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Gauthami Penakalapati Date

“Boys don’t have knowledge about menstruation; they think it is a bad thing” -
Knowledge and Beliefs about Menstruation among Adolescent Boys in Gicumbi District, Rwanda

By

Gauthami Penakalapati
Master of Public Health

Hubert Department of Global Health

_____
Matthew C. Freeman, PhD, MPH
Committee Chair

_____
Karen Andes, PhD
Committee Member

_____
Bethany Caruso, MPH
Committee Member

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By

Gauthami Penakalapati

Bachelor of Science
Georgia Institute of Technology
2009

Thesis Committee Chair: Matthew C. Freeman, PhD, MPH

An abstract of a thesis submitted to the Faculty of the Rollins School of Public Health of
Emory University in partial fulfillment of the requirements for the degree of
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Abstract

"Boys don't have knowledge about menstruation; they think it is a bad thing" -
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Background
Research indicates that girls who have reached menarche face numerous challenges in the school environment. Lack of facilities, supplies, and guidance on puberty and menses management can lead to feelings of shame and embarrassment. Girls fear being stigmatized by boys who have flawed understanding of menstruation and who perpetuate stigma surrounding menstruation. Research on boys' understandings of menstruation is limited.

Purpose
This research aims to understand the knowledge and beliefs adolescent boys have about menstruation and how their understanding influences their behavior towards girls who are menstruating in Gicumbi District, Rwanda.

Methods
Qualitative methods were used to encourage open dialogue and enable boys to share in-depth narratives. Five semi-structured focus group discussions were conducted with a sample of 31 primary and secondary school boys aged 9 to 17 years. Data were collected in five urban and rural schools in Gicumbi District. Discussions conducted by locally trained male researchers in Kinyarwanda, the local language. Discussions were recorded, transcribed and translated into English. Data were analyzed in an iterative process of developing and defining codes. The codes were subsequently linked to themes spanning or differing across the FGDs. The developed set of themes address the research aims of the project.

Results
Boys shared their knowledge about the biology of menstruation, menstrual related behaviors, and knowledge of menstrual related challenges. Menstruation signified maturity because girls were able to conceive but boys were misinformed that girls could become pregnant during their menses. Boys were aware that girls lacked adequate water and sanitation facilities and limited access to absorbent materials; these challenges were thought to limit girls' participation in the classroom. Many boys expressed negative ideologies and feelings towards menstruation and acknowledged that menstrual related teasing of female classmates was common.

Conclusion
Boys' negative ideologies about menstruation are perpetuated by the lack of knowledge and the overall silence surrounding the issue. Boys' negative behavior towards girls who are menstruating affects the overall well-being of girls. Teachers and the WASH sector have an opportunity to improve feelings of school connectedness among boys and girls to improve the physical and mental health of girls.

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Contents

INTRODUCTION

Introduction and Rationale

As the first stage of puberty for girls, menstruation marks a girl's entry into womanhood. Girls absorb a variety of negative attitudes and myths surrounding menstruation as they grow older, and a lack of awareness of proper hygienic practices and misconceptions of menstruation can have negative consequences on girls' overall mental and physical well-being. As universal primary school enrollment, particularly for girls, is becoming a reality, the school setting is becoming the main environment in which girls must manage their menses. Studies have shown that inadequate water and sanitation facilities, including lack of clean water for washing and private places for girls to change and dispose of absorbent materials, are barriers to girls' education In addition, girls are juggling feelings of shame, fear, and worry about being stigmatized and socially excluded. Girls are worried that they might be teased and ashamed by their male classmates, and to avoid embarrassment, girls skip class during their menses. In the school environment, boys play an important in girls' feelings towards her menses. Studies indicate that boys often harbor a negative and uninformed view of menstruation; views which are used to reinforce sexist attitudes towards girls and women.

Problem Statement

Girls face a variety of challenges when managing their menses in the school setting including a lack of access to absorbent materials and inadequate water and sanitation facilities to maintain their hygiene. These challenges are garnering more attention as menstruation is thought to contribute to the gender gap in secondary education. The siloing of these challenges as exclusively female contributes the stigma and secrecy of menstruation because girls are experiencing these challenges in a dynamic and social school environment. There are few studies examining boys' attitudes and knowledge on menstruation, and no published studies exploring boys understanding of menstruation in Rwanda or other low-income

countries. It is critical to understand boys' knowledge, attitudes, and perceptions towards menstruation to best create a school environment that supports the well-being of girls and boys.

Purpose Statement

This paper services three objectives: (1) to understand how boys' knowledge and beliefs about menstruation influences their behavior towards girls who are menstruating, and (2) to explore how boys' understanding of menstruation impacts the physical and mental well-being of girls, and (3) to support the concept of school connectedness as a means to promote the physical and mental well-being of girls and boys in school

Research Aims

Explore how boys' knowledge and beliefs about menstruation influences their behavior towards girls who are menstruating

Aim 1: Understand boys' knowledge and beliefs about menstruation

Aim 2: Describe boys' behaviors towards girls who are menstruating

Aim 3: Describe boys' perceptions of girls' menstrual experiences

Significance Statement

This study will inform our understanding of how boys shape girls' menstrual-related experiences in school. The study will also explore how menstrual-related challenges and experiences may have implications on the physical and mental well-being of girls. The following investigation promotes the concept of school connectedness as a means to support the physical and mental well-being of girls and boys in schools.

Terms of Reference

9YBE: Nine-Year Basic Education

CGSW: Center for Global Safe Water

CFS: Child Friendly School

FGD: Focus Group Discussion

GFL: Girl Friendly Latrines

IRB: Institutional Review Board

MoE: Ministry of Education

MoH: Ministry of Health

SES: Socio-economic Status

WASH: Water, Sanitation, and Hygiene

REVIEW OF THE LITERATURE

Adolescents in Rwanda and other developing countries are facing social, economic, and health-related challenges different from previous generations (Fatusi & Hindin, 2010). A study by Patton (2009) showed that adolescents are at high risk of mortality primarily from behavioral causes including sexual and reproductive health issues, accidental and intentional injuries, mental health problems, and substance use and abuse. Among all adolescents worldwide, young people in Africa have a higher relative risk of death than adolescents in other region and largely attributed to preventable mortality (Fatusi & Hindin, 2010; Patton et al., 2009). Among sub-Saharan females 15-24 years, communicable and pregnancy-related issues are the leading causes of mortality. Injury and communicable diseases are the leading cause of death among males of the same age group in sub-Saharan Africa (Fatusi & Hindin, 2010).

Despite the health challenges that sub-Saharan adolescents face, 76% of boys and girls are enrolled in primary school (UN, 2012). Schooling positively influences health behavior and long-term economic achievement (Fatusi & Hindin, 2010; Hewett & Lloyd, 2005). Young people – both males and females – are spending an increasing number of their early years in school. This means that schools are an increasingly important environment where youth interact and develop relationships with peers and selected adults, such as teachers and other school staff (Fatusi & Hindin, 2010). The concept of school connectedness – "feeling that someone in a young persons' school cares about his or her well-being" - is associated with positive health outcomes (Fatusi & Hindin, 2010). School-connectedness is associated with improved academic achievement, positive health behavior, and improved mental health(Eisenberg, Neumark-Sztainer, & Perry, 2009; Libbey, 2004). This construct is particularly relevant for adolescents as they come to rely less on their families and more on extrafamilial relationships like those found in schools with friends and others (Goodenow, 1993; Shochet, Dadds, Ham, & Montague, 2006).

As the gender gap in school enrollment closes, girls are more likely to transition through adolescence and puberty, including managing their menses, in the school setting. The idea of school-

connectedness could be especially important for girls as they navigate puberty and the challenges that come from managing their menstruation in low-resource settings. Fatusi (2010) notes that, although schooling has massive positive impacts on adolescent health and economic attainment, schooling may also have negative consequences related to sexual exposure and behavior, bullying, and violence. Promoting a safe and supportive environment for girls is integral for their physical and mental health, and boys play an important role in building these supportive environments and promoting school-connectedness.

Often associated with the transition from girlhood to womanhood, menstruation is a natural reproductive process bearing strong cultural and societal attitudes towards women and girls (Roberts, Goldenberg, Power, & Pyszczynski, 2002). Menarche, or the first menstruation, can be a proud moment for girls and families with and is met with varying rituals and traditions to celebrate the transition to adulthood (Dunnavant & Roberts, 2009; Farange, 2011). Globally, this entry into womanhood, however, coincides with an understanding that menstruation should be kept secret and hidden (Beausang & Razor, 2000).

Studies in Nigeria, Mexico, the United States, India, and Malaysia suggest a variety of negative attitudes and myths surrounding menstruation, particularly, menstruation has been "socially constructed as a problem – something shameful and dirty" likely because menstrual blood is perceived as disgusting and unclean (Irinoye & Ogungbemi, 2003; Marván & Bejarano, 2005; Merskin, 1999; Omidvar & Begum, 2010; Wong, 2011). As such, menstruation is a source of social stigma for women, and a menstrual stain on a woman's clothing is seen as a blemish on her character (Johnston-Robledo & Chrisler, 2011). Indications of menstruation lead to physical isolation, thoughts on limited mental capacity, and overall negative judgments towards females who have displayed their menstrual status (Johnston-Robledo & Chrisler, 2011; Roberts et al., 2002).

Due to the silence surrounding mensuration, many girls are simply unaware of menstruation prior to menarche (Abioye-Kuteyi, 2000). Many studies suggest the girls learn about menstruation from home, primarily from their mothers and sisters (Abioye-Kuteyi, 2000; Irinoye & Ogungbemi, 2003). A mother's education is associated with her ability to share accurate and correct knowledge of menstruation with her daughter, and unfortunately, there is ample evidence that girls in developing countries are not prepared to manage their menstruation (Abioye-Kuteyi, 2000; Ali & Rizvi, 2009; Farange, 2011; Goel & Kundan, 2011; Jogdand & Yerpude, 2011; McMahon et al., 2011; Sommer, 2010b). Though mothers are often the primary and first source of information for girls, mother may be uncomfortable with openly discussing menstruation and other related sexual and reproductive health issues (Dhingra, Kumar, & Kour, 2009). A lack of awareness of proper hygienic practices and misconceptions of menstruation can have negative consequences on girls' overall mental and physical well-being (Johnston-Robledo & Chrisler, 2011).

As universal primary school enrollment, particularly for girls, is becoming a reality, the school setting is becoming the main environment in which girls must manage their menses. In sub-Saharan Africa, 93 girls for every 100 boys are enrolled in primary school (UN, 2012). Rwanda boasts net primary school enrollments rates at 97% for girls compared to 95% among boys; net school attendance ratios are 87% among girls and 84% among boys (UNICEF, 2012). As schooling becomes more prevalent, teachers and schools have an important role in the education and development of children. Teachers are increasingly becoming an important source of knowledge about menstruation as girls are more likely to manage their menses in the school setting. Currently, menstruation is taught at many schools, often with boys and girls separated (Chang, Hayter, & Lin, 2012; Marván & Bejarano, 2005). Despite this education, adolescent girls in multiple studies in low-income countries showed gaps in knowledge and low levels of awareness about menstruation (Dhingra et al., 2009; Thakre et al., 2011). Girls in multiple studies expressed desire for more comprehensive information about menstruation (El-Gilany, Badawi, &

El-Fedawy, 2005; Sommer, 2009). For some girls, school is the only source of education on menstruation highlighting the need for schools to disseminate accurate information about menstruation and related reproductive issues (Kirk & Sommer).

Girls face unique challenges when managing their menses in the school environment. Studies have shown that inadequate water and sanitation facilities, including lack of clean water for washing and private places for girls to change and dispose of absorbent materials, are barriers to girls' education (Farange, 2011; McMahon et al., 2011; Sommer, 2009, 2010a). Due to a lack of appropriate facilities, girls are preoccupied about managing their menses and avoiding displaying their menstrual status; this discomfort is thought to limit girls' participation and concentration in school culminating in girls missing school altogether to avoid staining their uniform and resulting embarrassment (Kirk & Sommer; McMahon et al., 2011). In addition, girls are juggling feelings of shame, fear, and worry about being stigmatized and socially excluded - all resulting in distraction and preoccupation during school (McMahon et al., 2011). To compensate, girls simply prefer to manage their periods in a safe environment at home rather than at school. Though girls are known to miss school during their menses, there is not enough information on the association between the onset of menses and school dropout rates (Crofts, 2012; Grant, Llyod, & Mensch; Mutunga & Stewart, 2007). Combined with the challenges of managing menses at school and the lack of support at home and at school, girls inability to safely manage their menses is thought to increase feelings of disgust and shame towards menstruation – perpetuating feelings of stigma and negative attitudes of menstruation (Johnston-Robledo & Chrisler, 2011).

Despite the plethora of literature on girls' understanding and perceptions of menstruation, limited research has explored similar realms among boys and young men. The limited research on boys understanding of menstruation has taken place in Taiwan and the United States, but similar research has

not been previously conduced in low-income countries (Allen, Kaestle, & Goldberg, 2010; Chang et al., 2012; Cheng, Yang, & Liou, 2007; Fingerson, 2005).

As with their female counterparts, boys learned about menstruation at school in conjunction with other sexual and reproductive health matters (Allen et al., 2010; Cheng et al., 2007). Boys learned about the anatomical information on menstruation from teachers in school but felt like they knew less about menstruation than their female classmates (Allen et al., 2010; Chang et al., 2012; Cheng et al., 2007). To compensate, boys were more likely to trade stories and information about menstruation with their peers though these transactions are likely laced with substantial accuracy problems (Epstein & Ward, 2007). Though girls learned from their mothers, educating boys on menstruation was seen to be the responsibility of the father (Kissling, 1996). For boys in the United States and Taiwan, this rarely occurred as fathers and other male relatives had limited knowledge about menstruation themselves (Allen et al., 2010; Chang et al., 2012; Cheng et al., 2007; Kirk & Sommer).

Studies indicate that boys often harbor a negative and uninformed view of menstruation; views which are used to reinforce sexist attitudes towards girls and women (Chang et al., 2012; Cheng et al., 2007; Roberts et al., 2002). Boys often saw girls as “emotional” or unstable during their menses and more prone to weakness from menstrual-related symptoms. In fact, Chang (2012) found that boys believed more of menstrual related taboos than their female counterparts. Boys have more negative feelings towards menstruation than girls and have often internalized menstrual stereotypes as an explanation for how girls behave (Chang et al., 2012; Cheng et al., 2007).

In addition to the aforementioned studies, knowledge of boy’s behaviors towards menstruating girls came from qualitative studies interviewing girls. For example, girls in Kenya and Tanzania confirmed menstrual-related teasing by boys towards girls (McMahon et al., 2011; Sommer, 2010b). Boys in the United States also acknowledged menstrual-related harassment in the school setting (Allen et al., 2010). Researchers have acknowledged that males have limited knowledge about menstruation, and just as

girls are lacking guidance during their transition into adulthood, boys are also lacking similar information on how to transition into adults and how to interact with girls who are menstruating with empathy and understanding (Kirk & Sommer; Sommer, 2011).

Because boys do not experience menstruation themselves, they often experience it second-hand from the reactions and feelings of their female friends, sisters, mothers, or other female relatives. Cheng (2007) supports that this second-hand learning contributes to boys negative attitudes towards menstruation. Despite the limited research on boys' and young men's knowledge of menstruation, studies show that boys adopt negative views of menstruation which are sometimes used to reinforce sexist attitudes towards women.

MANUSCRIPT

Abstract

Background
Research indicates that girls who have reached menarche face numerous challenges in the school environment. Lack of facilities, supplies, and guidance on puberty and menses management can lead to feelings of shame and embarrassment. Girls fear being stigmatized by boys who have flawed understanding of menstruation and who perpetuate stigma surrounding menstruation. Research on boys' understandings of menstruation is limited.

Purpose
This research aims to understand the knowledge and beliefs adolescent boys have about menstruation and how their understanding influences their behavior towards girls who are menstruating in Gicumbi District, Rwanda.

Methods
Qualitative methods were used to encourage open dialogue and enable boys to share in-depth narratives. Five semi-structured focus group discussions were conducted with a sample of 31 primary and secondary school boys aged 9 to 17 years. Data were collected in five urban and rural schools in Gicumbi District. Discussions conducted by locally trained male researchers in Kinyarwanda, the local language. Discussions were recorded, transcribed and translated into English. Data were analyzed in an iterative process of developing and defining codes. The codes were subsequently linked to themes spanning or differing across the FGDs. The developed set of themes address the research aims of the project.

Results
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Conclusion
Boys' negative ideologies about menstruation are perpetuated by the lack of knowledge and the overall silence surrounding the issue. Boys' negative behavior towards girls who are menstruating affects the overall well-being of girls. Teachers and the WASH sector have an opportunity to improve feelings of school connectedness among boys and girls to improve the physical and mental health of girls.

Introduction

Menstruation in many cultures signifies the transition from girlhood into womanhood. This transition into adulthood can be a difficult time for girls as they learn to manage their menses along with navigating the social and gender norms of becoming women. Menstruation is often seen as shameful and dirty, a taboo subject meant to be hidden (Cheng et al., 2007). As such, girls are often taught by their mothers to keep menstruation a secret and to avoid displaying their menstrual status. Feelings of shame and social discomfort are common as girls and women take pains to conceal their menstrual blood and knowledge of menstruation from others (Kissling, 1996). In the school setting, girls take particular care to conceal their menstruation from male peers to avoid mocking and harassment (Cheng et al., 2007; McMahon et al., 2011; Sommer, 2010b).

Though girls worldwide face the taboo and stigma of menstruation, girls in low-income countries lack appropriate resources, facilities, and preparation to safely manage their menstrual hygiene (Ali & Rizvi, 2009; El-Gilany et al., 2005; Irinoye & Ogungbemi, 2003; Wong, 2011). Due to a lack of support, guidance, and role models, girls in low-income countries lack the emotional and social knowledge to understand menstruation and maintain their physical and emotional well-being. Recent work has focused on the challenges girls face in managing their menstruation in the school setting and raised awareness at the importance of supporting girls in school (McMahon et al., 2011, Sommer, 2010a).

Though past research understanding the challenges girls face in the school setting have acknowledged that boys play an important role in girls experiences, limited research has focused on boys' roles in the school environment. Research with boys in Taiwan and the United States addressed male students' attitudes towards and knowledge of menstruation, but similar research has not been conducted in low-income settings (Allen et al., 2010; Chang et al., 2012; Cheng et al., 2007). This study

investigates the knowledge of menstruation among boys in Rwanda and explores their behaviors towards girls who are menstruating.

Methods

We collected primary qualitative data collected in Gicumbi District, Rwanda in collaboration with UNICEF Rwanda, Ministry of Health Rwanda (MoH), Ministry of Education (MoE) and the Center for Global Safe Water (CGSW) at Emory University. The data was collected between August and October 2012. The research team included researchers from Emory University, UNICEF Rwanda, and Ministry of Health Hygiene Officers. Ethical approval for the study was obtained from Emory University Institutional Review Board (IRB Protocol #IRB00059345).

This study was part of a multi-country study on MHM in schools that included research using similar methods conducted in Bolivia, Philippines, and Sierra Leone. The purpose of the research was to investigate menstrual related challenges across a range of settings and cultures in order to increase MHM knowledge in the school setting and design recommendations to best support girls who are menstruating in schools. The research design was informed by an ecological framework derived from Bethany Caruso (Figure 1) and sought to capture the scope of MHM challenges and school behaviors on various levels of influence: biological, personal, interpersonal, environmental, and societal factors.

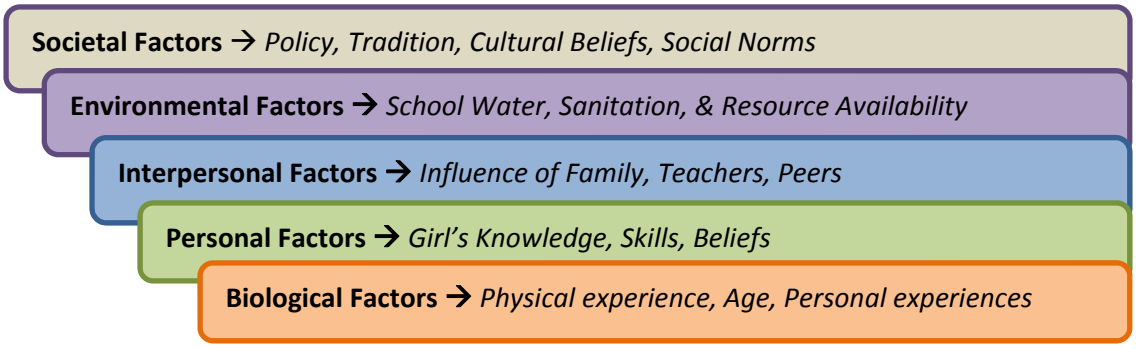

Figure 1: Ecological Framework – Adapted from Bethany Caruso (unpublished).

Study Setting

Rwanda is a small landlocked country in Central Africa. The study was in Gicumbi District, a rural district in the Northern Province. Gicumbi supports 29% of the total population of the Northern Province and 5.3% of the total population of Rwanda. Gicumbi residents are young with 81% of them being younger than 40 years old. A majority of the population is employed in agriculture: 67% are independent farmers. Household agriculture and livestock are the primary sources of household income for many families in Gicumbi (Demographic Health Survey, 2012; NISR, 2012)

The education system in Rwanda is structured into five levels: pre-primary, primary, secondary, vocational training, and tertiary. Pre-primary schooling lasts for three years for children aged 3-6; primary and secondary schooling follows, lasting six years each. Secondary education is composed of lower secondary (first three years) and upper secondary (second three years). Vocational training consists of training young people with skills for employment. Tertiary education is equivalent to a Bachelor's Degree and varies between three to six years. All instruction is taught in Kinyarwanda during primary school, but students learn English and French. In secondary school, all instruction is taught in English or French. Compulsory education known as "Nine-Years Basic Education (9YBE)" lasts nine years from age 7 to 15 covering primary (P1-P6) and lower secondary (S1-S3) (MoE, 2012).

Rwanda boasts net primary school enrollments rates at 97% for girls compared to 95% among boys (NISR, 2012). Enrollment rates drop for secondary education, with 24.2% boys and 27.2% girls of secondary school age enrolled in 2011 (MoE, 2012). The national enrollment trends are similar in Gicumbi; net attendance rate for primary school is 97.9% but drops to 25.8% for secondary school (NISR, 2012). Within Gicumbi, 83.7% of individuals aged six and older have attended school. Gicumbi has a literacy rate of 84.8%, higher than the national rate of 69.7% (NISR, 2012). Gicumbi counts 91 primary schools and 57 secondary schools (MoE, 2012).

Study Design

The study is a primary analysis of qualitative data collected in Gicumbi District, Rwanda in 2012. The research was conducted within a broader study to understand MHM in schools; in the broader scope, researchers spoke with girls, boys, teachers, and mothers to investigate the range of challenges faced by girls during menstruation in school and in every day settings. Girls participated in in-depth interviews (IDIs) and focus group discussions (FGDs); IDIs were used to provide a safe environment for girls to share personal experience related to menstruation and FGDs were aimed to discover a range of challenges and to understand their opinions and recommendations for improving school facilities and other needs. Boys are an integral part of the school environment and they are participating in FGDs to understand their knowledge of menstruation and their perceptions on the role of boys around menstrual issues. Observation data was collected on the state of school water, sanitation, and hygiene (WASH) facilities. Mothers of daughters in the schools participated in FGDs to collect information on the cultural norms associated with menstruation. Teachers were surveyed on the status of school WASH facilities and menstrual hygiene related issues to understand their perceptions of menstrual related challenges. Observation data was collected on the state of school water, sanitation, and hygiene (WASH) facilities.

The research described henceforth will pertain specifically to the data collection process and analysis of the boys' FGDs. Researchers utilized a semi-structured guide when conducting the FGDs with boys. The FGD moderator guides aimed to better understand boys understanding and knowledge of menstruation and menstrual-related challenges that girls experience.

School Selection

Prior to this study, 12 schools were identified by UNICEF Rwanda, MoH, and Gicumbi District Officials. From this preliminary list of 12 schools, this project identified eight schools based on their location; four schools were in rural areas and four were in Gicumbi town. In total, the research visited eight schools and conducted FGDs in five schools: three rural and two urban schools. All schools were co-education 9YBE schools.

The research team gained entry to the schools with cooperation from the Gicumbi MoE. The Gicumbi MoE connected the research team with headmasters and teachers in each of the eight schools. The research team coordinated logistics directly with a representative from the Gicumbi MoE and headmasters and teachers of each school.

Study Participants

The study population included boys aged 9 to 18 years old in 9YBE schools. The age of some students do not correlate to their respective grades. Rwandan students receive free 9YBE expected to range from age 7 to age 15 spanning from the first year of primary school (P1) to third year of secondary school (S3). The primary or secondary status of some students may not accurately reflect their age. For example, a boy in P6 could be 16 years old instead of the expected 12 years. The reason for this discrepancy in lack of traditional age to grade correlation was not studied, but it is important to note references to primary and secondary students in this paper may not be prescribed to a certain age.

During the time of data collection, all students were on holiday recess. At each school, the Gicubmi Ministry of Education identified two to three teachers based on their investment in the school community. These teachers then solicited participation by boys who lived within walking distance to the school. Teachers identified boys who represented the diversity of the school population accounting for age, family socio-economic status (SES), academic achievement, and family structure. A total of 31 boys participated in the five FGDs.

Data Collection

The data collection tools were originally created in English. Local researchers adapted the tools to the Rwandan context and translated the tools into Kinyarwanda. Research assistants further modified the research tools to reflect cultural nuances. The FGDs were moderated by one male researcher and one male note-taker. Prior to data collection, written and verbal informed consent was obtained for all participants. School boys obtained written parent/guardian permission prior to participation. The boys themselves orally consented to participation prior to audio-recording of the FGDs. To ensure confidentiality, all FGDs took place in classrooms. All conversations were recorded and transcribed and later translated into English. Transcriptions were de-identified and all electronic documents were password protected.

All data collectors were Rwandan Ministry of Health Hygiene Officers and were trained in qualitative research methods prior to data collection. Data was collected in Kinyarwanda, the local language.

The original FGD guides did not include questions of sex and pregnancy and moderators did not inquire about boys' knowledge on the relationship between menstruation, sex, and pregnancy. Boys, in all five FGDs, raised the issue independently. In an effort to avoid discussing about sex and pregnancy, moderators did not probe into boys' statements. We also lacked an IRB clearance to discuss issues of reproduction.

Data Analysis

Our analysis will inform the reader about the knowledge and understanding of menstruation among boys in Gicumbi District, Rwanda. The English transcripts were coded with common themes that emerged from the data. Using an iterative process, codes were then organized into broader themes addressing boys' knowledge of menstruation. The data were analyzed using MAXQDA (Berlin, Germany). Qualitative data analyzed addressed boys' knowledge and beliefs about menstruation and how their

knowledge and beliefs influence their behavior towards girls who are menstruating. Quotes from the data, which best expressed typical statements, were included in this paper.

> **Research Question:** Explore how boys' knowledge and beliefs about menstruation influence their behavior towards girls who are menstruating
> **Aim 1:** Understand boys' knowledge and beliefs about menstruation
> **Aim 2:** Describe boys' behaviors towards girls who are menstruating
> **Aim 3:** Describe boys' perceptions of girls' menstrual experiences

Results

Boy's opinions about menstruation are shaped by the education they receive in school, the information they learn at home, and the experiences they have with female peers and family members. Boys in this study ranged from ages 9 to 18 and attended either a rural or an urban school. An urban school was defined as one within Gicumbi Town and any schools outside of town were considered rural. We did not find systematic differences in the knowledge, perspectives, and opinions between boys in rural schools and boys in urban schools. The purpose of qualitative research is to understand the experiences of a group, and so these findings cannot be generalized to other populations.

Knowledge of Menstruation

Boys shared their knowledge about the biology of menstruation, the social understanding of menstruation, the materials girls use to manage their menses, menstrual related behaviors, knowledge of menstrual related challenges. Boys explained that they learned about menstruation and associated behaviors from various sources including teachers, parents and other family members, and peers. The statements around knowledge of menstruation reflect ideas and thoughts that boys *perceive* to be true. Moderators did not correct or diagnose any misinformation shared by the boys.

Knowledge of the Biology of Menstruation

In school, most boys and girls are first introduced to puberty and menstruation in a co-education setting. Boys from all FGDs said they learned about menstruation in either P4 or P6 – approximately at age 10 and 12 respectively.

When asked to describe the biology of menstruation, boys were able to provide anatomical detail. Boys from all schools shared that menstruation is the result of "mature ovule not meeting with spermatozoid for fecundation." Another boy put it more simply as "when blood comes out of a girl's vagina when she reaches puberty." They learn that girls reach menarche around 12 years of age or when girls are in P4 or P5 or simply based on their "hormones."

Boys mentioned teachers as the primary source of knowledge on the biology of menstruation. Boys said they were taught by a female or a male teacher in a co-education setting during the "SAT" [science and technology] class in primary school and again during "human biology and reproductive health" in secondary school. Students in one school were taught about body growth by World Vision, a non-governmental organization aimed at reducing poverty in low-resource settings.. Boys at this school were taught "that as the body grows, there is some change on it such as for girls about 12 years they may start menstruating so she can prepare for it." At the same school, boys further discussed menstruation in an after school club. Boys from this school mentioned that the club invited a female community health worker to explain menstruation in more detail.

Social Knowledge of Menstruation

When asked what menstruation means, boys said they associated menstruation and menarche to girls being "grown up" and reaching maturity because girls could now get pregnant. A girl is an adolescent "from head to foot" because she has reached puberty. Overall, boys saw menstruation as a normal occurrence and that girls were created to have periods – simply "how God created them" (FGD 9, 87).

Boys acknowledged that menstruation was normal but frequently referenced to menstruation as a "problem" or as an illness because girls looked like "ill people." Boys said that girls also referred to menstruation in a similar fashion. Boys said that girls looked unhappy and when boys inquired about a girl's well-being, the girl would say she was sick. Boys felt that menstruation made a girl feel irritable; she was "not free" because "she has that problem." Overall, when speaking about menstruation, boys in all the FGDs referred to menses negatively.

Knowledge of Materials used during Menstruation

Boys cited pads and cloth as the materials girls used to manage their menstrual hygiene. Pads and the brand Kotex were referred synonymously in all FGDs. Boys said that girls "buy Kotex from shops, but they have a large cloth and cut it in different small cloth! Like '*igitenge*'"[large pieces of fabric in colorful prints worn by Rwandese women]. Boys believe that girls preferred pads because they were easier to use and more discrete and because girls could bring them to school "freely." One boy said if a girl could not afford pads, pieces of cloth were an alternative because they were cheaper, but it was important for girls to clean and dry them properly to prevent infections. Girls were thought to discard used materials in "inaccessible places for people" such as toilets, long pits, or incinerators to prevent others from seeing the materials.

Boys were clear that a family's financial situation reflected which materials girls used during their menses; girls from poorer families used cloth and families with means bought their daughters pads. As for girls who could not afford pads, boys said they would skip school during their menses - a family's ability to afford pads was linked to a girl's school attendance. To minimize school absenteeism, schools provided pads at school. Boys at three schools knew that pads were available for primary school girls and that there was a designated female teacher for girls to go to for menstruation-related advice. At one school, boys said the school provided primary school girls in P4 – P6 pads. Boys at two schools mentioned that their school had a private room for girls to rest and manage their menstruation.

Boys did express concern that a girls' choice of absorbent material influenced her movement in the community. Girls who used pads or pieces of cloth were free to go to the market as long as they had a place to change, but girls who did not use any sort of materials had limited mobility and were generally restricted to their bedrooms and/or homes

Boys were not asked from whom they learned about absorbent materials, but one boy related a story of his sister referring to pads as "bread."

> **Participant 1**: *Girls use to call pads, bread!*
> **Interviewer**: *Breads? Is it a common term they use?*
> **All**: *(laughing)*
> **Participant 2:** *Yes! One time, my sisters bring pads at home, and I ask to them, what is that? They say, "breads"! And I ask them can you give a piece of eating?*
> -School 1**:** Urban

Knowledge of Menstrual Related Behaviors

Much of boys' understanding of how girls behaved during their menses were based on their interactions with girls in the school setting. Boys shared knowledge of how girls behaved during menses in school and how they knew when girls were menstruating. Boys noticed that girls' behaviors changed during their menses; girls were said to be quieter and less participatory. A girls' behavior was often an indicator that a girl was menstruating. Boys mentioned that stains on uniforms and attempts to covers those stains were other signals of menstruation.

Boys acknowledged that girls want to keep menstruation a secret and were "afraid that other persons will realize that they are on their period!" Boys noticed that girls were going to great lengths to conceal their menstruation. Girls would act as normal as possible to "hide [menstruation]" to prevent others from knowing their menstrual status, but despite girls' efforts to keep menstruation a secret, boys noted that they were aware when girls were menstruating.

In terms of interactions with classmates and peers, boys believed that girls preferred to be alone due to feeling uncomfortable with others; during school, boys said that girls preferred to stay in the classroom and in her bedroom if she were at home. Interestingly, one boy mentioned that girls

preferred to be alone to avoid making *others* feel uncomfortable. One boy felt that girls were shy when around classmates and peers. However, boys noticed that girls tended to seek the company of other female classmates when menstruating and generally avoided male company. Boys said that primary school girls were especially likely to seek solitude – avoiding both male and female company. Girls were not active with boys as they used to be before they started their periods, and boys sensed that they could not behave as they used to with female companions.

Much of boys' awareness of how girls behaved is in response to how girls managed pain associated with menstruation. In terms of indications of menstruation, boys thought that headaches and abdominal pains were evidence that a girl was menstruating. Severe abdominal pains were thought to limit classroom participation and often forced girls to stay at home. Boys thought that girls looked weak - a sign of illness. Boys thought that being "angry" or in a "bad mood" was normal for girls when on their periods due to abdominal pain and bleeding. Boys said that girls were not happy and looked weak and ill. If boys inquired about how a girl was feeling, girls would tell them that they were feeling ill and unwell. Boys said girls were free to go about their normal activities but pain and weakness could limit girls from doing certain activities such as housework or other physically demanding tasks such as sports and "agriculture class".

Boys described girls' behavior at school during menstruation similarly in all schools. Boys thought that girls reduced their classroom participation when menstruating for various reasons. Because students traditionally "stand up to answer questions" or walk to the blackboard, boys believed that girls were "afraid" to answer questions in case there were blood stains on their uniforms, an obvious sign of menstruation. Participation and concentration in class were thought to suffer because girls were afraid that others would realize they were menstruating. One boy shared a story of an instance when a girl reduced participation in class:

> **Participant 2:** *There is a girl who studies with us in S2. One day, the teacher asked her to go to the blackboard, and she stood up, and she sat down directly without going to do the exercise. And we ask her, what's wrong with you, and she took the sweater and put around her waist and run away home! This means that she can't participate well in class when she is on her period.*
> -School 1, Urban

Lack of absorbent materials was also thought to limit participation in school. One boy said "a girl might be smart, and then the teacher asks her to answer a question; even if she knows the answer, she won't stand up to answer if she doesn't have a sanitary napkin." One boy felt that if a girl was prepared, she could feel comfortable to go the blackboard. Weakness and pain were also thought be causes of limited participation and concentration in class.

Boys commented on girls' adaptations to their school setting in a variety of ways. Girls who were menstruating were the first to arrive and also the last to leave school. Boys in multiple schools mentioned that girls would stay in classrooms during break times and were "very quiet" during class.

Boys said that girls would also miss school during menstruation. One boy mentioned that girls did not miss school prior to reaching menarche but did miss school when they got their period: "sometimes, girls wake up in the morning and realize they got their period. That day, they don't go to school which would not be the case when they had not reached menarche, they don't miss school." Another boy in the same focus group said that "girls who know how to keep track of their period, when they expect their period, they don't go to school."

Boys noted that girls received permission from teachers to go home because of "that problem" [menstruation] and severe pain. Some teachers allowed girls to miss exams and let girls take their exams another day. Boys said that girls were also allowed to miss school if the school lacked materials and supplies for them to manage their menses at school. If girls lacked materials, they would simply wrap a sweater around themselves and go home to clean themselves.

In one school where boys knew pads were available for primary school girls, the boys said that teachers were less accepting of girls missing school due to menstruation. One boy at this school overheard a teacher "telling girls that they shouldn't miss classes because they are on their period; she told them that they have pads available at school." Another boy at a different school said that a girls' experience with menstruation influenced if a girl could or could not miss an exam.

> **Interviewer***: Can she miss an exam because of menstruation?*
> **Participant 1***: Some can miss, and other can't.*
> **Participant 2***: Maybe a girl who got her first period can miss an exam, but for those who had it several time, they can't miss an exam.*
> **Participant 6***: Now days, girls don't miss class during their period, but before they used to miss class.*
> **-**School 1, Urban

Knowledge of the Menstrual Related Challenges

Boy expressed that girls face a variety of menstrual related challenges at school and at home. At school, the primary challenges included managing menstruation in a resource poor setting and social exclusion by peers. At home, boys felt that girls had limited familial support. At some schools, boys felt that girls had difficulties managing their menses due to unavailability of water or a private space to clean oneself. A boy said that girl "cannot feel free" to ask the headmaster where to find water. Boys said that due to a lack of water or a private space, girls go home to arrange themselves and miss class.

Within the home, boys in multiple schools said that a girl's family may not have the financial capacity to provide absorbent materials such as pads or cloths. Boys believed the lack of supplies reduced a girl's ability to manage her hygiene and this leads to discomfort and limited participation and concentration in class. Though pads were available at two schools, boys said pads were often reserved from primary school girls or for girls who were surprised by their period. Boys at these two schools noted that pads were not freely available to all girls at all times during their menses.

Knowledge of Menstruation Associated with Sex, and Pregnancy

Moderators did not ask questions about sex and pregnancy. The issues regarding sex and sexual behavior were brought up by the boys themselves, and moderators did not inquire about boys' sexual histories or activities.

Boys in all the FGDs associated menarche with maturity and a girls' ability to become pregnant and give birth. When asked how girls behave when on their period, boys said that girls were expected to "behave well because [they] are at risk of getting an unwanted pregnancy."

Boys mentioned that girls would receive advice on how to behave from parents and teachers. Boys said parents who were not shy to talk their daughters about menstruation talk about how "girls can prevent getting unwanted pregnancies by avoiding sex." At another school, one boy said that parents treat girls "as a mature person who needs more care and advice" to avoid sexual "temptations" and "bad practices." One boy defined "bad practice" as an unwanted pregnancy which could create troubles in the family. Boys in three schools said that teachers also tell girls to avoid sex when they reach puberty. Boys, in all the discussions, said that girls were worried and concerned about having an unwanted pregnancy.

Boys were misinformed on when girls could get pregnant.[1] Boys in all the FGDs emphasized that girls should not have sex during their periods because they could get pregnant. To avoid pregnancy, boys mentioned that protected sex was necessary when a girl was on her period because this was the time when girls were likely to get pregnant: Boys brought up sex and pregnancy when asked if it was necessary for boys to know about menstruation and how boys should behave towards girls who are menstruating.

[1] Moderators did not probe to clarify if boys were referring to girls' ability to become pregnant 1) post-menarche in general or 2) during a girl's menses.

> **Participant 2:** *I think she should protect herself when she is on her period, because she might get pregnant.*
> -School 9, Rural
>
> **Interviewer:** *Can you tell me how boys behave towards girls who are menstruating?*
> **Participant 3:** *You shouldn't have sex during that period because otherwise, she would get pregnant.*
> **-**School 9, Rural
>
> **Participant 4:** *Because if you make sex with menstruating girl she can become pregnant. If she told you that she is menstruating, you have to avoid sex with her in order to protect her from unwanted pregnancy."*
> -School 4, Rural

Only one boy in all of the discussions, however, rejected this knowledge and believed that girls could not get pregnant during her menses.

> **Interviewer**: *How does a girl behave when she is on her period?*
> **Participant 7**: *She behaves well, because she is at risk of getting an unwanted pregnancy.*
> **Participant 5**: *I don't agree with him, maybe he doesn't know because he is in P5; a girl can't get pregnant when she is on her period, because at that time her ovum has burst.*
> -School 8, Urban

All of the boys' recommendations on how girls should behave during their menses revolved around avoiding sex during menstruation. Boys would advise girls to be "serious" and avoid relationships with boys. Boys said that girls were told to avoid boys by parents and teachers because they were not to be trusted and might do "something"; one boy mentioned that "some boys want sex so badly" that when a "girl comes near, they [boy] ask for sex, or even, force a girl to have sex with them ." As such, girls should avoid seeing "teams of many boys" or visiting an untrustworthy boyfriend. Just as girls were expected to behave well, boys were also taught to behave well by their parents and teachers to avoid having sex with a girl and causing pregnancy. One boy said his parents "focus on me because I'm the first born. They tell me to avoid sex because "anytime I make sex, I can get a girl pregnant." One boy said that his male teacher told them that "although [they] are children, we [boys] might get a girl pregnant."

Just as girls were expected to avoid boys, one boy mentioned that boys at his school avoided girls during their periods. Interacting with a girl would lead him to have sex with the girl, make her pregnant, and lead to him drop out of school. Though many of the boys believed that girls generally avoided male company, one boy felt that girls were actually more sexual during their menses and made advances towards boys. This boy was told what "when a girl has her period, she wants to have sex. So her behavior changes and she starts approaching boys. She wants to talk to them." Similar sentiments were not shared elsewhere in the discussions nor mentioned again in the same FGD. Interestingly, the same boy who mentioned that girls want to have sex during menstruation shared that boys can "have a problem and get an erection" depending on how the girl is sitting; the girl "feels something during that time, she can come close to you, and you can have that problem [erection]." If avoiding sex was a problem, one boy shared using a condom to protect the girl from pregnancy was also an option.

Knowledge about how to treat girls changed as boys grew up. One boy mentioned that when "you [boy] were younger, you could have sex and that wouldn't have caused problems, but now, if you do that, you can get her pregnant". Boys believed that they became more knowledgeable and experienced about menstruation and sex as they grew older. Regardless, boys wanted to learn more about menstruation to better understand the "days they [girls] have their period, and on which days it is safe to have sex."

Boys perceived that understanding menstruation was important for future relationships with girls, especially future girlfriends and wives. Boys shared that if they did not know about menstruation, this could cause "misunderstandings" between couples. Boys felt like it was important for them to know about menstruation because it would influence their future sexual decisions. One boy shared "If you don't have knowledge about menstruation, you can have sex with a girl without knowing that she is in menstruation and you make her pregnant, and it can be a problem!." Also, as future fathers, boys

thought it was important for boys to know about menstruation so they can educate their future daughters "to be serious and to avoid relationships with boys, so that she can't get pregnant."

Boys' Behavior towards Girls

Teasing

Boys admitted that menstrual related teasing of female classmates occurred in the school setting. Boys used various terms to secretly refer to menstruation which they shared amongst. Boys teased girls about being in an "angry or bad mood." The terms "drawn a card" and "flat tire" refer to girls who are menstruating. If a girl had a stain on her uniform, she was said to have sat on tree tomatoes (fruit with red juices common in Rwanda). "Stamping" refers to a girl who has stained a chair or another item during her menses. The term "ibisure byatobotse" was also used and refers to a "collection of swamp water that occasionally bursts." Generally, teasing involved telling other classmates to avoid going near a girl because she was menstruating and smelled bad.

Term	Meaning
Drawn a card	"a girl is seated and she stains her dress, it is that fact of staining"
Flat tire	"girl has got her period"
Seated on tree tomatoes	Girl has period
Stamping	"Girl is menstruating"
Ibisure byatobotse	"collection of swamp water that occasionally bursts"
Wabagiye hehe?	"Where did you butcher?" in reference to blood stains

Boys noticed that girls modified their behavior during their menses. Changes in behavior, such as exclusively interacting with girls and self-exclusion, were one reason why girls were teased. Interestingly, a few boys mentioned that teasing could be prevented by the girls themselves.

> **Participant 5:** *Sometimes, girls don't take care of themselves, and don't do anything to prevent staining their skirts. So, when you try to give them advices, they don't take them into considerations and that results in other pupils, who don't know anything about menstruation, teasing them – that's where the teasing comes from.*
> -School 8, Urban

Though boys shared instances of when they were aware when girls were menstruating due to "headaches" and "abdominal pains", a few other boys also mentioned that they were often unaware of changes in girls' behavior during menstruation because girls were so keen on hiding their menses. A distinct physical indication of menstruation was a stain on a girl's uniform, and boys "tease [girls] when they have a stain."

> **Participant 7:** *There is a girl, who was in my class in S1, but even now she is my class, she used to run out of the class without even telling the teacher. Then she would find boys to the toilets, and they would say that she has drawn a card. She would come back in class, and go out again, she would be teased again, and finally she would decide to ask permission to go home.*
> -School 6, Rural

> **Participant 5***: I remember a story of a girl back in primary school, she realized that people saw that she had a stain on her dress, and then she asked for permission to go home – which she was given.*
> **Interviewer***: What had happened to her?*
> **Participant 5***: After realizing that other pupils had seen her stain, and had started to tease her, she asked for permission to go home.*
> **Participant 4***: What I can maybe add is that, when a girl stains her skirt during class time, and one of her classmates sees that, that classmate will share it with another classmate, this classmate will also share it with another classmate, and at the end of the day, the whole group will be aware of that.*
> -School 9, Rural

Boys said that teasing was especially common among primary school aged boys. Many boys stated that teasing was the result of limited knowledge and experience – menstruation was "something new" that was happening to the girls. Young boys teased because they did not know anything about menstruation and are unaware of how to act with girls who are menstruating. Many boys mentioned that the teasing behavior diminished as boys progressed into secondary schools. Primary school boys

were “still young” and unexposed to menstruation while secondary male students come to understand that menstruation is a “normal functioning of the body.” Relationships between boys and girls improved as they both grew older and entered secondary school. Boys said both sexes “interacted normally” once in secondary school.

Boys mentioned that girls were afraid of being teased, particularly by primary school boys. In order to avoid being teased, girls took pains to “hide” their used materials in long pits, toilets, and incinerators Boys said that teasing terms had negative connotations and were used to make girls feel badly about themselves. A few boys felt that teasing likely made girls feel ashamed and upset.

Despite the teasing, boys did mention instances of boys assisting girls during their menses. Some boys helped girls by preventing other boys from teasing. One boy mentioned that he would offer a sweater to girls who may have stained their uniform; the girl could cleanup and other boys will not see the stain and tease her.

> **Participant 3***: I don’t think the practice of teasing is good. I think that those who tease don’t have knowledge about menstruation. If it were me, I would go to her, and give her advice*
> -School 9, Rural

There was one instance of boys teasing each other in relation to menstruation. A boy mentioned that boys avoid sitting with girls who are visibly menstruating to avoid being teased by others.

> **Interviewer***: How do boys feel when they are seated with a girl who is menstruating? How do you feel?*
> **Participant 6***: How I feel-, I can only have a problem if the blood which is coming out of her, goes to my clothes. I would have a proble, because students can tease me, they would ask me “wabagiye hehe?”*
> (Interview Note: Kinyarwanda term literally meaning “where did you butcher?”)
> **Interviewer***: ”wabagiye hehe”?*
> **Participant 7***: If I see that she is menstruating, I would stand up and leave.*
> **Interviewer***: You would leave. Why?*
> **Participant 7***: Students can tease you, and nobody likes to be teased.*
> **Interviewer***: You can be teased because you are seated with someone who is menstruating?*

> **Participant 7***: They tease you. You cannot seat with someone who is bleeding. People can say that you like it.*
> -School 6, Rural

Boys Perceptions of Girls' Menstrual-Related Experiences

Communication around Menstruation

Boys mentioned that girls find it difficult to bring up menstruation with their mothers and fathers, and there were inconsistencies in how boys thought that girls communicated with their parents about menstruation. Boys in one school believed that not every girl talked to her parents; girls were thought to be afraid of talking to their parents especially those who have gotten their period for the first time. Boys from the majority of the schools disagreed if the parents or if the daughter were responsible on initiating the conversation on menstruation. Some boys felt that it was the responsibility of the parents to educate their daughters so that she can be prepared. Others thought that the girls should begin the conversation because they are the ones with "a problem and have to ask advice from their parents" and they are the ones who want to know about menstruation.

Despite the differences, when asked how girls learn about menstruation at home, boys thought that girls were likely to seek the support and advice of their mothers and older sisters. Boys said that mothers were sources of information on "what is happening" and that girls "feel more comfortable talking to them than to their fathers." Boys generally agreed that daughters do not speak with their fathers about menstruation. Fathers were generally thought to be uneducated about menstruation. Boys thought that girls were afraid to speak with their fathers because girls do not "exchange" with them. Boys imagined fathers tell their daughters to speak with their mothers because they, as men, do not menstruate and do not understand. Boys said that girls could talk to their fathers when they were in need of materials, but this was thought to be the only time when girls discussed menstruation with their fathers.

Interviewer: *Do you think girls discuss it with their fathers?*
All Participants: *No, they don't.*
Interviewer: *Tell me. Why?*
Participants 1: *They [Girls] don't [talk to their fathers] because they know that men don't get their period. They know that if they want to discuss it with their father, their father would say "go discuss it with your mother".*
Participants 4: *Most of the time, men who are not educated don't know about menstruation, in that case, when a daughter wants to discuss menstruation-related subjects with her father, who is not educated, her father might say "what are you talking about, you are a prostitute"*
-School 6, Rural

At two schools, boys talked of instances of fathers being unavailable to talk about menstruation because fathers from those communities drank. In one school, a boy thought this prevented girls from talking to their fathers.

"*Girls who come from poor families don't discuss with their fathers, because most of the time, their fathers get home drunk and don't have time to discuss.*"
-School 8, Urban

"*Parents are different, I can give you an example, some parents go for a drink after work and they come home when their children are already asleep, and they do that every day, you understand that those children will never have a chance to discuss about menstruation with their parents*."
-School 9, Rural

When asked if boys discuss with parents who do not drink, boys said that parents tell them that they are "still very young to know" and to "ask that question at school." Though girls may not speak to their fathers, boys mentioned that "it is mostly fathers who give us [boys] lessons and tell us how to behave." One boy said fathers tell boys how to behave during puberty and the risk they might encounter.

Boys said that parents' education was an important factor for discussing menstruation with daughters; educated mothers were expected to bring up menstruation when a "mother sees that her daughter is growing up, she starts telling her about menstruation." When a mother is uneducated, the daughter brings up the topic and questions what is happening to her. Boys mentioned that parents can

be uneducated about menstruation and were incapable of explaining menstruation to their daughters. One boy said “parents also need more knowledge, they need training.” Interestingly, one boy mentioned that boys are taught menstruation to “educate [their] parents” as well.

Sources of Support

Boys acknowledged the many challenges girls experience when managing their menses including inadequate water and sanitation facilities, limited access to pads, and overall discomfort surrounding menstruation. Despite these challenges, boys felt that girls did have various sources of support at home and at school.

In the school setting, teachers were often mentioned as sources of support. Boys thought that teachers were helping when teachers gave girls permission to go home to “arrange” herself during her menses. Teachers were attempting to make girls feel comfortable by advising them to “go home so that all her classmates do not know that she is menstruating.” Boys felt that teachers tried to take care of girls “in a way that they [girls] can’t get a problem.” Teachers gave girls, who were menstruating and lived far from school, absorbent materials to manage her menses at school. For girls who lived close to school, teachers gave those girls permission to go home.

Boys also mentioned that female classmates helped each other. A boy mentioned that girls can receive advice and information on how to behave from another girl who is already menstruating. Girls were said to support each other because “they know they time will eventually come.” Boys also mentioned lending female classmates sweaters if they [boys] saw stains on girl’s uniform. When asked how boys support girls in school, boys said they would reassure girls that menstruation and its associated symptoms, such as abdominal pains, are “totally normal” and that it “happens to every girl.”

At home, boys mentioned that they, as brothers, could offer “advice” to sisters who feel more comfortable talking to them than to their parents. Brother would confirm availability of absorbent materials and encourage their sisters to talk with their parents. Ultimately, their goal was to make their

sisters feel comfortable. One boy mentioned that if he had money, he would help his sister and purchase Kotex for her. Boys also offered to help their sisters or female cousins with household chores and activities such as fetching water or feeding family cows. One boy offered to "do all the house work because we can consider that she [female cousin who is menstruating] is ill, and an ill person doesn't work." At school and at home, providing "advice" was the most common type of support boys mentioned. Girls were expected to behave well during their menstruation and avoid boys and sex.

Given what boys have said above, boys are knowledgeable about menstruation. They are aware of the challenges girls face at school while also acknowledging their behavior towards girls. Overall, boys expressed interest in menstruation and a desire to understand it more in-depth.

Discussion

Limited studies have looked into the knowledge and perceptions of menstruation among *adolescent boys*. Consistent with findings in the United States and Taiwan, boys in this study, had a strong anatomical knowledge of menstruation and frequently connected menstruation with maturity and the ability to conceive. Though boys were aware of the physical challenges associated with menstruation, they were not fully aware of the emotional difficulties girls faced while managing menstruation at school – particularly because boys were the cause of emotional distress (Cheng et al., 2007; McMahon et al., 2011; Sommer, 2010b). Boys in this study harbored negative perceptions of menstruation and participated in menstrual-related harassment towards girls (Allen et al., 2010; Chang et al., 2012; Cheng et al., 2007). Boys perceived that their negative behaviors influenced girls' behaviors and their ability to safely manage their menses in school. Despite their awareness and behaviors, boys did express interest in supporting girls who are managing their menses in school. Educating boys about menstruation and integrating them into building an environment where girls feel comfortable managing their menses could promote the well-being of both boys and girls in school (CDC, 2009).

Engaging boys in discussions about menstruation and associated sexual health implications produces opportunities which benefit the physical well-being of boys and girls. Boys in this study sexualized menstruation and associated it with a girls' ability to conceive. Though they were aware that girls could get pregnant post-menarche, boys were misinformed as to which time during her cycle a girl ovulated and could therefore get pregnant. Many boys believed that girls could only get pregnant during their menses and that boys should avoid sex with girls who are menstruating. This incorrect understanding of the menstrual cycle and pregnancy has the potential to influence unplanned pregnancy rates and rates of sexually transmitted diseases and infections. By educating and engaging boys on the correct knowledge of menstruation from an early age, there are opportunities to dispel misinformation about menstruation and pregnancy and potentially reduce sexually risky behaviors. Additionally, denouncing myths on the sexualization of menstruation could promote safer sex practices. Though the age of sexual debut is rather low in Rwanda compared to other East African countries, appropriate knowledge on menstruation and subsequent implications on fertility, pregnancy, and sexuality are important for boys and girls to understand even at an early age (Gupta & Mahy, 2003; Kayirangwa, Hanson, Munyakazi, & Kabeja, 2006).

Managing menstruation can be a stressful event for young girls. Boys in this study were aware that the lack of adequate water and sanitation facilities in school and limited access to absorbent materials - challenges common in low-resource settings globally – were the root of girls behavioral adaptations (Abioye-Kuteyi, 2000; Ali & Rizvi, 2009; Bata, 2012; Dhingra et al., 2009; Oche, Umar, Gana, & Ango, 2012). Rwandan boys addressed difficulties for girls to manage their menstruation in the schools setting due to a lack of adequate water and sanitation facilities and absorbent materials such as pads. Similar challenges were shared by interview with girls in Tanzania and Kenya (McMahon et al., 2011; Sommer, 2010b). In addition, reports of menstrual-related harassment have been cited in studies looking at boys and girls (Allen et al., 2010; Chang et al., 2012; Cheng et al., 2007; McMahon et al., 2011;

Sommer, 2010b). Rwandan boys used code names such as “drawn a card” or “flat tire” to discretely refer to menstruation when discussing with their male peers in school. Rwandan boys used a variety of disparaging terms to tease girls who stained their uniforms. Teasing was usually aimed at girls who had accidentally stained their clothing – girls were essentially teased for not “controlling” the “visibility” of their menstruation – two key dimensions of stigmatized conditions (Johnston-Robledo & Chrisler, 2011). Exposing one’s menstrual status was a source of shame and ridicule from boys and girls alike (McMahon et al., 2011; Roberts et al., 2002)

The teasing behaviors add to the overall negative attitudes and references towards menstruation being a “problem” or an “illness” which caused “moodiness” or unpredictability in behavior (Chang et al., 2012; Cheng et al., 2007). Boys in this study classified girls who were menstruating as “smelly,” “dirty,” and uneducated about proper hygiene practices when some girls could not conceal blood stains. Rwandan boys claimed that girls strived to hide menstruation from their peers, particularly their male classmates, to avoid being stigmatized; such behavior is supported by previous studies among girls (Burrows & Johnson, 2005). Despite a girl’s best efforts to keep her menstrual status a secret, boys in the study were acutely aware of the changes in girls’ behavior when menstruating. Indications of menstruation such as headaches, abdominal pain, or blood stains on a uniform can be difficult for girls to manage discretely. Like other stigmatizing characteristics such as HIV or homosexuality, menstruation is characterized by secrecy and silence. Girls were fearful of being discovered as menstruating which would cause stigmatization and socially exclusion (Berg & Coutts, 1994; Johnston-Robledo & Chrisler, 2011). To avoid being teased and embarrassed, girls aim to keep their menses a secret, indirectly perpetuating menstrual stigma through silence (Johnston-Robledo & Chrisler, 2011; Stubbs & Costos, 2004). Boys participating in menstrual related harassment reinforce the hidden stigma of menstruation.

Boys, unlike girls, often only received menstrual education at school, and often, this was a mixture of facts from teachers and fiction from peers. Parents did not talk their sons about impending pubertal body changes or about sex (Epstein & Ward, 2008). Boys were simply told to avoid sex with girls with no additional comprehensive sexual communication from parents or other role models (Wamoyi, Fenwick, Urassa, Zaba, & Stone, 2010). This lack of communication from parents, particularly fathers, forces boy to resort to misinformation from peers and media (Wamoyi et. al, 2010). Parents themselves lack knowledge of menstruation, and combined with cultural communication taboos, they may feel ill equipped to educate their children, instead relying on teachers to provide the necessary information (Crichton, Ibisomi, & Gyimah, 2012). Teachers, in turn, may feel uncomfortable talking about sensitive reproductive issues, leaving boys in a void of misinformation (Cheng et. al, 2007). Boys are left to fill in gaps with stereotypes and broad generalizations which likely leads to teasing and harassment.

The associated shame and lowered self-esteem of being teased and socially excluded can be psychologically damaging and could lead to risky reproductive decisions with potential negative ramifications on girls' physical health (Johnston-Robledo & Chrisler, 2011; Schooler, Ward, Merriwether, & Caruthers, 2005). Among adolescents, poor mental health is strongly linked to lower educational attainment, substance abuse, violence, and poor sexual and reproductive health (Patel, Fisher, Hetrick, & McGorry, 2007). Studies show that those exposed to chronic teasing and bullying have more negative mental health outcomes including lower self-esteem, increased levels of depression, stress, and hopelessness, and were more likely to think about and attempt self-harm (Chang et al., 2012; Coggan, Bennett, Hooper, & Dickinson, 2003). Teasing also negatively influences school performance (Strøm, Thoresen, Wentzel-Larsen, & Dyb, 2013). Among girls, menstrual-related teasing, in the form of shaming or social exclusion, is also associated with increased sexually risky activities (Schooler et al., 2005).

Recommendations

As female primary school enrollment continues to increase in Rwanda and other low-income countries, girls are more likely to experience menses in the school setting (MoE, 2012; UN, 2012). Kenyan girls in McMahon's study (2011) viewed menstruation as a social stressor and physical barrier to schooling, but there are opportunities to mitigate said challenges at school by improving school connectedness. A school environment where students feel supported and cared for by teachers and peers empowers youth to make healthy, informed healthy decisions and supports their emotional and physical well-being (Benard, 1991). School communities and the WASH sector have important roles to play in promoting feelings of school connectedness among female and male students.

School connectedness is associated with multiple positive health outcomes including delayed sexual debut and healthy sexual behaviors. In a study among Nigerian youth aged 12-21, school connectedness was shown to decrease the likelihood of sexual activity (Slap, 2003). In another study identifying protective factors than expose Zambian youth to HIV, researchers used school attendance and knowledge of HIV indicators for school connectedness and discovered that indicators were associated with lower levels of sexual activity and consistent condom use (Magnani et al., 2002). As with improved reproductive and sexual health outcomes, school connectedness is also shown to improve self-esteem which is associated with high academic achievement and decreased risky health behavior among girls and boys (Bond et al., 2007).

Programs that aim to increase students' school connectedness often use teachers in interventions; teachers are capable of encouraging increased school connectedness through classroom management and discipline strategies in their relationships with and engagement of students (Chapman, Buckley, Sheehan, & Shochet, 2013). Though teachers may be embarrassed to openly discuss menstruation in school, they remain the primary source of knowledge on menstruation and reproductive health in schools in Rwanda and other countries (Cheng 2007). Girls were more likely to

receive additional knowledge on menstruation at home by their mothers or sisters, but boys, though curious, were unlikely to receive additional education from parents regarding this issue (Raffaelli, Bogenschneider, & Flood, 1998).

Consistent with Epstein (2007), this study found that boys primarily learn about menstruation from their peers. Trading personal anecdotes and experiences likely increases transmission of misinformation and could promote negative stereotypes of menstruating females. Boys in this study said the parents, particularly fathers, were uneducated about menstruation and believed that menstrual and sexual and reproductive education was a teacher's responsibility. As such, teachers have a crucial role in educating girls and boys on correct menstrual and reproductive health knowledge at school where young people are apt to interact and learn from their peers and teachers.

To improve school connectedness in Rwanda, teachers could be more invested in providing a complete education of menstruation – a holistic curriculum that addresses the emotional and social aspects of menstruation in additional to the current anatomical focused curriculum. Within schools, there is conflicting research whether boys and girls should be educated together or separately during sexual and reproductive health curriculum (Chang et al., 2012). An alternative could be a combined approach where boys and girls are first educated separately and then rejoined later in the curriculum to discuss expected challenges or sources of support. To best support the mental health of girls in schools, teachers and staff could create guidelines that promote positive behavior but condoning teasing and other forms of harassment. Among interviews with teachers in Australia, teachers perceived that students' feeling of connectedness reduced problem behavior (Chapman et al., 2013). Teachers believed that fairness and "consistent and confident discipline" and a sense of teacher support increased feelings of school connectedness and affected student behavior and outcomes (Chapman et al., 2013). Outside of the classroom, active student and teacher engagement in open dialogues about menstruation, sexual and reproductive health, and promoting self-esteem in extracurricular activities or clubs can also

heighten feelings of school connectedness (McNeely, Nonnemaker, & Blum, 2002). Aiming to promote school connectedness by investing in a holistic curriculum, adopting a discipline action plan, and providing opportunities for students to participate in extracurricular activities could decrease menstrual-related harassment and improve mental health outcomes for girls.

In order to build an enabling environment for girls in schools, boys need to be involved in the sexual and reproductive health education of girls. Though the boys in this study understood the anatomy of menstruation and were aware of the challenges girls faced in the school setting, they harbored negative menstrual ideologies fueled by misinformation and lack of clear information in their primary and secondary school years. Though boys may not value receiving education about menstruation during their childhoods, they could be persuaded due to their curiosity to join the conversation at an early age. In fact, boys expressed a desire to learn more about menstruation in this study as in others (Chang et al., 2012; Cheng et al., 2007). Boys in this study and in a study of young men in the United States demonstrate that as boys mature, they come to understand the value of menstruation as a life-giving and "normal" process. There is evidence that developing an understanding of menstruation during primary school could have long-term positive health impacts for girls and boys as they continue into their secondary school education (Allen et al., 2010). Maticka-Tyndale's (2010) study with Kenyan youth showed that students who participated in an HIV prevention program during primary school had higher levels of sexual-health related knowledge and were more likely to participate in safer sex practices as they continued into secondary school. Though the benefits of primary school education continued into secondary school, it is important that supplemental reproductive and sexual health education must continue into secondary school to further encourage positive health impacts (Maticka-Tyndale, 2010).

In addition to engaging teachers and the school community, the water and sanitation community can also play a role in increasing school-connectedness. Sommer (2010) advocates for the

WASH community to promote girls' education in low-income countries by addressing the lack of basic water and sanitation-related facilities essential for girls to manage their menstruation in school. Clean accessible water, a private space to clean oneself, and mechanisms to dispose of used absorbent materials are essential for girls to safely manage their menses during school. Girls, themselves, can be engaged to determine and potentially design appropriate WASH facilities that best suit their needs (Sommer, 2010a). Providing these facilities provides the means for girls to manage their menses without fear of staining their uniforms and any teasing that may result – improving girls' mental health and well-being.

Feelings of school connectedness among girls and boys in Rwanda could be improved through teacher engagement, comprehensive sexual and reproductive health curriculum, and functional water and sanitation facilities. Studies by Marks (2000) and Ryan and Patrick (2001) suggest that feelings of school connectedness decrease as students' progress from primary to secondary education(Sulkowski, Demaray, & Lazarus, 2012). Despite this, it is important for school to encourage school connectedness even among secondary schools. Overall, feelings of school connectedness may make girls feel more comfortable seeking support and guidance from teachers and peers; boys, in turn, may be more likely to be sympathetic to the challenges girls face when menstruating and perhaps engage in less menstrual-related teasing. In Rwanda, girls may feel more comfortable managing their menses in the school setting and boys may also play a more supportive and understanding role. School connectedness addresses the need to build a social and physically supportive environment where girls have the ability to participate and make choices that do not come with the risk of fear, shame, or embarrassment.

In the long term, school connectedness in strongly associated with improved educational outcomes including school attendance and higher grades and test scores (CDC, 2009). Combined with improved WASH facilities, girls would participate more fully in school and be less likely to skip school during their menses (Pearson & McPhedran, 2008). Continued increased educational attainment among

girls has important implications for the health of young girls, women, their future families, and the role and status of women in society (Gakidou, 2010).

Limitations and Future Research

Despite providing a first-hand perspective of boys' knowledge and beliefs about menstruation, this study is not without limitations. Rwandan schools were in summer recess during data collection, and though attempts were made to collect a random sample of boys to participate in the FGDs, teachers identified boys were within walking distance to the school to participate in this study. In addition, the boys may have their tailored their responses knowing that the FGD moderators were affiliated with UNICEF/MoH. Lastly, qualitative nature of this type cannot be generalized to other settings.

Though this study is the first of its kind in low-income settings, investigations of this kind can be strengthened by seeking a broader male perspective. Exploring fathers' knowledge and perceptions of menstruation would provide a comprehensive of the challenges girls face at home and at school and to better understand the gender norms and expectations surrounding menstruation.

Conclusions

This study found that boys have negative ideologies towards menstruation; they participate in teasing behaviors and perpetuate menstrual stereotypes. Despite this, boys expressed interest in supporting girls during their menses. To best support the health and well-being of girls, teachers and the WASH sector need to build and sustain an environment where students - boys and girls - feel valued. This concept of school connectedness will help girls feel comfortable and supported when managing their menses in school and will have positive impacts on their mental and physical health.

PUBLIC HEALTH IMPLICATIONS

1. **Understanding boys' knowledge and beliefs of menstruation is important to developing an enabling environment for girls in school**
   The evidence from this study suggests that boys are knowledgeable about the anatomy of menstruation and are aware of the challenges girls face when managing their menses in school. Overall, boys harbored negative perceptions of menstruation and participated in menstrual-related harassment towards girls. These negative attitudes further perpetuate the harmful stigma that already surrounds menstruation. Educating boys about menstruation and integrating them into building an environment where girls feel comfortable managing their menses could promote the well-being of both boys and girls in school.

2. **Negative behavior, such as menstrual-related teasing and harassment towards girls, and misinformation about menstruation may have long term physical and mental well-being implications**
   Boys admitted that menstrual-related teasing of girls occurred in their schools. The teasing behaviors contribute to the overall negative attitudes and references towards menstruation being a "problem." Boys teased girls when they had stained their uniforms; to avoid the resulting shame and embarrassment from teasing, girls opted to skip school altogether during their menses. The associated shame and lowered self-esteem of being teased and socially excluded can be psychologically damaging and could lead to risky reproductive decisions with potential negative ramifications on girls' physical health. Among adolescents, poor mental health is strongly linked to lower educational attainment and poor sexual and reproductive health. Among girls, menstrual-related teasing, in the form of shaming or social exclusion, is also associated with increased sexually risky activities.

   Misinformation about menstruation can contribute to sexually risky activities. Boys in this study sexualized menstruation and associated it with a girls' ability to conceive. Though they were aware that girls could get pregnant post-menarche, boys were misinformed as to which time during her cycle a girl ovulated and could therefore get pregnant. Many boys believed that girls could only get

pregnant during their menses and that boys should avoid sex with girls who are menstruating. This incorrect understanding of the menstrual cycle and pregnancy has the potential to influence unplanned pregnancy rates and rates of sexually transmitted diseases and infections. By educating and engaging boys on the correct knowledge of menstruation from an early age, there are opportunities to dispel misinformation about menstruation and pregnancy and potentially reduce sexually risky behaviors.

3. **Promoting school-connectedness can positively impact the well-being of girls and boys**

The concept of school connectedness or the "feeling that someone in a young persons' school cares about his or her well-being" - is associated with positive health outcomes. School-connectedness is associated with improved academic achievement, positive health behavior, and improved mental health. Feelings of school connectedness among girls and boys in Rwanda could be improved through teacher engagement, comprehensive sexual and reproductive health curriculum, and functional water and sanitation facilities. These systems can support girls in that girls feel comfortable managing their menses in school because of adequate facilities. With adequate facilities, girls might be less likely to stain their uniforms and boys would be less likely tease and shame girls. Girls would feel more at ease attending school and more likely to attend and participate in class.

Boys also have the opportunity to discuss and understand menstruation in a safe environment. A combination of correct information and supportive environment, boys would be more knowledgeable about safe sex practices and hopefully, become more sympathetic and understanding of menstruation. Overall, school connectedness would improve the physical and mental well-being of girls and boys by providing them a safe and supportive environment where they share and discuss concerns.

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