of increasing the use of disposable sanitary pads also exist. One issue that arrises is that of disposal. No official data on menstrual waste in India exists, but estimates based on data that 12% of menstruating women use sanitary pads suggest as much as 9000 tonnes of soiled sanitary pads are produced per month (Garikipati & Boudot, 2017). This will only increase as more women choose to use sanitary pads, and could become a growing problem, both environmentally and practically. Garikipati and Boudot (2017) also found that a majority of women would prefer to use safe reusable cloth, such as falafil pads. This also requires safe sanitation facilities and adequate knowledge of cleaning the pads to be a viable option. Lahiri-Dutt (2014) presents a feminist critique of the medicalisation of menstruation, addressing perceptions of uncleanliness, the economic function of pushing sanitary pads on an untapped market and the discrediting of traditional, cultural knowledge passed down informally through mothers.

It is clear that the current literature and the policies still have some gaps that need to be filled. Overwhelmingly the literature focuses on poor MHM and the negative social consequences and health outcomes thereof. A preference for disposable sanitary pads as the most hygienic absorbent choice is also prevalent in the current literature. The studies discussed here fail to look for potential resources within the community, or at the lived experiences of menstruation, from the perspective of adolescent girls. It is vital to seek further insight into the entirety of the menstruation experience, to be able to understand the multifaceted and complex problems surrounding menstruation and MHM for adolescent girls in India, and to begin to develop solutions to these problems. To understand how to effectively improve the situation, an understanding of the different aspects of the experience and how they influence one another is necessary.

3. Theoretical framework

Integral theory is the framework used in this study to understand the experiences of adolescent girls around menstruation, seeking to develop a holistic picture of those experiences, including interior and exterior, and individual and collective perspectives. An integral theory approach to health promotion strives to be multidimensional, complex and evidence-based, mapping the entirety of an experience, or a reality (Lundy, 2010). As such, integral theory can be described as a meta-theory drawing on multiple other theories from many fields, and in turn being applied in a number of disciplines. Health promotion is one sector in which integral theory can offer insight, through it’s comprehensive approach to both research and practice. The map provided by integral theory works as an analytical tool for determinants of health and their “interconnected influences and outcomes” (Lundy, 2010, p. 50).

Wilber's AQAL (All Quadrants, All Levels) Model is central to integral theory, *quadrants* and *levels* being two of the five basic elements included in Wilber's integral approach (Esbjörn-Hargens, 2010). Integral theory also looks at *lines, states* and *types*. Lines can also be referred to as multiple intelligences, and looks at different aspects of individual or group development. States refer to occurrences or happenings of varying length, and can be applied to all the quadrants. Types arise regardless of development level, and refers to for example personality type, gender type, religious system or body type (Esbjörn-Hargens, 2010). These aspects all work together to make up what is a vast and complex theoretical approach. This study focuses on, and applies the AQAL model, specifically the four quadrants as its tool for analysis.

The AQAL model looks at the four quadrants individually, acknowledging them as distinct perspectives on experience, which are simultaneously interconnected. Ken Wilber refers to the model as holonic, a holon being "a whole that is part of other wholes" (Wilber, 2001, p. 53). Thus each of the four quadrants is a whole, which is part of the larger whole of reality, and looking at all those holons gives a greater insight into an experience. In the context of health promotion it can give insight into complex interrelationships between individuals, communities and organisations, as well as determinants of health (Lundy, 2010).

Figure 1. AQAL model (Lundy, 2010)

Individual interior (subjective) thoughts, feelings, perceptions, values, beliefs, motivations, moral sense, sense of spiritual connectedness	**Individual exterior (objective)** material body/brain, physical health/wellbeing, activities, behaviours, tools, techniques, material resources
Collective interior (intersubjective) shared attitudes, values, beliefs, meanings, worldview, collective norms and ethics, relationships, cultural background	**Collective exterior (interobjective)** natural environment, built environments, human systems, government/community institutions

This model does not look at just one aspect of an experience, but seeks to analyse the experience as a whole. The upper left quadrant describes the individual interior or subjective experience, looking at an individual's mind-consciousness. The lower left quadrant looks at shared patterns of consciousness within a community or culture. The upper right quadrant looks objectively at the physical body and individual behaviours. Finally the lower right quadrant looks social systems and structures, both natural and man made (Wilber, 2001). These four quadrants are all linked, and all interact in a number of ways. The systems within which we live affect our cultures, actions and thoughts. In turn individuals and communities make up and develop those systems. Our shared cultures have a profound effect on our beliefs and values, as well as our behaviours and health. But again those cultures exist within systems made up of individuals, and thus all the

quadrants are closely linked and interrelated. The quadrants interact, and influences are exerted in all directions in a complex web of connections, and they can be said to tetra-mesh (Wilber, 2001). It is necessary to understand these quadrants and their interactions, both to form a picture of an experience, and to understand how change can best be enacted.

The "All Levels" part of the model refers to stages of human development, moving from self-centric, to ethnocentric, socio-centric, world-centric, planet-centric and finally to kosmos-centric (Esbjörn-Hargens, 2010). These levels describe a widening of focus from the individual, through the group, to the country, the world, all beings and finally all of reality. The levels of development exist within each of the quadrants. Understanding the levels of development is important to health promotion practices in that it can aid in developing strategies and directing efforts in the most effective way. However, for the purpose of this study I will not analyse the levels of development due to the limited size of the 30 credit thesis, and the complex nature of the topic.

For the purpose of this project the focus will be on the four quadrants as an analytical tool for gaining insight into and understanding the experiences girls have of menstruation and menstrual health. The four quadrants shed light on different aspects of the menstruation experience. The collective exterior gives insight into the resources available to girls. The collective interior is helpful in understanding the social wellbeing of girls within the community. The individual exterior looks at behaviours, strategies and bodily issues related to menstruation and puberty. Finally, the individual interior quadrant provides insight into the emotional wellbeing of menstruating girls. It is necessary to acknowledge that this is only one small part of the very complex integral theory, but due to the limitations of a 30 credit master's thesis it is impossible to go in-depth into the entirety of integral theory. The quadrants have been selected due to their strengths as analytical tools for understanding the multifaceted and interconnected issues around experiences of menstruation.

4. Objective

As our knowledge of the consequences, both social and health related, of poor MHM develops, there is still a failure within the development and health promotion sectors to address the need for a more holistic understanding of the menstrual experience. Thus, the objective of this study is to understand the experiences of adolescent girls in school in Sri Puram, Tamil Nadu surrounding their menstruation, and how they cope with MHM.

4.1 Research questions

- What are the resources available to adolescent girls in managing their menstrual health?
- How do menstruating girls use the resources available to them in order to manage menstruation?
- What are strategies used by adolescent girls to manage their menstrual health?
- How does menstruation affect adolescent girls' emotional and social wellbeing?

5. Methodology

Qualitative research seeks to understand behaviours, interactions and phenomena in their natural setting, and according to the meaning that participants bring to them (Denzin & Lincoln, 2005). It can be interpretative and transformative, and the researcher is the main research tool. A number of data collection methods can be used, such as interviews, focus group discussions, observations and photography, to answer the questions of how, why and what. Qualitative research is an excellent methodology when seeking to gain insight into the lived experiences of the participants. As this study investigates adolescent girls' menstrual experiences, a qualitative approach is best suited to developing a deeper understanding of this complex issue.

For this qualitative research project an integral theory approach was used. The aim was to understand the experiences girls have around menstruation and menstrual hygiene management through the four quadrants. The four quadrants examine individual interior and exterior, as well as collective interior and exterior, and the interactions between the four, and thus is a useful tool in understanding both subjective and objective experiences. Through a better understanding of these experiences potential resources and strategies can be identified, as well as shedding light on challenges girls face. This can in turn inform the development of tools for sustainable change from within.

5.1 Study site

This research project is part of a larger community-based study on WASH taking place in Sri Puram. The study was conducted in Thirumalaikodi, a village in the district of Vellore, Tamil Nadu in India. Participants from one school that is connected to Sri Puram (The Golden Temple) and Sri Narayani Peedam charitable trust took part in the study. Some community members from outside of the school also participated. Sri Puram provides a unique spiritual and cultural setting. The temple plays a central part in community life, and this also extends to the school. In addition, it is important to note that the school chosen for this study is a private school, with better facilities and more

resources than most local government schools. The student population at the school include both self-financed students and scholarship students.

5.2 Participants and recruitment

Purposive sampling was used to select participants for the study. As part of the larger study, the principal and teachers at the selected school identified the students who were invited to participate. For the larger SHINE photovoice project students with a high level of English from grades six, seven, eight and nine were selected for participation. The individual students, and their guardians, were invited to participate, and gave informed consent (see appendix G). For the MHM sub-study the oldest female students were selected and invited to participate, with the assistance of a female teacher. The principal of the school is also a gatekeeper, and has approved the participation of students from these grades. The specific inclusion criteria for this study were 1) school attendance 2) female students 3) having reached menarche 4) older than 15 years of age. This research project is part of a 30 credit master's thesis, and due to this a limited number of girls were invited to participate. Limitations on time and word count are also the reasons male students were not included.

In addition to the students, nine female teachers were selected for participation in a focus group discussion. Two health care professionals, one community health expert, one OBGYN expert, and one mother and community member were selected to participate in interviews. Purposive sampling was again used, to gain insight into the social and cultural context, as well as to explore the perspectives of both medical experts and an older generation within the community. The participants were all invited to participate and gave written informed consent. The mother and community member was selected with the help of a gatekeeper at the temple. The health care professionals were selected with the help of a gatekeeper at the local nursing college. The female teachers were selected with the help of the principal of the school.

5.3 Methods

The research was conducted in three stages. The first stage consisted of informal conversations with stakeholders, as well as one formal semi-structured individual interview with a mother with insight into the community (see appendix A). The objective of this stage was to gain insight into possible cultural sensitivities regarding the research topic, and to discover what language would be appropriate to use going forward. The second stage consisted of one group interview with health care workers (see appendix B), and one focus group discussion with female

teachers (see Appendix C), with the objective of understanding the social and cultural context, and gaining insight into the perspectives of members of the community who act both as sources of information and support for adolescent girls. The third stage focused on the experiences of the female students, through one photovoice project and two in-depth individual interviews with the girls (see Appendix D).

Table 1. Stages of research

Research Activity	Stage1	Stage 2	Stage 3
Gain understanding of cultural appropriateness of research content	● IDI with mother/community member ● Informal conversations with stakeholders		
Learn about practices and cultural norms from local experts, to better understand the context		● Group interview - health care workers ● FGD - female teachers	
Investigate the experience of menstruating girls			● Photovoice - female students ● IDIs - female students

It was decided that a group interview was the most appropriate method for interviewing the two health care professionals. This was to minimise the burden on the participant, to avoid taking up too much of their time. The reason for choosing a focus group for the teachers were similar, the FGD was an efficient way of accessing multiple perspectives in a short amount of time. The FGD also allowed me to explore, and gain insight into social norms and common beliefs and practices around menstruation and MHM (Skovdal, 2015). This was important to developing a holistic picture of the menstruation experience. The inclusion of teachers and health experts in the FGD and group interview also provided inside into the structural aspects of the experience. The group interview, FGD and IDI with a mother worked to triangulate the results of the photovoice and IDIs with the adolescent girls, provide insight into different perspectives on the experience and to develop understanding of the wider context of the setting.

Photovoice is a participatory action research data collection method, that uses photographs taken by participants and accompanying captions or interviews to gain insight into experiences, phenomena or behaviours (Wang, Yi, Tao & Caravano, 1998). It was used to capture the experiences and perceptions of the girls surrounding menstruation, menstrual health and menstrual hygiene management. The photovoice included three female students from the school in Sri Puram. An initial workshop was held, where the participants were invited to develop a research question for the photo assignment based on the research question of this study. The participants first

brainstormed freely words they associated with the study research question (See Appendix E). I then worked with the participants to organise those words into topics, which they may wish to investigate. Based on these topics the participants came up with a number of suggested research questions, one of which was selected through voting. The question selected for the photo assignment was "the age of reaching puberty, and what changes for a girl?". The participants were then given three days to go out and photograph the things they felt were relevant to answering this question. After the three days a second photovoice session was held. Each participant viewed their own photos with me, briefly explaining each, before selecting one to share with the group. Each participant then presented their chosen photo to the group, briefly describing the photo and why they selected it. The group then voted to select one photo to discuss in more detail. This photo was discussed using the SHOWED method. These images and the discussion of the SHOWED questions form the basis for analysis (Skovdal, 2015; Wilson, Dasho, Martin, Wallerstein, Wang & Minkler, 2007). The process aimed to be participatory throughout, and the participants were instrumental to shaping the research process and outcome.

SHOWED questions for Photovoice
What do you **S**ee here?
What's really **H**appening here?
How does this relate to **O**ur lives?
Why does this problem, concern, or strength exist?
How can this image **E**ducate the community, policy makers, others?
What can we **D**o about it?

The goal was for the participants to feel ownership throughout the research process, and that the photovoice project itself was a cooperative learning experience. Through allowing for reflections on their own experiences, both strengths and needs emerged, and the information gathered could act as a catalyst for change (Wang & Burris, 1997). Through the photovoice the participants were be able to capture images and share information from settings that were not available to me as a researcher. Both the process and the outcome is hoped to be beneficial to the participants and the community.

In addition semi-structured in-depth individual interviews with two of the girls were used to supplement the findings from the photovoice. The initial plan was to conduct the interviews after the completion of the photovoice, however, due to time constraints one interview was conducted before the first photovoice session and one interview was conducted between the first and second photovoice sessions. There may have been both benefits and disadvantages to changing the order. Conducting the interviews before the completion of the photovoice meant the girls had already started reflecting on the topic, and gave them time to develop their ideas and opinions on the topic. It also allowed the participants to feel more comfortable discussing the topic as a group in the photovoice sessions. However, by conducting the IDIs first I may have inadvertently influenced the

photovoice process, though care was taken to minimise this. Conducting the IDIs first also made it impossible to follow up on anything that emerged in the photovoice in more detail. Using both photovoice and IDIs still ensured triangulation of the results, as well as provided a greater insight into different aspects of the individual experiences of girls surrounding menstruation, menstrual health and menstrual hygiene management.

I used observations throughout the study, and kept detailed field notes. I did not analyse the field notes, but they functioned as an aid in developing descriptions of the setting and for my own understanding of the context. The field notes also contributed to the development of the research questions and the varying interview guides.

All IDIs, the FGD and the photovoice session were recorded, for which permission was sought and given, transcribed and analysed using thematic network analysis. Though the photographs taken were central to the photovoice process, the discussion around the SHOWED questions formed the basis for analysis for that part of the research, alongside the interviews and FGD. Thematic network analysis provided a structured approach to the analysis (Attride-Stirling, 2001). The transcripts were inductively coded using Atlas.ti. The codes that emerged were defined and refined through revisiting the raw data. The codes were then grouped together based on similarities and patterns, thus forming the basic themes. The development of the basic themes was also a largely inductive process, though the research questions did serve as a guide. The four quadrants of the AQAL model were chosen as the organising themes, and the basic themes were deductively ground into each of the four organising themes. Throughout the process I returned to the data, to ensure that the themes I was developing coincided with what the participants had originally expressed. As seen in Table 2 the AQAL model provided the four organising themes, while the codes and basic themes that emerged inductively can be seen in the first two columns. The research questions guided both the interview process and the analysis, but some of the codes and themes that emerged went beyond the initial scope of the research questions. These have been included as they were important to the participants, and played a role in further shaping the research.

Table 2. Codes, basic themes and organising themes

Codes	Basic themes	Organising themes
Daughter not afraid when attaining menarche Feeling nervous when attaining menarche Girls learn about menstruation after menarche Having knowledge will make girls less afraid Not understanding what is happening at menarche	Emotional reactions at menarche	**Individual interior**
Emotional changes during puberty, feeling irritated Feeling uncomfortable changing napkins in school Feelings of shame/embarrassment Gradually feeling more comfortable with MHM Initially feeling guilty when talking to friends Girls need to feel confident	Feelings around menstruation	
We should be considerate of others when disposing Everyone is responsible for making things better Not using pads creates problems for ourselves, not disposing properly creates problems for others Our duty to keep and dispose of napkins in a good way	Perceived duties and responsibilities	
Changing pads regularly Cleaning genitals Cloth is difficult to maintain, pads are easy Handwashing Improvements in MHM Pads help keep us clean Being unable to change pads regularly Juice helps with stomach pains and energy Sharing napkins with friends	Keeping ourselves healthy	**Individual exterior**
Disrespecting the temple by throwing napkins near wall Open disposal can spread disease Throwing pads in the open Young girls follow advice about disposal, older women do not Keeping our surroundings clean Burning sanitary pads	Keeping our surroundings clean	
Feeling tired, unable to concentrate during menstruation Stomach pain You should tolerate pain as a woman Girls should take rest during menstruation Infections Importance of nutrition to girls during menstruation Girls attain menarche at an earlier age	Physical issues/puberty	
Adolescent girls as sources of information for older women - educating mothers Media as sources of information Get advice from people with more experience Learning through experience Mother as a source of information Peers and sisters as sources of information Same information from many sources Teachers as sources of information	Where we get information about MHM	

<u>Relationships with boys/men:</u> Boys are not helpful to girls regarding menstruation Boys can help girls Challenging to communicate with male staff Not talking to father/brothers about menstruation <u>Communication with women/girls:</u> Easy to talk to friends Easy to talk to mother Girls feel free to talk to teachers (female) Teachers need to be caring, and council students Sharing advice and comforting peers Peers have similar experiences <u>Parents:</u> Parents buy napkins Parents feel happy at menarche Parents do not talk to kids about menstruation	Relationships with those around us	**Collective interior**
Things women should not do during menstruation: go to temple, domestic labour, enter puja room, go near God, touch common areas, touch others, attend festivals Isolating girls/women during menstruation God is pure Older generations reproduce myths/beliefs/practices Culture is changing, disregarding traditions, modern variations on practices Not unclean/negative energy/black mark We should follow our tradition Head-bath is good help during menstruation Natural medicine is good and helpful	Traditional values and practices - In the name of God	
Girls are powerful Girls are strong and brave Girls should be brave to challenge everything Menstruation is a natural thing Girls now act differently than older generations Being curious and adventurous can be dangerous	Girls are powerful	
Science education is for girls and boys Girls should learn about menstruation at a younger age MHM is part of the science curriculum in grades 8 and 9 Awareness programs for girls only in school	Learning about MHM in schools	**Collective exterior**
Handwashing facilities in school Water supply problems Poor sanitation in public schools Good sanitation facilities (private school) Bringing napkins from home (private school) School should provide napkins (private school) Too few toilets in school	Resources available in schools	
Government program to provide napkins Other medications made available in rural areas Easy/local access to napkins	Government efforts toward improved MHM	
Socio-economic status Castes/communities Rural/urban	Social differences	

5.4 Trustworthiness

To ensure the trustworthiness of the findings of this study it is essential to consider the dependability, credibility and transferability. The credibility of the study refers to the accuracy of the findings, as perceived from multiple perspectives including the participants and the reader (Yilmaz, 2013; Anney, 2014). To ensure this I used triangulation of methods and participants. IDIs, FGDs and photovoice were used to ensure the quality of the results, and to best capture the complexity of the participants' experiences (Golafshani, 2003). Different groups of participants were also included to develop a fuller understanding of the situation, and to explore different perspectives. Use multiple methods of data collection and including a variety of participants allowed me to test the credibility of my findings. Similar experiences and issues were described by all the participants, allowing for some subjectivity, suggesting that the results are credible. I have also attempted to develop detailed descriptions of the context, both through observations and interviews. This has been done to ensure an understanding of the specificity of the setting, and thus the findings. Throughout the thesis I have acknowledged the vast variety of menstrual experiences within India, however several of my findings coincide with common themes found across the literature.

Dependability applies to research process, and specifically refers to the selection, justification and application of the data collection methods (Yilmaz, 2013). I designed the research with assistance from both my supervisor at the University of Bergen, and my supervisor at Prokect SHINE, and we took care to ensure that the methods were suitable for the setting and the research questions. I have justified my choices of methods throughout. I have described the methods in detail, and reflected on their strengths and limitations. To further ensure dependability one transcript was co-coded by one of my peers. This was done to check the validity of the codes before themes were developed. As the methods, settings and participants have been described in detail, and the research was conducted in a structured manner transferability is achieved (Yilmaz, 2013). As the research is subjective and focused on lived experiences, details within the results are likely to vary somewhat across populations, but the methods are transferrable and could be used in other settings.

Qualitative research engages with subjective realities, both in the role of the researcher and the participants, and the research methods rely on social interactions between researcher and participant (Davies & Dodd, 2002). To ensure rigour in the research process I worked to develop a comfortable environment for the interviews and photovoice sessions. I was also able to establish rapport with the participants in meeting prior to the interviews and FGD, this allowed for comfortable open communication. In the first stage of the research I also sought to develop my own

understanding of the context, the language I should use, and how I should approach the sensitive topic of menstruation with the participants. This was done through informal conversations with gatekeepers, and one semi-structured interview with a community member and mother.

Throughout the research and analysis I have reflected on my own role and my own subjectivities. As a researcher from a Norwegian university I am an outsider, and this could affect my interactions with the participants and the information they chose to share with me. However I did live and work in the community for two months, and was able to build relationships with community members and take part in daily activities through my work with Project SHINE. This allowed me to develop a deeper understanding of the context, and allowed the participants to become familiar with me. However, as a highly educated outsider a power imbalance could have been an obstacle to the participants fully opening up to me about their experiences. Though I have done the utmost to ensure that the findings relayed here reflect the views, perspectives and experiences of the participants it is important to recognise my own subjectivity and the role this could have played in the both the research and analysis process. Care was taken throughout to include the participants in the development of the research process.

5.5 Ethics

Permission to conduct this study was sought from NSD, and the study was approved (see Appendix F). The Project SHINE India study has sought ethical clearance from Regional Committee for Medical and Health Research Ethics (REK) in Norway, the Institutional Ethical Review Board in India, Sri Narayan Hospital and Research Centre, and the Sri Narayan College & School of Nursing.

All qualitative research must consider ethical implications of potential harm to participants and the community. For this study this was addressed in the photovoice, the IDIs, the group interview and the FGD. For the photovoice ethics guidelines were developed, instructing participants to seek written consent for photos in which people are identifiable (this included, but was not limited to full-face photographs). In group settings, a supportive, non-judgemental environment was encouraged, to prevent emotional distress when discussing sensitive topics. Group rules were also established, including the confidentiality of all information shared in the group, use of pseudonyms during discussion, and the option to not answer any questions, leave the room or withdraw from the study at any point. These same principles applied to the interviews and FGD. The IDIs and photovoice sessions with the students were all conducted at the school, in one of the kindergarten classrooms. This classroom was selected as a neutral space within the school. The

classroom also allowed for privacy, as the windows could be shuttered so no-one could look in. The FGD with the teachers was conducted in the same room, I chose to meet with the teachers at the school to minimise the burden on them so they would not have to travel again to meet. The IDI with the mother was conducted in her room, were she felt comfortable and privacy was ensured. The group interview with the health experts took place in their office, again this minimised the burden placed on the participants in terms of time and travel. To further ensure privacy and anonymity, all recordings were transcribed and de-identified. Once transcribed all recordings were deleted. All data is stored on a password protected computer.

Project SHINE India has sought written informed consent from all participating students and their guardians, as well as community stakeholders (see Appendix G). Assent was sought from students and guardians participating in the sub-study, and all participants and their guardians were informed of their 'right to refuse' at any stage of the study. The same informed consent form as that used by Project SHINE India was used when seeking consent from the teachers, health care professionals and stakeholders, to ensure consistency and avoid confusion. The informed consent form contained information about the study and its purpose, the procedures, potential risks and benefits, as well as the right of participants to withdraw without consequences, at any time.

6. Findings

The findings have been divided into four organising themes, each containing three to four basic themes. In this chapter each the individual interior, individual exterior, collective interior and collective exterior will be explored through the basic themes. Each basic theme is presented in one paragraph, and evidenced using 'in vivo' quotes from the interviews, FGD, or the photovoice session. The level of english varies between participants, but I have chosen to use 'in vivo' quotes to ensure the participants own words remain central to the understanding of their experiences. Where the meaning of the quote is unclear I will explain in more detail based on the context of the quote. Some quotes have been edited for length. In the photovoice session one photograph was selected for group discussion. This was a photo of sanitary pads. Additionally, I have chosen to include some of the other photos taken, as they are representative of other themes that emerged in the interviews and FGDs, though those photos were not directly discussed in the photovoice session.

6.1 Individual interior

The first quadrant and organising theme, individual interior, focuses on the emotional wellbeing of adolescent girls. This quadrant encompasses subjective experiences, thoughts, feelings,

motivations and values. Thus this theme provides insight into the individual internal lives of the participants. Three basic themes make up this organising theme: emotional reactions at menarche, feelings around menstruation and perceived duties and responsibilities.

Emotional reactions at menarche

One common issue that emerged in a number of the interviews was the different emotional reactions girls have at menarche, and that whether or not girls learn about menstruation prior to menarche will impact their reaction to their first period. Girls who were informed about menstruation, and thus knew what to expect were unafraid.

> *"I have informed already about this [told her youngest daughter about menstruation], because my elder daughter is there in the house. So that she knows something about this, and when she informed to me I started crying and she was not in fear. Nowadays they are bold, she stayed bold."*
> *Female teacher 3*

This idea of the importance of being prepared especially emerged in the FGD with the teachers, and they discussed at length how being informed affected the emotional reaction at menarche. Conversely, some participants reported feeling unprepared, and not understanding what was happening to them. This resulted in feeling nervous and insecure.

> *"At the time I felt nervous, very nervous, I can't understand whats happening, whats happening, something is going on. I'm very shocked."*
> *Student 2, age 15*

This idea was expressed by several of the participants, both the students and the older participants, such as teachers and health experts. Feelings at menarche were described as mixed, and discomfortable at the sight of the first blood was a reoccurring theme.

Feelings around menstruation

A number of feelings around menstruation and MHM emerged through the study, forming the second basic theme. Several of the adolescent female participants discussed feelings of irritability and anger, related to puberty.

> *"Some emotional things will be changed, they will get so more angry in those periods, that they will be irritated easily."*
> *Student 1, age 15*

Both the student and teacher participants described girls as becoming irritable during menstruation. In relation to menstruation and MHM needs, such as changing pads, feelings of embarrassment, shame, shyness and guilt were also mentioned.

"Definitely they are embarrassed for at least two years, definitely. And they are very very shy to express it also, and they are a little bit embarrassed to ask for napkins also."
Female teacher 1

However, the girls also reported gradually feeling more comfortable and confident as they gained experience and attained information.

"But I don't feel like this when I grow up, I got the experience, and I got the advice of others and I feel ok, but every girls is not like this."
Student 1, age 15

"She knows her confidence, she knows how to talk to others, how to speak with others. How to respect others."
Student 2, age 15

It is clear that feelings surrounding menstruation are complex and changing, and that a number of factors influence the emotional wellbeing of young girls in relation to their experiences of menstruation.

Perceived duties and responsibilities

The third theme that emerged in the individual interior quadrant was feelings of duty and responsibility. This came across especially in the conversations with the adolescent female participants, both in the individual interviews and the photovoice session. The girls discussed feeling responsible not only for their own health, but the health of their communities and the upkeep of their surroundings. These feelings work as motivation for improving certain aspects of MHM, specifically pad disposal.

"If we are not using it [pads], it will create problems only for us. But if we are not disposing it properly it will create problems for others also."
Student 1, age 15

The girls reflected on pad use, and the effect on their own health, but were also able to reflect on the possible detrimental environmental effects of improper pad disposal. They identified a lack of concern for the surroundings as one of the main consequences of poor MHM.

6.2 Individual exterior

The second organising theme and quadrant is the individual exterior, which focuses on the body, actions, behaviour and physical health. Thus this theme encompasses the objective strategies used by girls in managing their menstrual health, and how they use the resources available to them. This includes actions and behaviours towards keeping themselves healthy, keeping their surroundings clean, as well as physical experiences related to menstruation and puberty.

Keeping ourselves healthy

One theme that emerged throughout the study was the importance of keeping ourselves healthy. The participants also related menstrual health to cleanliness. Sanitary pads were repeatedly brought up as an important tool in maintaining good personal hygiene, and was also used as an example of the changing hygiene practices in India. Previously using cloth or cotton as a reusable absorbent was common, but the participants argued that girls today typically prefer disposable sanitary pads.

> "*Actually in olden days they had. At first my parents taught me how, using the cloths, cotton cloths. My mother used to fold the cotton cloths, as old sarees, she would keep it safe place, she would make us to use only that cotton cloths, how to use, everything."*
> *Teacher 2*

It was suggested that reusable cloth is more difficult to maintain, and that it could lead to problems with cleanliness and health. It was clear that disposable napkins were the preferred absorbent, and that this was perceived as a useful tool for maintaining health.

> "*Keeping and using napkins is very important. We should keep it properly, and maintain it. change properly."*
> *Student 3, age 15*

Photo selected for photovoice discussion

This behaviour is part of part of a change in hygiene practices in India, which came up in many of the conversations. The common perception was that overall hygiene practices are improving, especially for younger, educated girls.

> "*Now its far better than earlier years. Years before, as I told you earlier, they used to use only cloth, they washed the cloth and reused it. But now that is better. Now children are using sanitary napkins, all being required is education."*
> *Mother, age 52*

The importance of nutrition, as part of maintaining a healthy body during menstruation also emerged, and several participants discussed this. Food and drinks were suggested as a resource that could aid in preventing stomach pain, as well as being important for health and energy levels generally.

> "*When I drink that fresh juices, I felt ok with my stomach aches. And I feel better than the last periods. My mother, she will buy some fruits for me, and she will make juice in the home itself… And when making apple juice she will put some ice cubes, milk in it, so I'll gain some calcium, and the juice, the ingredients when we are adding the flavour will be more."*
> *Student 1, age 15*

Photo of local fruits eaten to enhance health during menstruation

The teachers also discussed eating junk food or avoiding eating as trends they observe in some of the adolescent students, that could have negative health impacts. Though these are likely behaviours that do exist in the student population in general, this did not emerge in the interviews with the student participants. The participants were conscious of the importance of nutrition and suggested that eating healthily was an important part of staying healthy during menstruation.

Keeping our surroundings clean

It became clear throughout the study that MHM is not only a concern for personal health, but also for the health of the community and the environment. This relates especially to problems

around lack of sanitary pad disposal structures. Disposal behaviours were discussed by both the adolescent female participants and the teachers. Both groups discussed the importance of safe, clean disposal. However, in the conversations it also emerged that behaviour related to disposal is problematic for many.

> *"But most of the girls are not following it [proper disposal practice], they are just throwing the napkins as such in the streets… it spreads diseases over so many people, from the child to the grown ups, so we should dispose it correctly… We should role the napkins in the paper and put it in a cover… And most of our teachers advised about it… The childs are doing it properly, but the grown up women are not disposing it properly… Near my home there is a temple, the temple was, they have just thrown near the wall itself… This, I felt so horrible"*
> *Student 1, age 15*

The adolescent female participants argued that this was a problem created largely by older women, as younger girls better understood the issue, and acted accordingly. The teachers did not make this distinction between groups, and only discussed the problematic behaviour of open disposal in general terms.

> *"Disposal is not in a good way, on the road side we can see so many napkins, throwing aside, and we are walking on them itself. So its very obvious to see that."*
> *Teacher 1*

It is clear that this disposal is a large issue within MHM in the community, which can have consequences beyond individual health, and which concerns both older and younger generations.

Physical issues/puberty related changes

The final theme that emerged in the individual exterior quadrant relates to the physical body, changes that occur during puberty, and associated pains and discomforts. This was especially evident in the interviews with the adolescent female participants, where all described experiencing stomach pain, tiredness and headaches during menstruation and in relation to physical changes during puberty.

> *"I felt my headache, stomach ache, these disturb me. I can't able to learn, I can't able to do my regular works properly, and I can't able to concentrate in the classrooms."*
> *Student 1, age 15*

These bodily issues were also described as affecting their ability to concentrate in school, and participants emphasised the need for rest during this time. The teachers also described their female students complaining of stomach pains and other discomforts, and discussed this both as a real issue, but also as potential tool girl's use to get out of school work.

"We have body pain, stomach ache that is very difficult to tolerate. But in my home they say, you should not say it out, if you have stomach pain also you should not say it out… You should tolerate this because you should, you are a woman, you should tolerate this."
Student 2, age 15

One student participant also described these physical afflictions as something girls and women should tolerate without complaint, as it is a natural part of being a woman. She highlighted that physical discomfort and pain is a central part of the menstruation experience for adolescent girls, and can be challenging to manage in daily life.

6.3 Collective interior

The theme collective interior contains collective norms, values, traditions and relationships. This is the intersubjective quadrant, and captures shared experiences within a community. This includes where girls get information about MHM, their relationships with the people around them, and the changing role of traditions and practices, often rooted in a relationship with God.

Where we get information about MHM

Throughout the study it became clear that girls access information about MHM from a number of sources, including mothers, peers, teachers and different media. It also emerged that they receive similar information and advice from multiple sources. Mothers were most commonly reported as the first, and main source of information. Several of the teachers also reported discussing menstruation with their own daughters when they started puberty.

"I tell everything to my mother about the periods, because she knows more about it than me. So when I tell this she will be giving some more advices, how we should be. So I will tell everything to my mother."
Student 1, age 15

Peers were also brought up as important sources of information, sharing experiences and solving problems together was mentioned by several of the girls as helpful in dealing with their menstruation.

"It helps because my mother knows about it very well, and my friends have some experience about it so when I tell something about my problems they will give something to to solve this problem. So I tell this. It is helpful for me."
Student 1, age 15

One student mentioned that peers of the same age might not be a helpful source of information, but that those who are older and have more experience had more advice to offer.

"Not when talking to the same age. I would like to get advices who got more experiences than me. So it will be so helpful for me. When I am asking the advices from the same age

group I'll get the same information again and again, but when I'm getting information who got more experience than me I'll get information. And new informations, new habits, to change me."
Student 1, age 15

One important point that came up both in discussion with the teachers and the students was the fact that the girls are receiving the same information and advice from multiple sources, and that this has a reinforcing effect.

"*Because the same advice they will be hearing from different people, so I think they will be following it, I hope they will be following it. But I'm not sure with it. Most of the people gave this advice, the teachers, my mother, and my aunties gave this advice to me."*
Student 1, age 15

Though media, such as the internet, books and advertisements were mentioned, it appeared that the most important sources of information were other females; teachers, mothers and friends. The girls also discussed the importance of adolescent females sharing what they learn in school with older women, such as their mothers. This point was also brought up by the health experts. As mothers act as the most important source of information, it is important that the information they share is helpful to the younger girls, and avoid reproduction of negative practices.

"And for this we have to educate the mothers first. They have to understand that they should not follow all these practises, which is not necessary. Certain good procedures are there, like taking bath, all those are required, because of hygiene they practice that. That can be followed. But what is not required, they should not follow."
OBGYN expert

"And the students they should say their parents, especially their mothers, when they are doing, when the mother is not following, the child should advice them. "Mom, you should not do like this"[talking about disposal practices]."
Student 2, age 15

Relationships with those around us

As the main sources of information for adolescent girls are the people around them, their relationships to those people are important to understanding their experiences around menstruation. The first thing that emerged from the girls was that they generally found it easy to talk to their mothers, friends and female teachers. These relationships were described as supportive. The teachers also expressed the importance of their role in relation to adolescent girls, and how they should treat them with care, and provide support.

"And girls are, feel free to ask me all their doubts and I am clearing everything. And they'll feel, even when I'm in the staff room also, they'll come and contact and they'll ask something about all those things. Even we'll teach about how it is happening, for what

reason it is happening. And even, we can say, even 11 years old child also. And I teach, I used to teach my daughter also, she knows what is going to happen."
Science teacher

One student expressed initially feeling guilty when discussing menstruation with her peers, but that with time she felt more comfortable.

"To my mother it was easy for me, but to my friends at the first time when I am talking about this I felt somewhat guilty, but after that it is ok for me. It was easy for me to talk to my friends about it. But still to my sister I feel that guiltiness."
Student 1, age 15

Relationships to men and boys were described as more challenging, this included male relatives and teachers, and emerged both in conversations with the students and the teachers. None of the girls reported discussing MHM with their fathers or brothers, and found it uncomfortable to relate to male teachers regarding their needs during menstruation. However, it was also mentioned that male relatives offered support in terms of buying sanitary napkins.

"No, its too scary to talk to my father, I will just talk to my mother. But sometimes my mother will tell to my father about it. But directly I will not tell this to my father."
Student 1, age 15

"We can't able to change it frequently so it is very tough to come out of the class, to get the permission of the teacher if any male teacher is handling the class, we can't able to explain. So it is tough."
Student 3, age 15

One student mentioned that boys could play a more active role in supporting and comforting girls during their periods, but the majority of the participants felt that women and girls play the most important role in supporting girls with their needs during menstruation.

"Boys can also, can know about this [menstruation]… They should know, somewhat happens, we should help…"
Student 2, age 15

In conversations with the older participants (teachers and the mother) it emerged that there is a societal taboo that prevents girls from discussing menstruation openly with their parents, and it was suggested that girls discussed more openly with their peers.

"See, in our country, I already told this, they won't be more open to the family. And they are maybe more of shyness, towards the father and of course, the male characters, and the mother also."
Teacher 1

Thus relationships both provide support and challenges for the girls. Some open communication exists, and this is an important part of the support system for girls, yet relationships with the male members of the community are challenging.

Traditional values and practices - In the name of God

One large part of the collective interior aspect of the menstruation experience is the role of traditional values and practices and the relationship to the divine. The health experts, teachers and the mother described strict traditional practices of ritual isolation at menarche, as well as other restrictions traditionally imposed during menstruation. It was also specified that these strict practices are no longer common, though they may be practiced in certain communities.

> *"A lot of myths. Like isolating the girl when she's menstruating, at menarche they used to isolate the girl for at least a week, depends. And they would give her separate utensils, vessels and cloths, everything will be separate and she will be in a separate room. She should not touch any area, commonly used area. She should not enter into the temple. And to the puja[2] rooms, even the festivals. During the festival times she should not come."*
> *OBGYN expert*

Photo of puja room in the home, where menstruating girls/women should not enter

Both the adolescent and older female participants described a change in these practices, with some aspects remaining important such as not going to temple, or entering the puja room during menstruation. Student 1 even argued that many have now moved even further from traditional practices, disregarding this rule and going to the temple during menstruation.

> *"I said about the tradition, according to the tradition for first three days we won't move into temples, or near the god… But now in the trend, present trend, in the first days they are going into the temple, they are going to near to the God. We should give importance to our traditions, we came from it…We should not ignore our tradition and culture."*
> *Student 1, age 15*

[2] Acts and rituals of devotion or worship

The restrictions on entering temple were explained in terms of the purity of God and the impurity of menstruation by one student participant.

> *"We should not get this, kumkum[3], because God is very pure, and at that time we are somewhat, germs and we are not clean, of course, so we should not go near God. We should not keep kumkum, we cannot go to temples. I think."*
> *Student 2, age 15*

The mother explained that it is not the menstruating woman that is impure, and that the restriction does not mean God does not love you, but that the menstrual blood is a pollutant, and this is why women should not enter temple while bleeding. These practices were also described by the students as being passed down from one generation to the next through mothers.

> *"My mother would advice me, you should not go to this temple… you should not participate in the activities according to this, the wisdom, the God, you should not participate in anything. So I'll obey it. Because it is through our tradition. So generation generation they are following, why we should ignore it? I do follow it. But most of them are not following it, according to the trend. They are just ignoring, what is the value of the tradition? So when I, when I am getting this information I feel bad."*
> *Student 1, age 15*

The students also discussed the importance of these traditional values and practices, the need to preserve them, and the ways in which they can be helpful and provide support. This can be seen not only in their relationship with the divine, but also in the application of other practices such as traditional medicine.

Photo of turmeric used in religious rituals

> *"In our tradition we have so many medicines from the plants. We are just taking from the plants and we are using it, but when we are using in tablets, it gives more side effects, we*

[3] Kumkum is a red pigment made from turmeric used to mark the 'third eye' chakra (centre of the forehead)

are so afraid of the tablets, to use what side effect it will be causing us. But when we are using from the natural things that is said by generations, it is very useful, there is no side effects."
Student 1, age 15

This is also connected with a scepticism towards western medicine, and treating symptoms related to menstruation with pharmaceuticals, expressed by the students. Traditional values and practices, and the connection to God are complex, and made even more complex as evidenced by the changes and developments seen in these values and practices.

Girls are powerful

One final collective norm that emerged among the patricians is how powerful girls are, and the importance of this in managing their menstruations, and supporting one another. Words such as brave, bold, curious and adventurous were used to describe the current generation of adolescent girls, and how they approach life, puberty and menstruation. This was also differentiated from older generations, and their behaviour.

"My mother's best advice, she taught me. My mother always used to say, if you are a girl you should be very strong than a boy, she used to say. Very brave and and strong, better than boys… you should be very bold… Girls are better. My mother often used to say."
Student 2, age 15

"I think girls. I think the boys can learn just the information, but I want to know the girls to be. They (girls) are really powerful, only girls, they are powerful individuals."
Student 1, age 15

This idea was also connected to the changing role of women in society in general, for example that women working outside the home plays a part in changing the perceptions of women, how they act, and what they can do.

"According to the generation its changing, now already. Olden days there is nothing, nowadays, they are saying only you should stay at home, nowadays every woman is working, then how can they stay only in rooms? They have their own job. Nowadays they are not caring. Just like, they are going."
Student 2, age 15

The power of girls and women was discussed by both the students and the teachers, and it is evident that women and girls recognise the importance of this power, and the role they can play in supporting each.

6.4 Collective exterior

The final quadrant and organising theme, the collective exterior encompasses the systems around us, our physical environment, institutions and structures. The collective exterior in this study

especially looks at the resources, both physical and educational, available to girls in managing their menstruation. The importance of specific government efforts towards MHM also emerged as an important factor in the collective exterior. Finally it became evident that structural and social differences within India play a part in both the experiences and health outcomes related to menstruation for adolescent girls.

Learning about MHM in schools

The educational resources connected to learning about MHM in school were a central theme within the collective exterior quadrant. This was discussed by all the participants. The teachers explained that menstruation is part of the science curriculum and is taught to all students in grade 8 and 9. This part of the education on menstruation is given to boys and girls together. This was confirmed by the student participants, who also argued that it was important for boys to learn about and understand menstruation.

> *"So its given in grade 8 and grade 9, its just about the hormones, what is secreted, hormones like, oestrogen, progesterone, those hormones and how its secreted, and what are the benefits, and how menstrual cycle takes place, phase 1, phase 2, those phases And what are the, pregnancy, and the structure of ovary, uterus, everything they have, they have male organs also. Male organ system. Both reproductive organs are given in grade 9."*
> *Science teacher*

> *"Yes, boys and girls learn about it together. This is a coed school, there is no separation."*
> *Student 2, age 15*

Teachers and students also described parts of the education given to girls only. Separate meetings on appropriate hygiene management were mentioned, along with programs provided by outside actors, such as pad companies.

> *"Even we have to teach, how to use napkins and at times, we'll have only the female children inside the classrooms and we'll send the boys outside, and I'll say how to use napkin, how to dispose, and within four hours we have to use, all those things I used to say. And some people they follow also, and they won't use cloth, all those things."*
> *Teacher 3*

> *"In school many programs are conducted for it. Last week also we had a program from Whisper company. They came and they are saying how to use napkins, they have a panel like how to use it in our, what to say, our cloth, in our underwear. And they taught what are in napkin, how napkin, how the blood is absorbed, they taught me that…And we should keep ourselves clean and using napkin, throwing it, should be very, rolling in paper, somewhat covering, for those who clean…"*
> *Student 2, age 15*

The students also discussed the need for menstruation education at an earlier age. As menstruation is currently part of the curriculum in grades 8 and 9, education comes after menarche for many

girls. One student argued that some information should be given to girls in grade 5 or 6, to ensure that girls are better informed when they attain menarche.

> *"The schooling, in fifth we should talk only for girls about this. Not younger, five to six (grade). Now we learn about it in 8. At 8 all girls first getting, but fifth, one or two are getting (periods), so that they can know about it."*
> *Student 2, age 15*

Menstruation being part of the curriculum means that girls and boys are given a scientific understanding of menstruation and the female reproductive system. Hygiene specific education is also given to girls separately, both by teachers and other information providers. However, the students did feel it could be beneficial to start this education at an earlier age.

Resources available in schools

Educational resources are not the only resources available in schools, and the physical resources provided in terms of sanitation facilities are also an important part of the menstruation experience. The students explained that the school had sanitary pads available, but that students typically buy and bring their own, and only use the pads provided by the school in emergencies.

> *"We have (napkins available at school). But we will be taking it from our home, if we have any emergency we will use the school, they are providing. I think this very very helpful, and very safe."*
> *Student 1, age 15*

Students and teachers also described good sanitation facilities, with toilets that provide privacy, multiple hand washing facilities (no soap is provided) and dustbins in all the girl's toilets, as well as the teachers' toilets.

> *"We gave separate dustbin in girls bathroom, as well as in staff room. We are using you know, we too have a separate dustbin for that, and we have a (inaudible) to dispose that. We have precautions in school. I don't know about the other public places. In government schools we don't have this type of precautions."*
> *Teacher 6*

Generally staff and students felt the sanitation facilities at the school were good, though one student mentioned that the number of toilets meant you sometimes had to wait in line, which could be uncomfortable during menstruation. The health experts described big disparities between private and public schools in terms of sanitation facilities, mentioning challenges such as water supply and privacy, which in turn can lead to problems maintaining good MHM.

> *"Sanitation facilities in government schools, they don't have adequate sanitation facilities to tell the truth. They have latrine facilities. But the water supply is a problem, and most of the children they use open open urination. That is one of biggest problem. Because of this problem, they don't even change the sanitary napkin. Morning they take it. We tell them to*

change within six hours once. Sometimes they may even prolong for a day. No privacy, and there is no water supply in the toilets. So because of that they can't be changing the pads."
Community health expert

As this study focused on the experiences of girls in one private school, no first hand accounts of the facilities in government schools were given. Still it is clear that the sanitation facilities available in schools shapes the menstruation experience of adolescent girls, as they spend much of their time in school, and it is also safe to assume that facilities vary among schools.

Government efforts toward improved MHM

The experiences of menstruation are also influenced by government efforts toward MHM. The GOI are implementing programs targeted at rural and disadvantaged girls, both providing free sanitary pads and MHM education. These programs were described by both the health experts and the teachers.

"It's called child development services. Its a small place, where there will be one teacher, one cook. The children will stay there for the whole day, where they will be teaching, some primary level of education they will teach the children, and they will be provided with food. So from morning, 9 till 4 o'clock they will be available. That place the girls can go and get the napkins."
OBGYN expert

It emerged that providing free sanitary pads is central to this government effort, and that pads should be easily and locally available. Where education is not given in schools, or where girls do not attend school MHM education is provided separately.

"The government has taken many initiatives, as national wise they have a health program to educate the adolescent girls regarding menstrual cycles, menstruation, all those things. Even that giving sanitary napkins is under national program."
Community health expert

"Rural area students, also getting from schools. Government schools they are supplying freely for girls."
Teacher 7

There was no mention of government efforts aimed at improving sanitation facilities in the communities targeted by the programs. The student participants also suggested the government could extend the provision of free sanitary pads to include private schools as well, to ensure that all students have equal access to this resource.

Social differences in India

Finally it became evident that social and structural differences in India are part of shaping experiences around menstruation. These differences include socio-economic, rural/urban, and cultural and caste related differences. A variety of social/structural differences and their impacts were discussed by all the participants.

> *"It depends upon the community. So brahmins are following very strictly about this isolating the girls, during puja time, during menstruation time. Still they are following that one. Some of the communities still they are sticking onto these practices."*
> *Community health expert*

Certain communities follow different or stricter practices than the general population, based on religious or cultural beliefs. This in term impacts the experiences girls from those communities have around menstruation. Differences in habitation, in terms of urban or rural dwelling, also influences the menstruation experience, and could potentially also affect health outcomes and education access.

Photo of the toilet in a participant's home

> *"Health is good. It depends upon the family they came from. Because it is a rural area family the health is different than a city oriented girl."*
> *Teacher 2*

The adolescent female participants were also aware that their experiences of menstruation were not universal, and pointed out that different families and different communities have different practices, and that these practices are passed down from generation to generation.

> *"In some of the houses they have many traditions… to not touch others, sleep alone, keeping this. In my house its not there, in my house only taking head bath for two day, one day kum kum not allowed, second day I'll be normal like everyday. In some houses means*

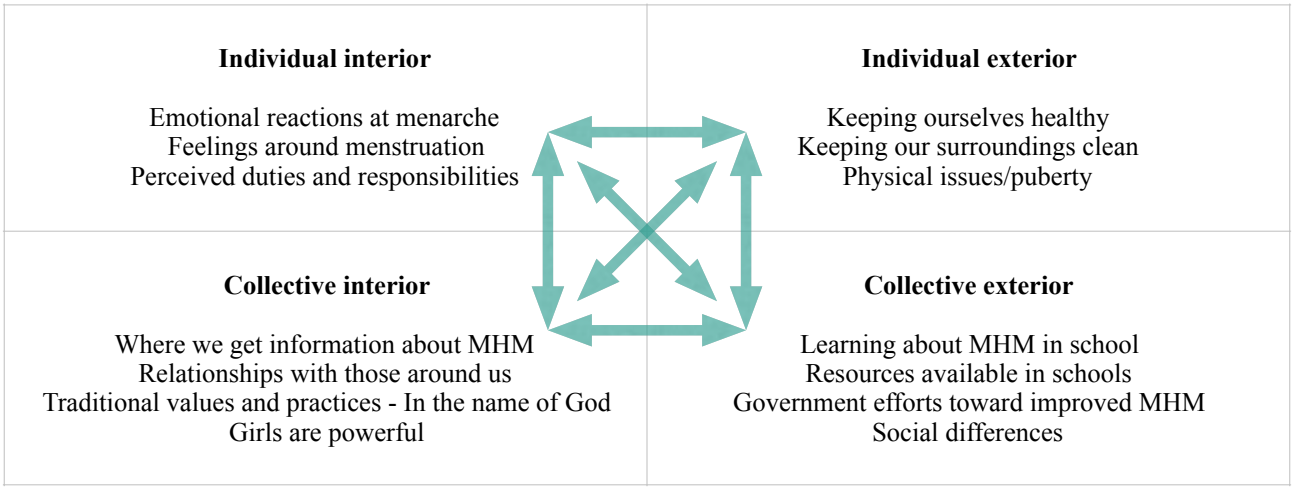
that doing pujas that person, that house very clean. They have separate room, they should stay only in that, they should not come out, they should be very clean, taking head bath, very clean, Because in those days, they were separated, and they have their own cultures, traditions, they are following from a grandparents has, a parent has, a child has. Thats the way it comes down."
Student 2, age 15

The idea of differences within India is a complex one, as the country is vast in terms of geography, population and culture. However, these differences all play a part in shaping experiences of menstruation for adolescent girls in India, and are part of the reason this is such a complex issue.

7. Discussion

Integral theory was used to separate the different aspects of the experiences of the adolescent girls in to the four quadrants, as a way of organising the experiences to better understand. However, this is not to suggest that these aspects exist separately, on the contrary the quadrants are closely linked and influence each other a great deal. While separating aspects of the experiences around menstruation is helpful in clarifying, organising and emphasising the diversity of any human experience, to comprehend the complexity of the experience one must consider the interconnected nature of the four quadrants. The quadrants tetra-mesh, meaning that all the aspects are part of the same experience, and they are all linked. A lot of analysis tends to focus on only one or two of these aspects, however, for research to be integral all quadrants and their interconnections must be analysed. Some wider issues also emerge when investigating experiences of menstruation. The conflict between religious tradition and the western, liberal scientific approach and how it shapes the experience must be better understood. Finally it is also important to explore the vast economic and social differences within India, and how this plays a role in menstruation experiences. In this next section I will explore these links, interconnections and influences, aiming to better understand the entirety of the experience of menstruation, including resources, strategies, and social and emotional well being.

Figure 2. Connections between the four quadrants.



7.1 Collective exterior and individual exterior

Collective exterior factors, such as educational institutions, government programs and the physical environment play a role in shaping individual exterior factors, such as behaviours. The government of India has taken initiative to improve MHM through the subsidising sanitary pads for adolescent girls, focusing particularly on girls in rural areas and government schools. Menstruation has also been made part of the biology syllabus in grades 8 and 9, ensuring both girls and boys have an understanding of the biological process of menstruation. The physical environment and resources available in school, and in the community in general vary greatly across India. All these structural factors play a large role in shaping MHM behaviours for adolescent girls.

The Government of India has since 2011 placed a focus on MHM through the Menstrual Hygiene Scheme, which is part of the adolescent health initiative Rashtriya Kishor Swasthya Karyakram (RKSK) (Government of India, 2017 accessed 15.03.18). The program aims to increase awareness of MHM among girls, improve access to and use of sanitary pads and ensure safe disposal of sanitary pads. Among these objectives the access to and use of pads has been the most publicised, as evidenced by the fact that it was discussed by all the participants in this study, and appears most frequently in the literature (Garg et al., 2012). The participants all also expressed a strong preference for disposable pads as their absorbent of choice. Previously reusable cloths and rags have been commonly used across India, however both current literature and this study suggests that this behaviour is becoming increasingly uncommon, while disposable pad use is becoming the most common behaviour (Shah et al., 2013). This suggests that this part of the government effort toward MHM has been quite successful in influencing the behaviours of adolescent girls.

Another of the objectives of the scheme is to increase awareness on MHM, and this can be seen in the inclusion of menstruation on the biology syllabus for grades 8 and 9. As it was described

by one science teacher this syllabus covers the physical processes of menstruation, and is given to both boys and girls. Mason et al. (2017) found that knowledge on menstruation and MHM among adolescent boys is varying, but generally lacking, and that this lack of understanding plays a role in the perpetuation of stigma and taboo. Increased knowledge on the issue across genders could play a role in improving experiences of menstruation for adolescent girls, through decreased stigma around the issue. In addition to the science education given to all students, hygiene education is given to girls separately. It again appears that these educational policies have an affect on MHM behaviours, and provide important knowledge resources for adolescent girls. The student participants valued the advice given by female teachers, and were aware of proper MHM practices as they were taught in the school. However, the introduction to menstruation and MHM in school happens post-menarche for many girls, and some of the participants suggested that MHM education might be more effective if given at a younger age. As suggested by much of the literature (Akankshs et al., 2014; Verma et al., 2013) and reported by the adolescent female participants the mother is still the main source of information, and this could limit the effect of MHM education on behaviours. Thus it does appear that education does have an effect on individual behaviours, though it could potentially have a greater effect if started earlier.

One area where education appears to have had a large influence on the behaviours of female students is disposal of sanitary waste. This is another one of the objectives in the scheme (Government of India, 2017 accessed 15.03.18.), but perhaps the most contested one. Garikipati and Boudot (2017) discuss the overwhelming amount of waste associated with increased use of disposable sanitary pads, and the challenges associated with this. This was also a topic of concern for the adolescent female participants. The participants reported that older women in the community were not informed about the dangers of open disposal of sanitary waste, and that this could have consequences such as impure water sources and other forms of environmental degradation. Thus, participants displayed different behaviours than older members of the community as a direct result of the MHM education they receive in school. This priority was also reflected in the resources available in the school, where dustbins are available in all the toilets, and there is discussion of installing an incinerator. These structures may not exist outside of school, limiting women's ability to practice safe disposal behaviours. The focus in the Menstrual Hygiene Scheme on promoting disposable pad use, without adequate disposal systems places the burden of sanitary waste disposal on girls and women, while limiting their options for sanitary behaviour and negatively impacting the environment. Thus, the collective exterior here work both to promote positive behaviours, while a lack of waste disposal infrastructure simultaneously limits real choice.

The relationship between the collective exterior and the individual exterior is not a one way street, though it may appear that the structures around us exercise a greater influence on individuals than individuals do on structures. Still, individual behaviours can play a central role in shaping the direction of policy. For example, a focus among adolescent girls on environmental responsibility and disposal behaviours that reflect this could ensure that this topic remains on the current policy agenda and aid in the development of more environmentally conscious waste disposal structures. Feminist activists in India are also taking action to speak out against the 14 percent Goods and Services Tax the GOI recently imposed on sanitary pads. Women used the hashtag #LahukaLagaan ("tax on blood") to protest the tax, resulting in the GOI reducing the tax to 12 percent (Fadnis, 2017). Individual actions, behaviours and choices directly influenced government policy, with the aid of social media. This could suggest that in the digital age individual actions have greater potential than ever to be catalysts for change.

The collective exterior influences the menstruation experience in several ways. Firstly, this can be seen in the resources available to girls, both physical and educational. Disposable sanitary pads being made available to girls as a result of policy has had a great effect on absorbent choice among adolescent girls. Educational resources in the form of knowledge on both the physical process of menstruation and proper hygiene practices are also central to shaping MHM behaviours. Finally, inadequacies in the waste disposal infrastructures and practices result in environmental problems. The resources available, how and when they are available directly influences how those resources are used and what strategies girls employ in managing their menstrual hygiene.

7.2 Collective exterior and collective interior

Systems, structures and environments can influence culture, norms and even relationships, but these norms and cultures can also be influential to the development of those systems and structures. The ties between the collective exterior and collective interior are close and mutual, as evidenced by many of the recent developments around MHM in India. There appears to be a collective cultural shift in terms of views on hygienic absorbents, where preference has moved from cloth and cotton to disposable sanitary pads (Verma et al., 2013). Structural developments may also have influenced changes in traditional practices around menarche and menstruation. While the collective exterior is vital to the provision of the physical resources needed for MHM, the collective interior plays a central role in the social wellbeing of adolescent girls, thus how these two quadrants interact shapes much of the experience of menstruation for adolescent girls.

The Indian government's program promoting disposable pads as the hygienic option in terms of absorbents, has influenced a cultural shift away from cloth and cotton to disposable sanitary pads. The perceptions that emerged in this study showed that disposable pads are the preferred choice, and are seen as more hygienic and easier to maintain. This was also evident in several of the studies from other parts of India, which showed that the majority of adolescent girls preferred disposable pads (Verma et al., 2013). Garikipati & Boudot (2017) found that older women preferred reusable cloth. This could suggest that there is an element of generational divide in opinion, as the culture shifts toward acceptance of disposable pads as the norm. The influence of education is clear in this, and what adolescent girls learn in school is essential in driving this shift. The education system is where the political structures have the most direct access to and contact with citizens, and where it can exerts its influence. This in turn could lead to wider acceptance in the community as adolescent girls act as health promoters.

Participants in this study also suggest that the changes in the culture go beyond the acceptance of disposable pads, and point to developments in traditional practices around menstruation and menarche. These practices include restrictions on activities during menstruation, such as not entering temples, avoiding cooking and physical contact with men, and even isolation. These restrictions are commonly described in the literature, and appear to be common across the country, though they are implemented to varying degrees (Arora, 2017; Khanna, Goyal & Bhawsar, 2005). Menarche has traditionally been marked with ceremonies and puja in South India (Tan, Haththotuwa & Fraser, 2017), and served as a celebration to announce to the community that the girl is now a woman. However, as described by the participants in this study these practices are changing, and are no longer commonly practiced in the more extreme forms. These practices were also described as being passed down through the family, and it was suggested that structural changes, such as women working outside of the home has influenced the changes. Women taking on paid work outside of the home has made ritual isolation during menstruation unfeasible. The adolescent female participants described an increased disregard for these traditional practices among their peer, but discussed practices and values varying between families. These developments could be seen as mutual, as changes in the structures drive shifts in the culture, but women's roles in the culture also influence how the structures address these issues.

This can be seen in the basic theme of 'Girls are powerful', within the collective interior. Patricians described girls as strong and bold, and as not only essential as a social support system for one another, but as agents of change. Such perceptions of girls and women are potentially influential in how gendered issues are addressed within the structures of the education system and

wider MHM policy, and could act as a driver for keeping these issues front and centre of the agenda. The twitter campaign against tax again demonstrates this (Fadnis, 2017). These developments in both culture and structure are happening simultaneously, and are difficult to separate in terms of cause and effect, but it is clear that they are closely connected and drive each other forward. This also links to how men are included in the narrative on MHM, while it was commonly agreed among the participants that other girls and women provided both social and practical support, the role of men was more ambiguous. Some of the older female participants expressed a need to shield men from the conversation on menstruation, while the younger female participants expressed discomfort at the idea of discussing MHM with men in their lives, this included both male teachers, students and male relatives. However, all the participants agreed that it was important for male students to learn about menstruation, but there was some disagreement on what role men should play beyond that. Mahon, Tripathy and Singh (2015) found that open communication with boys and men about menstruation was essential to advancing the MHM agenda, improving social relationships between women and men and building strong social support systems for girls. Inclusion of men and boys in the discussion on menstruation beyond science education is still uncommon, and leads to lack of knowledge and reproduction of misinformation (Mason et al., 2017).

This is an example of how the different quadrants interact and influence developments in MHM. The government scheme has influenced how menstruation is addressed in schools, which in turn has an effect on both behaviours and internal motivations for the students, further influencing the wider effects on cultural norms. One student expressed a wish for men to play a more active role in supporting women regarding menstruation, whereas an other student believed men were not central to this and that they could continue to play a limited role. This illustrates how cultural norms and shifts in the structural approach both develop and influence individual values and beliefs, and this could in turn have consequences for the future development of the structural approach to MHM.

7.3 Collective exterior and individual interior

The collective exterior and the individual interior are also closely linked. Our internal reactions are often shaped by our environments and the systems around us. Feelings and motivations can be influenced by both perceived lacks and problems in the systems, where we might identify a need for change. More active ways systems and structures influence the interior include education and campaigns. These are tools used by institutions to shape individual attitudes and motivations, which in turn can affect our inner emotional lives.

A lack of knowledge of menstruation at age of menarche influenced the emotional response the adolescent female participants experienced at the start of puberty. Akanksha, Aswar, Domple, Doibale and Balaji (2000) also found that girls' reaction at menarche was directly associated with the information they had prior to having their first menstruation. As menstruation is first addressed in grades 8 and 9, the participants did not have prior knowledge about menstruation when they attained menarche. The students all expressed feelings of anxiety as their initial emotional reaction, and identified a lack of understanding as the root of that anxiety. The female teachers also discussed teaching their daughters about menstruation before menarche, and that as a result they were unafraid when they started their periods. This suggests that there is a direct link between knowledge and the emotional response girls have at menarche, and that the fact that the education system does not address menstruation earlier does influence this. The fact that menstruation and menarche is not part of the curriculum at an earlier age places the responsibility of informing girls about the changes happing in their bodies on the parents. As a result the access to information will vary between girls, and thus emotional responses will also be varied, with an increased risk of stress. Other studies have also found that the lack of sanitation facilities in school directly impact behaviour, and can lead to absenteeism (Pratibha, Nawaz & Kumar, 2016). The lack of proper structures here limits girls' options for healthy behaviours, and can lead to negative impacts through missing education.

Individual motivations and a sense of duty can also be seen to have arisen from the environmental problems that have developed as a result of increased disposable pad use, a lacking waste management infrastructure, and cultural norms which tend to disregard environmental protection. The adolescent female participants in this study had developed a sense of duty to their community and the environment regarding pad disposal, including a wish to spread good waste disposal practices to other member of the community. This was discussed by the participants both in terms of the environment and a concern for community health. As the amount of menstrual waste increases in India this becomes a concern of growing importance (Garikipati & Boudot, 2017). The physical environment, the structures and even social norms here play a part in shaping internal motivations and values. These values are in turn leading the girls to take on health promotor roles, to spread these values and to change behaviours, norms and systems. This part of the menstruation experience also places the burden of responsibility for the environment on the individual, and could act as a stressor. Participants also expressed feeling sad about fellow community members' disregard for their environment. The complexity of the interplay between the four quadrants is clear, and shows how the menstruation experience is shaped by all these interactions.

7.4 Collective interior and individual interior

Individual values, motivations and emotional wellbeing, or the individual interior, is closely linked to the cultural norms and relationships found in the collective interior. These two quadrants are perhaps the most obviously mutually influential, as human beings are constantly shaping one another through interactions. The values and norms of our community shape us, but as the community is made up of individuals, norms and values develop as the individual members do.

The connections between the collective and individual interior in this study became evident in the generational divides, and how influences are exercised between generations. In the younger generation individual values and motivations develop and are influenced by a range of factors, including cultural norms and the education system. These individual values sometimes appeared to diverge from the general cultural norms. One example of this is the focus among the younger participants on the importance of pad disposal. The participants perceived the cultural norm to be a disregard for waste disposal, resulting in an unclean and potentially unhealthy community. Thus, their individual values did not fall in line with the social norms, and could act as a catalyst for a change in the cultural value system. The participants expressed a desire to be part of spreading these values to the rest of their community, and take active part in educating other women and developing the collective motivations.

However, mothers are still the main source of information for girls about menstruation and MHM, especially at the start of puberty, and the participants in this study suggested that cultural norms are usually passed down through generations. This trend is also reflected in the literature on MHM in India (Akanksha et al., 2014; Verma et al., 2013). This could lead to the reproduction of traditions and rituals, which are not addressed in the education system. Though particularly restrictive menstrual rituals and school absenteeism were not reported among the participants in this study, other areas of India still find that girls are isolated during menstruation (Shah, et al., 2013). This study found that norms are important to building a sense of community, as well as a feeling of belonging, and can be a source of social support and aid in social wellbeing. This could be seen in the participants' descriptions of relationships between women. Relationships between peers, mothers and daughters, and female teachers and students were all described as supportive and a source of comfort and strength. Conversely, social norms around relationships with men can lead to discomfort and challenges. None of the adolescent female participants discussed menstruation or MHM with male family members or teachers. Men being shielded from the conversation on menstruation has been found in other studies from India (Mason et al., 2017; Mahon et al., 2015). The relationships in school were especially a source of stress, where being unable to communicate

openly with male teachers was seen as a hindrance to engaging in proper MHM. This could affect not only school performances, but also have wider consequences for health and wellbeing. Relationships with male peers were also discussed, where one participant argued that boys could play a more supportive role in supporting girls. Others argued that the relationships with other females were more important. However, to see significant social and cultural shift, and to encourage more open communication the inclusion of boys and men in the conversation is essential (Mahon et al., 2015). Communication and knowledge sharing could allow men and boys to play a more active role in social support.

7.5 Collective interior and individual exterior

Social norms are also influential in developing individual behaviours, and how the physical changes related to puberty are addressed. A considerable amount of information about menstruation and MHM is passed down to adolescent girls through informal channels, mothers being the main provider of knowledge before the issues are addressed in formal education. Developments in individual behaviours can also act as drivers for shifts in the social norms, as seen through changes in absorbent preferences. Social support networks in the form of culture, traditions and relationships are closely linked to strategies for managing menstrual hygiene, and resource use.

The evidence from this study suggests that mothers are still the main source of information at menarche, along with other female members of the community, such as sister and friends. This is a common finding in the MHM literature from India (Chandra-Mouli & Patel, 2017; Kansal, Singh & Kumar, 2016). It follows that these relationships are essential in shaping MHM strategies in the early years of puberty. These social resources were described as important both in term of providing support, but also in giving advice about how one should manage hygiene and other puberty related issues. Information on nutrition, and traditional remedies for menstruation related challenges, such as headaches and stomach pain, is also passed down from mothers. Practices such as head-baths and different plant-based medicines were described as helpful in ailing different physical pains. These are examples of cultural practices that are part of the local tradition, and that are passed down through relationships. Other norms, such as not going to temple or wearing kumkum during menstruation were also part of the advice given by mothers to the adolescent female participants, who in turn felt it was important to maintain these traditions. Culture and traditions were described as important, and in need of preservation by the participants. However, it also emerged that practices vary between families, suggesting that cultural norms are fluid and developing.

These developments can in part be attributed to changes in individual behaviours. One example of this is the shift in absorbent use away from reusable cloth and cotton to disposable pads. This has in large part been influenced by the government scheme promoting pad use through subsidies and education, leading to changes in individual behaviour, which in turn permeate social norms and become common accepted practice. The quadrants coexist and interconnect to shape the larger experience of menstruation for adolescent girls. Another example of behaviour leading to norm changes is the fact that women more commonly work outside of the home. Due to this extreme forms of menstrual isolation are becoming more uncommon, as they are not feasible within new social structures. This type of shift can also be seen through things such as higher age of marriage and motherhood for girls as educational attainment increases (Gupta, Kumar, Salhorta, Dureja, Mohan & Rahi 2014). It is evident that the quadrants do not exist in isolation, or even simply in connections between pairs, but rather that the quadrants all interact to shape experiences.

7.6 Individual interior and individual exterior

The individual interior, our motivations, values and emotions, directly impact the exterior, our behaviours and physical body. Internal motivations shape behaviours, which in turn affect health outcome and physical wellbeing. Throughout the study a concern for personal cleanliness emerged, this works as a motivation for the participants and shaped their MHM behaviours. These internal motivations have not developed outside of the rest of the menstruation experience, but have been influenced by both structural factors and social norms. A focus on, and motivation for cleanliness can aid in maintaining hygienic behaviours, which can help preserve and promote menstrual health. Cleanliness as a motivation MHM is connected to behaviours such as regular baths, using disposable sanitary pads and changing pads regularly. These behaviours have also been found to be central to MHM for school girls in other parts of India, such as in the Jammu district (Kapoor & Kumar, 2017). Physical discomforts and irritation were also reported by the participants, and linked to a need for rest and a decrease in ability to concentrate on school work. Similar emotional responses were found in two-thirds of school girls in one study from India (Chaudhuri & Singh, 2012). These physical reactions to puberty can be connected to decreased motivation and general wellbeing.

Internal motivations for the participants were not only focused on personal health outcomes, but also on environment and community health. The adolescent female participants identified problems that have arisen in their community due to increased sanitary pad use and the common practice of open disposal. This has lead to feelings of duty toward their community and the

environment, which act as motivation for proper disposal practices. These behaviours and motivations are also influenced by the MHM education they receive in school, and have the potential to influence social norms and lead to a shift toward better practices in the community at large. The focus on the need for sanitary disposal of menstrual waste has lead the school to work toward installing an incinerator. The individual interior and exterior quadrants are linked to such an extent that they can be hard to separate. This also makes it difficultly to distinguish the directions of influences between them. As they are both also closely linked to and affected by the collective quadrants the subjective aspects of the menstrual experience exemplify the tetra-meshing of the quadrants and the complexity lived experiences. These experiences must be understood as a whole in order to address the MHM needs of adolescent girls.

7.7 A post-colonial look at importance of traditions

One theme that emerged throughout the study was that of traditional practices and values, and the role these could play in helping and supporting girls in managing their menstruation. Though it was acknowledged repeatedly that traditional practices around menstruation vary between communities and families, the participants in this study argued that their traditional practices were helpful and in need of preserving. Much of the literature on MHM discusses restrictions placed on menstruating girls, and the harm this causes (Kaur, Kaur & Kaur, 2018; Akanksha et al., 2014, Garg & Anand, 2015), however it is also important to understand the connections to community and culture found in traditional practices, and how this aids in building and maintaining a strong social support network.

In India a dichotomy can be seen in the cultural significance of menstruation and menarche, which has traditionally been a collective experience, and the current responsibility placed on the individual to manage menstruation in a way that is hidden from the wider community (Puri, 1999). This conflict can be a source and stress for girls experiencing menstruation. This can be seen in the medicinalisation of periods, where a Western, neo-liberal approach promotes a view of menstruation as a hygiene problem to be solved by individuals (Lahiri-Dutt, 2014). This view on menstruation and MHM suggests that there is only one right approach, and that is one based solely in Western scientific traditions, and within this disposable sanitary pads become a silver bullet solution to the problem of MHM. However, this approach to menstruation still carries stigma, and the language used often suggests individual impurity rather than ritual impurity, and places the responsibility for hygiene or purity on the individual girls (Puri, 1999; Lahiri-Dutt, 2014). This type

of approach fails to address the whole picture of MHM, and can be especially problematic in settings with deep rooted traditions surrounding menstruation.

In post-colonial literature the conflict between the preservation of traditional values and the normalisation of Western neo-liberal values is often discussed, and this also applies to menstruation (Ashcroft, Griffiths & Tiffin, 2007). This should also be applied to health promotion practice. The Ottawa Charter has been critiqued for marginalising non-Western voices and normalising a Western conception of health. This critique is based both on the process that lead to the charter and the resulting document, and points out the individualistic nature of the charter, its exclusion of other health models and perspectives, as well as an othering of non-Western populations seen as in need of help and intervention (McPhail-Bell, Fredericks & Brough, 2012). Despite the language of inclusivity and health equity health promotion must reflect on and address these underlying issues embedded in the practice. While secular reason and scientific advances are often presented as the only way forward in development, this can lead to conflicting feelings, guilt and anxiety, and must be examined further. As the participants in this study suggested, traditions and culture can be a source of comfort and support, and even health, and should be preserved and included in the development of health promotion practice.

Traditions and culture are also central to a sense of spiritual connectedness, which is an important aspect of the individual interior quadrant of the AQAL model (Wilber, 2001). Having a relationship with the Divine can be a source of inner strength and motivation, but the dichotomy between the idea of God as pure and menstruation as impure can also be a source of conflict and stress. However, integral theory suggests that science and spirituality should be interested and need to exist in opposition, and Ken Wilber argues that "deep spirituality involves in part a broad science of the higher levels of human development" (2001, p. 76). Though scientific traditions are typically sceptical about religion, striving for progress within this dichotomy is not helpful to improving lived experiences. These two aspects, science and spirituality, are both central to the girls' experiences of menstruation, and can be supportive in different ways, however conflict between them can lead to unnecessary stress and anxiety.

7.8 India: country of differences

India is a vast and diverse country, with a plethora of religions, ethnicities and cultures (Kings, 2017). The socio-economic differences are also great, and one cannot seek to explore experiences within India without understanding that these differences exert a great influence. These differences are also reflected in the current literature which shows differences in pad use, sources of

information and health outcomes (Juyal et al., 2014; Udayar, Kruthika & Devi, 2016). This study was set in a particular context, and the adolescent female participants attended private school. The study was also set within the state of Tamil Nadu, a state which is often brought forth as one of India's most successful in providing affordable health care to its population (Parthasarathi & Sinha, 2016). This structural difference could mean that participants in this study have better access to to health care, and as a result better health outcomes, including menstrual health. Such structural differences are seen in education as well, both within the state and in the country at large. The teachers and health experts interviews in this study suggested that the resources and sanitation facilities available in public schools was lacking compared to those in the study school. This again could prove to have a great effect on MHM among adolescent girls, and on their wider experience regarding menstruation. However, the participants in this study did not receive subsidised sanitary pads in school or outside of school, as part of the government programme, and thus no conclusions can be drawn regarding the effect of this resource.

Caste is another factor, along with socio-economic and structural factors, which may affect health outcomes and menstruation experiences. In a study on sanitation interventions in rural Tamil Nadu O'Reilly, Dhanju & Louis (2016) found that caste played a role in the failure of the interventions studied. In India, and in Tamil Nadu, Scheduled Castes and Other Backward Castes have the lowest numbers of individual household latrines, and benefit the least from sanitation interventions (O'Reilly et al., 2016). This also impacts MHM, as a lack of access to safe and private sanitation facilities is essential to proper hygiene management. It also suggests that there are great differences in access, outcome and experience, which must be addressed to ensure health equity. Though these issues go somewhat beyond the scope of this study it is important to acknowledged that structural, cultural and religious differences exist within India, and that for health promotion to begin to address the issue of menstrual health we must understand that there are a range of lived experiences which must inform the progress in this field.

7.9 Limitations

One of the main limitations of this study is its size. As the research was undertaken as part of a 30 credit masters thesis it was necessary to limit the number of participants. Due to the limited number of participants, as well as the unique study setting it is not possible to draw broad conclusions about the situation in India at large. However, this also works to illustrate the need for local research to better understand the wide range of menstruation experiences around the world. As the objective of this study was to better understand experiences of menstruation. I sought to explore

the entirety of the experience of menstruation through speaking not only to the girls, but to other members of the community such as female teachers and health experts. This was done to provide context, as well as to gain insight into different perspectives on the experience itself.

The photovoice as a method allowed the participants to actively engage with and shape the research according to their interests and priorities. This was an important part of making the research as participatory as possible. However, the chosen version of photovoice may have some limitations. I chose to have the participants select one photograph to discuss at length in the group. Thus, the chosen photograph directed the conversation, and left other possible avenues unexplored. An approach where each participant was interviewed about their photograph could have allowed for deeper discussion of a wider range of topics, though it would not have allowed for a group discussion. This was somewhat addressed through adding IDIs to explore a wider range of topics related to menstruation and MHM.

My own role in this researcher was as an outsider and this could have affected the information given to me, and my understanding of this information. Though I tried to take every precaution to prevent a power imbalance developing, this must be acknowledged and addressed. I had the opportunity to meet and build report with the participant prior to the interviews, allowing for more relaxed conversations with the participants. English being the participants' second language could also have affected the data. The participants may not have been able to express themselves as fully in English as they may have in Tamil. Though their level of English was high misunderstandings or miscommunications may have occurred.

9. Conclusion and recommendations

MHM and menstrual experiences are complex and multifaceted. This study set out to understand the experiences of adolescent girls surrounding menstruation and MHM. These experiences were analysed using an integral framework and the AQAL model, to develop a fuller understanding of the menstrual experience and how different aspects of it interplay. This was explored through looking at the resources available, strategies used by girls, and the effect of menstruation of girls' emotional and social well being. This study found that the participants had access to sanitary pads, though not through school or government programmes. The participants' families purchased and provided the sanitary pads. In school and at home the participants had access to sanitation facilities, including toilets, hand washing facilities and disposal facilities. Information resources were also available to the participants in school. Menstruation was on the curriculum for grades 8 and 9, and taught to boys and girls together. The participants expressed a

need for menstruation to be addressed earlier, as many girls reach menarche earlier than this. It must also be acknowledged that there are massive differences between communities within India, and the structures and resources available to girls may vary.

The study also found that this availability of resources informed the use of resources, and the strategies developed by girls for managing menstrual needs. The participants all used sanitary pads, and changed pads regularly. The participants were also concerned with sanitary pad disposal. It was identified that this was a problem in the wider community, especially among older women, who often disposed of menstrual waste in the open. This was suggested to be a threat to both community health and the environment. Healthy eating, along with traditional remedies were also suggested as aids in dealing with the physical changes and discomforts that occur during menstruation and puberty.

In terms of emotional wellbeing and its link to menstruation, this study found that the participants experienced feelings of anxiety at menarche, due to a lack of knowledge. General feelings of discomfort around menstruation and MHM were also identified, but the participants expressed a growing confidence as they gained experience and knowledge. Feelings of duty towards the wider community, especially regarding sanitary pad disposal also emerged. These feelings acted both as motivation, and a source of stress.

Social wellbeing was found to be a complex topic as it relates to menstruation. Social wellbeing was influenced by both relationships, and norms and traditions. Relationships with women were also described as a source of support and advice, while relationships with men were more challenging and a source of stress, especially in the school setting. The inability to openly discuss menstruation with male teachers was identified as an obstacle to good MHM in school, and as potentially distracting from education. Traditional practices and connection to culture emerged as central to the experience, and were put forward as a source of comfort and strength, and in need of preservation.

All these aspects of the menstruation experience exist within the four quadrants of the AQAL framework, and are all interwoven. Separating these different aspects of the experience helps illuminate the multifaceted nature of the menstruation experience, however these four quadrants all interconnect and influences one another in different ways. This must be understood to be able to move forward and improve MHM and the menstruation experience of adolescent girls.

9.1 Recommendations:

1. *Environmentally sustainable absorbent options* - The push for disposable pads in a country like India where the infrastructure does not support the waste management needed to deal with millions of tonnes of menstrual waste produced is problematic, and more sustainable options must be explored. Reusable cloth pads could be an option, but requires proper cleaning and drying, thus access to washing and drying facilities could be an obstacle. Biodegradable sanitary pads, using invasive species is another option which could serve a dual purpose of eliminating both invasive species and menstrual waste.
2. *Education in cooperation with temples/religious institutions* - The disconnect between the scientific approach taken in schools and what is practiced at home, and in the community, causes stress and conflict. The girls also felt it was important to protect their traditions, suggesting that a more integrated approach to teaching about menstruation and MHM could be beneficial. This could also flow both ways from collective to individual and from individual to collective, allowing the girls to play a larger role in shaping their communities.
3. *Peer-support systems in school* - Older students can act as mentors to younger students, through providing both information and social support. The Menstrupedia comics could be used as a teaching tool (https://www.menstrupedia.com/). The mentors could be trained by teachers and nurses in both what information to provide and how to best support their peers.
4. *MHM training for male teachers* - Communication with male teachers is an obstacle to MHM in schools, and a source of discomfort for girls. Trainings on how to better communicate with female students about the MHM needs, and how to provide support could minimise this problem and fosters more open communication and a better learning environment.

References

Akankasha, J., Aswar, N. R., Domple, V. K., Doibale, M. K., & Balaji, S. (2000). Menstrual hygiene awareness among rural unmarried girls. *Journal of Evolution of Medical and Dental Sciences 3*(6), 1413-1419.

Akankasha, J., Aswar, N. R., Domple, V. K., Doibale, M. K., & Barure, B. S. (2014). Menstrual hygiene awareness among rural unmarried girls. *Journal of Evolution of Medical and Dental Sciences, 3*(6). doi:10.14260/jemds/2014/2000

Anney, V. (2014). Ensuring the quality of the findings of qualitative research: Looking at the trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies, 5*(2), 272-281.

Arora, N. (2017). Menstruation in India: Ideology, politics, and capitalism. *Asian Journal of Women's Studies, 23*(4), 528-537. doi:10.1080/12259276.2017.1386817

Ashcroft, B., Griffiths, G., & Tiffin, H. (2007). *Post-Colonial Studies: The key concepts* (2nd ed.). New York: Routledge.

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualtative research. *Qualitative Research, 1*(3), 385-405.

Chandra-Mouli, V., & Patel, S. V. (2017). Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low- and middle-income countries. *Reproductive Health, 14*(1), 30. doi:10.1186/s12978-017-0293-6

Chaudhuri, A., & Singh, A. (2012). How do school girls deal with dysmorrhoea? *Journal of the Indian Medical Association 110*(5), 287-91.

Davies, D. & Dodd, J. (2002). Qualitative research and the question of rigor. *Qualitative Health Research, 12*(2), 279-289. DOI: 10.1177/104973230201200211.

Denzin, N., & Lincoln, Y. (2005). Introduction: The dicipline and practice of qualitative research. In N. Denzin & Y. Lincoln (Eds.), *The Sage Handbook of Qualitative Reseach*. Thousand Oaks, CA: Sage.

Dhanalakshmi, N. (2015). The Assessment of Knowledge, Beliefs and Practices of Adolescent Girls and the Effect of a Structured Teaching Programme in Knowledge and Beliefs Regarding Menstruation, Pregnancy and Sexual Behaviour in Selected Areas of Pediatric Wards, the Out Patient Department and Medicine OPD of Christian Medical College, Vellore. *Asian Journal of Nursing Education and Research, 5*(2), 172-176.

Esbjörn-Hargens, S. (2010). An Overview of Integral Theory: An all-inclusive framework for the twenty-first century. In S. Esbjörn-Hargens (Ed.), *Integral Theory in Action: Applied, Theoretical, and Constructive Perspectives on the AQAL Model*. Albany, NY: SUNY press.

Fadnis, D. (2017). Feminist activists protest tax on sanitary pads: attempts to normalize conversations about menstruation in India using hashtag activism. *Feminist Media Studies 17*(6), 1111-14, DOI: 10.1080/14680777.2017.1380430.

Garg, S., & Anand, T. (2015). Menstruation related myths in India: strategies for combating it. *Journal of Family Medicine and Primary Care, 4*(2), 184-186. doi: 10.4103/2249-4863.154627

Garg, R., Goyal, S., & Gupta, S. (2012). India moves towards menstrual hygiene: Subsidized sanitary napkins for rural adolescent girls - Issues and challenges. *Maternal and Child Health Journal, 16*(4), 767-774.

Garikipati, S., & Boudot, C. (2017). To Pad or Not to Pad: Towards Better Sanitary Care for Women in Indian Slums. *Journal of International Development, 29*(1), 32-51. doi:10.1002/jid.3266

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report (8)*4. 597-607

Government of India. (2017). Menstrual Hygine Scheme: Background. Retrieved from http://nhm.gov.in/nrhm-components/rmnch-a/adolescent-health-rksk/menstrual-hygiene-scheme-mhs/background.html Accessed: 15.03.18.

Gupta, A., Kumar, R., Salhorta, V. S., Dureja, S., Mohan, A., & Rahi, S. (2014). *Strategy Handbook: Rishtriya Kishor Swasthya Karyakram*. New Delhi: Government of India

Juyal, R., Kandpal, S. D., & Semwal, J. (2014). Menstrual hygiene and reproductive morbidity in adolescnet girls in Dehradun, India. *Bangladesh Journal of Medical Science, 13*(2), 170-74.

Kansal, S., Singh, S., & Kumar, A. (2016). Menstrual hygiene practices in context of schooling: A community study among rural adolescent girls in Varanasi. *Indian Journal of Community Medicine, 41*(1), 39-44, doi:10.4103/0970-0218.170964.

Kapoor, G. & Kumar, D. (2017). Menstrual hygiene: knowledge and practices among adolescent school girls in rural settings. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 6*(3), 959-962.

Khanna, A., Goyal, R. S., & Bhawsar, R. (2005). Menstrual practices and reproductive problems: A study of adolescent girls in Rajasthan. *Journal of Health Management, 7*(1), 91-106.

Kings, A. E. (2017). Intersectionality and the changing face of Ecofeminism. *Ethics & the Environment, 22*(1), 63-87.

Kumar, A., & Srivastava, K. (2011). Cultural and Social Practices Regarding Menstruation among Adolescent Girls. *Social Work in Public Health, 26*(6), 594-604. doi: 10.1080/19371918.2010.525144

Lahiri-Dutt, K. (2015). Medicalising menstruation: a feminist critique of the political economy of menstrual hygiene management in South Asia. *Gender, Place & Culture, 22*(8), 1158-1176. doi:10.1080/0966369X.2014.939156

Leventhal, K. S., DeMaria, L. M., Gillham, J. E., Andrew, G., Peabody, J., & Leventhal, S. M. (2016). A psychosocial resilience curriculum provides the "missing piece" to boost adolescent physical health: A randomized controlled trial of Girls First in India. *Social Science & Medicine, 161*, 37-46. doi:10.1016/j.socscimed.2016.05.004

Lundy, T. (2010). A paradigm to guide health promotion into the 21st century: The integral idea whose time has come. *Global Health Promotion, 17*(3), 44-53.

Mahon, T., & Fernandes, M. (2010). Menstrual hygiene in South Asia: a neglected issue for WASH (water, sanitation and hygiene) proframmes. *Gender & Development, 18*(1), 99-113. doi: 10.1080/13552071003600083

Mahon, T., Tripathy, A., & Singh, N. (2015). Putting the men into menstruation: the role of men and boys in community menstrual hygine management *Waterlines, 34*(1), 7-14.

Mason, L., Sivakami, M., Thakur, H., Kakade, N., Beauman, A., Alexander, K. T., . . . Phillips-Howard, P. A. (2017). 'We do not know': a qualitative study exploring boys perceptions of menstruation in India. *Reproductive Health, 14*(1), 174. doi:10.1186/s12978-017-0435-x

McPhail-Bell, K., Fredericks, B., & Brough, M. (2012). Beyond the accolade: a postcolonial critique of the foundations of the Ottawa Charter. *Global Health Promotion, 20*(2), 22-29.

Ministry of Drinking Water and Sanitation. (2015). *Menstrual Hygiene Management: National Guidelines*. Government of India.

O'Reilly, K., Dhanju, R., & Louis, E. (2016). Subjected to sanitation: Caste relations and sanitation adoptation in rural Tamil Nadu. *The Journal of Development Studies, 51*(11), 1915-1928. doi:10.1080/00220388.2016.1241385

Parthasarathi, R., & Sinha, S. P. (2016). Towards a better health care delivery system: The Tamil Nadu model. *Indian Journal of Community Medicine, 41*, 302-304.

Pratibha, S., Nawaz, A., & Kumar, A. (2016). Impact of menstrual practice on the health of adolescent girls and the challenges faced in menstrual hygiene management at schools. *National Journal of Community Medicine, 7*(8), 667-671.

Puri, J. (1999). Docile and Disruptive: Narratives on Menarche and Menstruation *Women, body, desire in post-colonial India: Narratives of gender and sexuality* New York: Routledge

Reshmi, R. S., Gupta, M. K., Kumar, D., & Visengrawala, F. (2015). An intervention to empower and engage the self-helps for menstrual hygiene in Karnataka, India. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 4*(1), 15-22.

Shah, S. P., Nair, R., Shah, P. P., Modi, D. K., Desai, S. A., & Desai, L. (2013). Improving quality of life with new menstrual hygiene practices among adolescent tribal girls in rural Gujarat, India. *Reproductive Health Matters, 21*(41), 205-213. doi:10.1016/S0968-8080(13)41691-9

Skovdal, M. (2015). Photovoice: methodology and use. In M. Skovdal & F. Cornish (Eds.), *Qualitative Research for Development: A guide for practicioners*. Rugby, UK: Practical Action Publishing.

Sommer, M., Caruso, B. A., Sahin, M., Calderon, T., Cavill, S., Mahon, T., & Phillips-Howard, P. A. (2016). A time for global action: Addressing Girls' menstrual hygiene management needs in schools. *PLoS Med, 13*(2). doi:https://doi.org/10.1371/journal.pmed.1001962

Sommer, M., Hirsch, J., Nathanson, C., & Parker, R. (2015). Comfortably, safely, and without same: Defining Menstrual Hygiene Management as a public health issue. *American Journal of Public Health, 105*(7), 1302-1311.

Sommer, M., & Sahin, M. (2013). Overcoming the taboo: Advancing the global agenda for menstrual hygiene management for schoolgirls. *American Journal of Public Health, 103*(9).

Sumpter, C., & Torondel, B. (2013). A Systematic Review of the Health and Social Effects of Menstrual Hygiene Management. *PloS one, 8*(4), e62004. doi:10.1371/journal.pone. 0062004

Tan, D. A., Haththotuwa, R., & Fraser, I. S. (2017). Cultural aspects and mythologies surrounding menstruation and abnormal uterine bleeding. *Best Practice & Research Clinical Obstetrics & Gynaecology, 40*, 121-133. doi:https://doi.org/10.1016/j.bpobgyn.2016.09.015

Udayar, S. E., Kruthika, K., & Devi, P. V. (2016). Menstrual hygiene practices among adolescent girls residing in tribal and social welfare hostel in Andhra Pradesh: A community based study. *National Journal of Community Medicine, 7*(8), 681-685.

van Eijk, A. M., Sivakami, M., Thakkar, M. B., Bauman, A., Laserson, K. F., Coates, S., & Phillips-Howard, P. A. (2016). Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis. *BMJ Open, 6*(3), doi: 10.1136/bmjopen-2015-010290.

Verma, P., Ahmad, S., & Srivastava, R. K. (2013). Knowledge and practices about menstrual hygiene among higher secondary school girls. *Indian Journal of Community Health, 25*(3), 265-71.

Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behaviour, 24*(3), 369-87.

Wang, C., Yi, W. Tao, Z., & Caravano, K. (1998). Photovoice as a participatory health promotion strategy. *Health Promotion International, 13*(1), 75-86.

Wilber, K. (2001). *A Theory of Everything*. Dublin: Gateway.

Wilson, N., Dasho, S., Martin, A. C., Wallerstein, N., Wang, C., & Minkler, M. (2007). Engaging young adolescents in social action through Photovoice: The youth empowerment strategies (YES!) project. *Journal of Early Adolescence, 27*(2), 241-246.

Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions: epistemological, theoretical and methodological differences. *European Journal of Education (48)*2, 311-25. DOI: 10.1111/ejed.12014

Appendix A

1st stage interview guide - Mother/community member:

IQ1: Can you tell me a little bit about your own experience of menstruation as a teenager?

IQ2: How do you think things have changed?

IQ3: How was your daughters experience of menstruation different from yours?

P: How was MHM taught in school when your daughter attended?

P: How did you approach the topic with your daughter?

IQ4: Could you tell me about any taboos or misconceptions about menstruation?

IQ5: How would you approach the topic with girls from this community?

P: Are there any specific words I should use?

P: How do I create a comfortable atmosphere for the girls?

Appendix B

2nd stage interview guide - Health workers:

Thank you for being here today. This discussion is part of a research cooperation between the University of Bergen, Norwegian University of Life Sciences, and the communities that live in the Vellore area. The aim of this study is to learn about the experiences of adolescent girls surrounding menstruation and menstrual hygiene management, so that we can better understand how we can improve upon this. The reason for this discussion is to better understand the social and cultural context, the resources available in the community and to gain any insight you might have into the experiences of menstruating girls in this area. As mentioned in the consent form, all of your answers will be confidential, I will remove any identifying information you may share. If there are any questions you do not want to answer, you do not have to. You can also withdraw from the study at any time. Is it ok if I record this interview? Do you have any questions for me before we start?

IQ1: Can you tell a little bit about what resources adolescent girls have available to them regarding menstruation?

P: Can you speak a little bit more on how girls access absorbents?

P: What sanitation facilities are available to girls in this community?

IQ2: Do all girls use the same type of resources (absorbents/facilities)?

P: How do some girls use resources differently?

IQ3: How do girls manage their periods?

IQ4: How do they learn about menstruation and menstrual hygiene?

P: Can you tell more about that? What would you change about how girls in this community learn about menstrual hygiene?

P: Can you talk a little bit about menstruation education in the schools?

P: How would you improve this education?

IQ5: Can you tell me about any campaigns or programs that were successful in teaching girls about menstruation?

P: What was it that made this programs or campaigns successful?

P: Can you tell me how you would improve these programs?

IQ6: Can you tell me a little bit about what you know about how adolescent girls experience their first period?

P: Can you speak more about the emotional aspect that girls have gone through in your experience?

IQ7: Are there any commonly held beliefs or taboos associated the menstruation in this community? Can you tell me about these?

P: Do you know anyone personally, or have you had any experience with patients or students, who have been faced challenges due to these beliefs?

P: Can you me a little bit about where these beliefs come from?

P: How could these beliefs be changed?

IQ8: Can you talk a little bit more about any traditional practices that are associated with menstruation in this community?

IQ9: Can you tell me about any possible social support networks girls in the community may benefit from?

IQ10: What is the most common health outcome from improper menstrual hygiene practices?

P: What populations is most commonly affected by this?

P: Tell me a little bit more about this.

Summing up:

Is there anything else you would like to add?

Is there anything important you think I forgot to mention?

Could you direct me to anyone else who might be able to help me ?

Can I contact you again if I have any more questions?

Appendix C
2nd stage interview guide - Teachers:

Thank you for being here today. This discussion is part of a research cooperation between the University of Bergen, Norwegian University of Life Sciences, and the communities that live in the Vellore area. The aim of this study is to learn about the experiences of adolescent girls surrounding menstruation and menstrual hygiene management. The reason for this discussion is to better understand the social, cultural and educational context, the resources available in the community and to gain any insight you might have into the experiences of menstruating girls in this area. As mentioned in the consent form, all of your answers will be confidential, I will remove any identifying information you may share. If there are any questions you do not want to answer, you do not have to. Is it ok if I record this interview? Do you have any questions for me before we start?

IQ1: Can you tell me a little bit about how girls in this community experience menstruation?

P: Can you tell me more about these experiences. Can you give me any examples. Do you know anyone who might have experienced this?

P: How is the experience in school?

P: How is the experience at home?

IQ2: Can you tell me a little bit about what you know about how adolescent girls experience their first period?

P: Can you speak more about the emotional aspect that girls go through in your experience?

IQ3: How do girls learn about menstruation?

P: Can you talk a little bit about menstruation education in the schools?

P: When do girls learn about menstruation? Before or after their first period?

P: How do girls approach you about menstruation?

P: Can you tell me a little bit more about this. When? What kind of questions do they ask?

P: Can you tell me a little bit more about how parents talk to girls about menstruation?

P: Can you tell me more about how girls relate to their parents regarding menstruation?

P: How do girls talk to each other about menstruation?

IQ4: Can you tell me about any possible social support networks girls in the community may benefit from?

P: In school?

P: In the community at large?

P: In the health sector?

IQ5: Can you tell a little bit about what resources adolescent girls have available to them regarding menstruation?

P: Can you speak a little bit more on how girls access absorbents?

P: What sanitation facilities are available to girls in this community - at home - at school?

P: How about disposal facilities?

IQ6: Do all girls use the same type of resources (absorbents/facilities)?

P: How do some girls use resources differently?

IQ7: Can you tell me a little bit about how girls manage their periods?

P: Can you give me any examples of coping strategies?

IQ8: Can you tell me about any campaigns or programs that were successful in teaching girls about menstruation?

P: What was it that made this programs or campaigns successful?

P: Can you tell me how you would improve these programs?

IQ9: Can you tell me a little bit about any challenges girls might have in relation to their periods?

P: Any health challenges?

P: Any social challenges?

P: Any emotional challenges?

P: Any educational challenges?

P: In your experience, do girls miss school because of their periods?

IQ10: How do boys perceive menstruation?

P: How do boys learn about menstruation?

P: How do boys talk about menstruation?

IQ12: Can you talk a little bit about any traditional practices that are associated with menstruation in this community?

Summing up:

Is there anything else you would like to add?

Is there anything important you think I forgot to mention?

Could you direct me to anyone else who might be able to help me?

Can I contact you again if I have any more questions?

Appendix D

3rd stage interview guide - Female student

IQ1: Do you learn about menstruation in school?

P: Can you tell me a bit more about what you learn?
P: Who teaches you about it?
P: Do boys and girls learn about it together?
P: How do you feel about learning about this?

IQ2: What are some tools that help you deal with your period?

P: How does it help you?
P: When do you use these tools?
P: How do you use these tools?

IQ3: How do you access these tools?

P: Do you access them the same way other girls do?
P: Do you have difficulties accessing these tools/resources?
P: Who helps you access these tools?

IQ4: Do you use the same tools as other girls your age?

P: What tools do you use that are different?
P: How do you use them differently?
P: How does this help you?

IQ5: Who helps you deal with your period?

P: How do they help you?

IQ6: When did you first learn about menstruation?

P: Who first told you about menstruation?
P: What did they tell you?
P: How did you feel learning about it?

IQ7: Who do you talk to about your period?

P: Mother?
P: Father?
P: Teachers?
P: Friends?
P: Siblings?
P: Who is easiest to talk to about menstruation?
P: What do you talk about?
P: Does it help you to talk to them?
P: How does it help you?

IQ8: Can you tell me a bit about when you got your first period?

P: How did you feel?
P: Who did you talk to about it?
P: Did you do anything special?

IQ9: What is difficult for you when you have your period?
- P: How is it challenging?
- P: Do you talk to your friends or siblings about these feelings?
- P: What could be done to make this less difficult?

IQ10: How do you feel when you have your period?

IQ11: What do you do that helps you during your period?
- P: Do other girls do this?
- P: How is what you do different?
- P: How does it help you?
- P: How could this help other girls your age?

IQ12: What is the best advice you have gotten that has helped you deal with your period?
- P: Who gave you that advice?
- P: When did they give you that advice?
- P: How did the advice help you?
- P: Have you shared the advice with anyone?
- P: Did it help them?

IQ13: Do you ever help your siblings or friends deal with their periods?
- P: How do you help them?
- P: Do they ask you for advice?
- P: What do you tell them?
- P: When do they come to you for help?

IQ14: What advice would you give your friends/siblings to help them when they first get their periods?
- P: When would you give the advice?
- P: How would the advice help them?

IQ15: What is the one thing that could help girls your age deal with their periods?
- P: How would this help?
- P: What can be done to make this happen?
- P: How can you be part of helping others?

Appendix E

Photovoice session 1 - developing question for photo assignment worksheet
My research question: What are the experiences of menstruating girls in Vellore, Tamil Nadu?
Words I think of related to this:

Possible questions for photovoice:

Final question:

Photovoice session 2 - discussing the photo
SHOWED questions for Photovoice

What do you **S**ee here?
What's really **H**appening here?
How does this relate to **O**ur lives?
Why does this problem, concern, or strength exist?
How can this image **E**ducate the community, policy makers, others?
What can we **D**o about it?

Appendix F

NSD approval

Marguerite Daniel
Christiesgt. 13
5015 BERGEN

Vår dato: 15.08.2017 Vår ref: 54618 / 3 / ASF Deres dato: Deres ref:

Tilbakemelding på melding om behandling av personopplysninger

Vi viser til melding om behandling av personopplysninger, mottatt 02.06.2017.
Meldingen gjelder prosjektet:

54618	*A positive deviance approach to menstrual health among adolescent girls in Sri Puram, India. A photovoice study*
Behandlingsansvarlig	*Universitetet i Bergen, ved institusjonens øverste leder*
Daglig ansvarlig	*Marguerite Daniel*
Student	*Marte Gulbrandsen Hovdenak*

Personvernombudet har vurdert prosjektet, og finner at behandlingen av personopplysninger vil være regulert av § 7-27 i personopplysningsforskriften. Personvernombudet tilrår at prosjektet gjennomføres.

Personvernombudets tilråding forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database.

Personvernombudet vil ved prosjektets avslutning, 14.06.2018, rette en henvendelse angående status for behandlingen av personopplysninger.

Dersom noe er uklart ta gjerne kontakt over telefon.

Vennlig hilsen

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Appendix G

Request for Participation in Research Project

Project SHINE (Sanitation and Hygiene INnovation in Education) a school and community-based project to improve water, sanitation and hygiene in Sri Puram/ rural India

STAKEHOLDER CONSENT LETTER

BACKGROUND AND PURPOSE

This is a request for you to participate in a PhD research project from the Norwegian University of Life Sciences in partnership with the Sri Narayani Hospital and Research Centre. Permission to conduct the research project has been granted by the Institutional Review Board in India. This letter has important information about the research project, what we will ask you to do, and what we would like to use the information about you for if you choose to be in the research project.

This is a request for you to participate in a PhD research study from the Norwegian University of Life Sciences in partnership with the Sri Narayani Hospital and Research Centre that intends to investigate the potential for using science education to empower students to design health promotion strategies, which engage students and the wider community in preventing diarrheal diseases. The information we learn in this study will assist us in designing programs to prevent diarrheal diseases in young people and promote healthy sanitation and hygiene practices. We hope that the program will also have a wider impact on the community.

Your school is one of the schools participating in a research study, diarrheal disease, and different ways of preventing it. You are being invited to take part in the research project, which will help to ensure that the program we design will meet the needs of young people and this community.

Poor sanitation and hygiene practices often lead to diarrheal diseases, which are one of the leading causes of death in children under five in developing countries. In India, more than 334,000 children die from diarrheal diseases each year making this a public health issue of great importance. This project is designed to empower youth and communities in Tamil Nadu to develop and sustain health promotion strategies to prevent these diseases.

WHY ARE WE DOING THIS RESEARCH PROJECT ?

You are being asked to participate in a research project about sanitation and hygiene. Right now, we are interested in learning more about sanitation and hygiene in your community. We would like to invite you to take part in this part of the research project, in order to make sure the program we design will meet the specific needs of the students and the community.

The purpose of the research project is to investigate how science education in school can empower students to design health promotion strategies, which will engage students and the wider community in preventing diarrheal diseases. The information we learn in this research project will assist us in designing programs to prevent diarrheal diseases in young people and promote healthy sanitation and hygiene practices. We hope that the program will also have a wider impact on the community.

Poor sanitation and hygiene practices often lead to diarrheal diseases, which are one of the leading causes of death in children under five in developing countries. In India, more than 334,000 children die from diarrheal diseases each year making this a public health issue of great importance. This project is designed to empower youth and communities in Tamil Nadu to develop and sustain health promotion strategies to prevent these diseases.

You have been selected to participate in this research project because you have great knowledge about your community.

WHAT DOES PARTICIPATION IN THE PROJECT IMPLY?

If you decide to take part in this research project we will ask you to participate in an audio-recorded group discussion or interview to develop an understanding of your knowledge, beliefs and behaviors related to sanitation and hygiene.

WHAT WILL HAPPEN TO THE INFORMATION ABOUT YOU?

All personal data will be treated confidentially. We will not ask you your name and only trained research staff will have access to the audiotapes and transcripts of the discussion. No information will be given to anyone about any individual person's involvement with any activities. We will use the results of the study to improve the project so that it meets the needs of young people and communities.

We will not ask your name during interviews or group discussions and only trained research staff will have access to the audiotapes and transcripts. The project is scheduled for completion by August 2019. At that point, all personal data and recordings will already be anonymized. All information will be destroyed two years after the research project has concluded in August 2021.

It will not be possible to identify you in the results of the research project when they are published.

VOLUNTARY PARTICIPATION

It is voluntary to participate in the research project, and you can choose to withdraw your consent anytime without stating a reason. If you decide to withdraw, all your data will be made anonymous.

If you choose to withdraw, this will not have any consequences. If you wish to participate, **do not sign** the declaration on the final page. If you agree to participate at this time, you may later on withdraw your consent without any consequence.

If you would like to participate or if you have any questions concerning the research project, please contact Sheri Bastien at +47 67 23 00 00.

The research project has been notified to the Data Protection Official for Research, NSD - Norwegian Centre for Research Data.

Consent for participation in the research project

WHAT ARE MY OPTIONS?

Please check the boxes below to indicate which activities you agree to participate in and sign your name.

- □ **I agree** to participate in the research study and to take part in interviews.
- □ **I agree** to participate in the research study and to take part in group discussions.

I have received information about the project and am willing to participate.

(Signed by participant, date)

THANK YOU FOR YOUR PARTICIPATION!