

Research Article

Exploring an Understanding of Menarche and Its Challenges Among Primary School Girls in Tanzania

Noel Julius Ntawigaya* , Joyce George 

Department of Education, Teofilo Kisanji University, Mbeya, Tanzania

Abstract

This study examines the understanding and challenges of menarche among primary school girls in Tanzania, addressing three key objectives: assessing awareness of menarche and its associated challenges, evaluating management strategies, and determining the impact of menstrual disorders on academic performance. Utilizing a mixed-methods approach with questionnaires and semi-structured interviews, data were collected from four primary schools involving 60 female pupils from standards five to seven and four matron teachers. Findings reveal that while 51.7% of pupils have some understanding of menstruation, nearly 50% remain uninformed, especially in lower grades. The study also shows that menstruation onset is a significant developmental milestone, with 85% of Standard Seven pupils menstruating compared to 25% in Standard Five. Challenges such as stomach pains, lack of appetite, and inadequate access to sanitary products were also reported by 45% of students. Infrastructural deficits, including a lack of private changing rooms and proper disposal systems, were further reported to hinder effective menstrual management. Additionally, traditional practices for managing menstrual pain were reported, highlighting the need for integrating professional medical advice. Furthermore, menstrual challenges led to absenteeism, decreased concentration, and reduced confidence among girls, which directly affected their educational outcomes and exacerbated gender disparities in education. Based on these findings, the study advocates for early menstrual education, improved school infrastructure, and comprehensive support systems to enhance girls' well-being and academic success, presenting menstruation as a socio-educational issue that requires a holistic, integrated approach from all stakeholders.

Keywords

Awareness, Menarche, Menstruation, Menstrual Disorders, Thelarche

1. Introduction

Every human being, regardless of gender, will go through a period of puberty if there are no underlying issues. For males, this period is known as adolescence, while for females, it is referred to as menarche or the onset of menstruation. According to Jaruratanasirikul, Chanpong, Tassanakijpanich, and Sriplung, puberty is a normal physiological process during which children develop secondary sex characteristics,

experience growth acceleration, and achieve bone maturation and reproductive competence [11]. At this stage of life, it is normal for every woman to undergo thelarche and menarche, followed by regular menstrual periods each month. However, as time progresses, there have been significant changes compared to the past. Nowadays, the age at which girls begin menstruating is decreasing, with younger girls starting their

*Corresponding author: noeljulius9@gmail.com (Noel Julius Ntawigaya)

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periods, unlike in the past when puberty mostly occurred in slightly older girls. These changes in the age of menstruation among girls are not confined to a specific region but affect girls globally.

For instance, Pierce and Hardy report that, the mean age of puberty in girls in Western populations has been declining for the past 150 years [29]. The slowing or cessation of this decline in some countries since the 1960s suggests that the mean age at puberty is approaching a biological limit. Pierce and Hardy disclose that a child experiencing early puberty will undergo intensified feelings without the cognitive abilities to regulate these strong emotions and motivations. In high-risk social situations, this can lead to reckless behaviors such as early sexual activity, leaving school prematurely, and substance abuse, which can have lifelong detrimental effects through either biological or psychosocial pathways.

In the same line, Steingraber reports that Thelarche and menarche are occurring earlier in the lives of U.S. girls, with the age of Thelarche decreasing more rapidly than the age of menarche. On average, girls start their periods a few months earlier than girls did 40 years ago, but they begin developing breasts one to two years earlier. Over the course of just a few decades, the childhoods of U.S. girls have been significantly shortened. The average age of menarche among U.S. girls declined steadily throughout the first half of the 20th century and continued to decline afterward, though at varying rates among different racial and ethnic groups. For example, among U.S. white girls, the average age of menarche has declined slightly over the past four decades and now stands at 12.6 years. Among U.S. Black girls, the average age of menarche is 12.1 years, with a swifter rate of decline. Steingraber has also disclosed that early puberty poses several risks for girls. It increases the risk of breast cancer and is associated with many high-risk behaviors in later adolescence—such as smoking, drinking, drug use, crime, and unprotected sex—that can have potential lifelong consequences [33].

These changes have also been reported in African countries. For instance, in their study conducted in Nigeria, a Sub-Saharan country, Sabageh, Sabageh, Adeoye, and Adeomi explored adolescents' pubertal timing in both rural and urban areas. They found that the pubertal staging clearly indicated that a significant percentage of the adolescents were at pubertal stages much older than their age groups. Still, the study revealed that adolescents attain puberty earlier than expected, with a more pronounced trend among females [30]. Additionally, Lundeen et al., in their longitudinal study on pubertal development in a large contemporary sample of South African boys and girls, found that, in girls, a greater height-for-age z-score (HAZ) at age 5 years and a greater body mass index z-score (BMIZ) at age 5 years were associated with a faster tempo of pubic hair and breast development. Additionally, in girls (but not in boys), a greater-than-average increase in BMIZ between ages 5 and 8 years was associated with earlier initiation and faster progression through puberty. In boys, a greater HAZ at age 5 years was associated with a

faster tempo of pubic hair and genital development, and a greater BMIZ at age 5 years was associated with a faster tempo of pubic hair development [15]. Hence, the research by Sabageh, Lundeen, and colleagues confirms that in Africa, the age of puberty is also decreasing, unlike what was observed in previous generations and as reported in other continents around the world.

However, these changes in puberty, along with their symptoms for both boys and girls, vary between individuals. Some may experience puberty earlier, while others may experience it a bit later. The primary scientific reason for this variation is the nature of an individual's hormones, which differ from person to person in stimulating the bodily changes that lead to puberty. According to the Department of Health in Western Australia, puberty can start anywhere between the ages of 8 and 15 years. For many individuals, it begins around the ages of 10 or 11 years. For girls, puberty usually starts between the ages of 8 and 13 years, while for boys, it typically starts a bit later, between the ages of 9 and 14 years [5]. According to the information provided by the Department of Health in Western Australia, it appears that girls enter puberty earlier than boys. Since scholars have noted that early puberty can be associated with various issues, it is evident that girls face more and earlier challenges compared to boys.

Many women face numerous health challenges immediately after menarche. In their study conducted in India, McCammon, Bansal, Hebert, Yan, Menendez, and Gilliam report that menstruation frequently poses psychological, social, and health challenges for young women living in low- and middle-income countries. At an individual level, young women often lack knowledge about menstruation. Socially, they face stigma, have limited opportunities to discuss menstruation, and experience restrictions on mobility and other activities during their periods. At the institutional level, such as in schools, there are few resources to support menstruating young women, with issues like dirty toilets and broken doors worsening the situation [18]. In the same vein, Peterson and Sellius conducted a study in Tanzania and noted that challenges associated with managing menstruation can have life-changing consequences related to health, mobility, safety, and socio-cultural practices such as education and work for many women in low- and middle-income countries, including Tanzania [28].

Many studies have been conducted on the challenges faced by women related to menstruation periods. However, despite the efforts of many researchers, much of the focus remains on the specific needs of girls before and after puberty as they transition into young adulthood even within educational institutions such as universities and secondary schools, there is still insufficient attention given to primary schools. For example, in the case of Tanzania, studies by Sommer, Mwita, Bakari and Method et al. focused on investigating the social context of school girls' experiences with menstruation and schooling, the challenges they face during menstruation in rural areas, and the local barriers related to menstrual hygiene management prac-

tices and school absenteeism among school girls [32, 24, 1, 19]. All these studies were conducted in different regions of Tanzania, involving only secondary school girls. However, the reality of young girls in primary schools, who experience menarche with great shock and face numerous health challenges due to a lack of education about menstruation, remains largely unknown. Thus, to fill this gap, this study aims to assess the awareness of menstruation and its related challenges among primary school girls in a few randomly selected primary schools in Mbeya, Tanzania. In this regard, three specific objectives were addressed: to examine the level of awareness of reaching menarche and its challenges among primary school girls, to evaluate the actions taken to manage these challenges, and to determine the impact of menstrual disorders on girls' academic performance.

2. Methods and Materials

This study adopted a mixed-method approach design as it collected both quantitative and qualitative information from the respondents. According to Sharma, Bidari, Bidari, Neupane and Sapkota, mixed methods research design enables researchers to integrate and synthesize both quantitative data on overall patterns and trends and qualitative data on the meaning and context behind those patterns, providing a comprehensive understanding of the research problem [31]. The study involved four randomly selected primary schools—Mwakibete, Pambogo, Iyela, and Airport—located in two different wards, Iyela and Mwakibete, in Mbeya town, Tanzania, with the belief that pupils from these schools could provide a relevant representation of diverse contexts within the same geographical area. According to Latpate, Kshirsagar, Gupta, and Chandra, the random sampling technique ensures that every unit in the population has an equal probability of being selected, making it particularly useful when the population is homogeneous [12]. In each school, 15 female pupils were stratified randomly selected from Standard Five, Six, and Seven classes. According to Hayes, in stratified random sampling, or stratification, the strata are formed based on members' shared attributes or characteristics, such as income or educational attainment. This technique emphasizes differences among groups within a population, unlike simple random sampling, which treats all members of the population equally, giving each an equal likelihood of being selected [9]. Hence, pupils in these classes were stratified selected because many of them had begun to show signs of puberty in their physical development, unlike their peers in lower grades. Additionally, the study included a total of four female matron teachers from these schools who were purposively selected due to their positions, which provide them with the opportunity to offer support to female students, including counseling them, especially when they face challenges related to menstrual disorders. Data from pupils were collected using open and closed-ended questionnaires, while information from matron

teachers was gathered through semi-structured interviews. All responses obtained through qualitative methods were analyzed qualitatively, while data from quantitative methods were analyzed quantitatively. Furthermore, ethical procedures were observed throughout the research from start to finish, including obtaining research clearance from the Teofilo Kisanji University administration, ensuring the voluntary participation of participants in providing information, and maintaining the confidentiality of participants' data accordingly.

3. Results and Discussion

This section presents and discusses the results based on the three specific objectives of the study.

3.1. Examining the Level of Awareness of Reaching Menarche and Its Challenges Among Primary School Girls

This section involved four key questions that are directly related to the first objective of the study focusing on determining the level of awareness of reaching menarche and its challenges among primary school girls as follows.

3.1.1. What Is the Level of Understanding of Menstruation Among Female Pupils

The responses to this question have been presented in [Table 1](#) below and analyzed as follows.

Table 1. The level of understanding of menstruation among girls' pupils.

Class	Pupils' Responses			
	YES		NO	
	Frequency	%	Frequency	%
Standard Five	5	25%	15	75%
Standard Six	10	50%	10	50%
Standard Seven	16	80%	4	20%
Total	31	51.70%	29	48.30%

Source: Field data

[Table 1](#) shows that 31 pupils (51.7%) have an understanding of menstruation, while 29 pupils (48.3%) do not. Although this indicates that the majority have some understanding of menstruation, the data reveal a clear trend of increasing understanding as students advance from Standard Five to Standard

Seven. Standard Five pupils show the lowest understanding at 25%, with a high percentage (75%) lacking understanding. In contrast, Standard Six pupils display an intermediate level of understanding, with 50% having knowledge and 50% lacking it. Furthermore, Standard Seven pupils show the highest level of understanding at 80%, with only 20% lacking understanding. Thus, we can suggest that the level of understanding among students increases as they move up through the grades, indicating that knowledge of menstruation improves with age. This improvement could be attributed to peer interactions in school or at home, as well as to educational programs on adolescent health and reproductive education that students receive in higher grades. Due to the decreasing age at which puberty begins, it is crucial for schools, families, and stakeholders in reproductive health and education to introduce training programs for primary school pupils, particularly those already showing signs of puberty, to help them manage the challenges of this developmental stage. In this regard, Uzoechi, Parsa, Mahmud, Alasqah, and Kabir recommend that the standardization of sensitization practices across public and private primary and junior secondary schools for teenage girls regarding menstruation and menstrual hygiene is essential. Such actions promise to improve interventions against many myths surrounding menarche and the onset of menstruation for girls [37]. It is essential to implement awareness programs and campaigns to educate adolescents about the signs of puberty and the onset of menstruation.

3.1.2. Have You Already Started Menstruating

This question aimed to determine the extent to which individuals have already started menstruating, considering the previous question about their level of understanding of menstruation as shown in Table 1 above. In that table, many respondents appeared to have knowledge about menstruation, although their level of understanding increased as they progressed through their grades. So, the responses regarding the extent of menstruation onset are shown in Table 2 below.

Table 2. Students' Responses Regarding Entering the Menstruation Period.

Class	Pupils' Responses			
	YES		NO	
	Frequency	%	Frequency	%
Standard Five	5	25%	15	75%
Standard Six	9	45%	11	55%
Standard Seven	17	85%	3	15%
Total	31	51.67%	29	48.33%

Source: Field data, 2023

The results in Table 2 show that a total of 31 students (51.67%) reported having started menstruating, while 29 students (48.33%) reported they have not. These results clearly indicate that many primary school girls have already started menstruating, although this trend increases as they progress to higher grades. For example, the analysis in Table 2 confirms that the likelihood of menstruation onset increases with grade level among students, with 25% of Standard Five students, 45% of Standard Six students, and 85% of Standard Seven students reporting that they have started menstruating. The data reveals a significant relationship between increasing age and the onset of menstruation, as it is evident that students in higher grades, who are generally older, are more likely to have started menstruating compared to those in lower grades, who are still younger. This data clearly indicates that education about menstruation should not be limited to secondary school girls but should be integrated into the primary school curriculum and practices. Educating students about menstruation from an earlier age is crucial for ensuring they are well-informed and prepared as they approach this developmental milestone.

Still, both girls and boys are not adequately prepared for the significant physical changes and reproductive health issues that lie ahead. However, the situation is more severe for girls. For instance, Mooijman, Snel, Ganguly, and Shordt report that, studies suggest that around 66 percent of girls know nothing about menstruation until they experience their first menstrual period, making it a negative and sometimes even traumatic experience [22]. In addition, Ouedraogo and Trinies report that, in terms of knowledge, girls lack sufficient information and skills to manage their menstruation hygienically because they did not receive adequate information from their mothers before their first period. Additionally, there has been no education on menstrual hygiene management (MHM) provided in schools to address this knowledge gap [27]. In this regard, Mooijman et al. recommend that it is crucial for this subject to be taught in schools with sensitivity, fostering a relationship of trust between students and teachers [22]. In contrast, Lee and Kerner caution that a lack of knowledge and skills for menstrual management can be detrimental to school attendance, as well as to the quality and enjoyment of learning for girls [13].

3.1.3. Do You Experience Any Challenges During Your Menstrual Period

The aim of this question was to determine whether students who are already experiencing their menstrual period face any challenges or not.

Table 3. Students' responses regarding experiencing challenges during their periods?

Students' Responses	Frequency	Percentage
YES	27	45%
NO	33	55%
Total	60	100%

Source: Field data

As shown in Table 3, among the 60 students involved in this study, 27 (45%) reported experiencing challenges during their periods, while 33 (55%) reported not facing any challenges. Although the 45% of students who encounter challenges during their periods seems lower compared to those who do not, this still indicates that significant number face difficulties, especially considering that the difference is not large—it's more than three-quarters of those who do not face challenges. We are of the opinion that although the majority of students do not report difficulties, a significant proportion still faces challenges. This underscores the importance of having improved menstrual hygiene education and support systems both in schools and at home to help those who do encounter problems. Magayane and Meremo suggest that, menstrual hygiene management topics should be integrated into the curriculum to raise awareness about MHM among adolescent girls. Teachers and health workers have the responsibility to provide close guidance and health talks, advising adolescent girls on how to effectively manage menstrual-related issues to improve their school performance [16]. Onubogu et al. have also emphasized that continuous education of adolescent girls on menstrual hygiene management, along with advocacy for adequate menstrual hygiene management support, is imperative. They further recommend that active MHM teaching be fully integrated into primary and secondary school curricula, school health programs, and preventive adolescent health initiatives [26].

3.1.4. What Problems Do You Experience During Menstruation

This question aims to identify challenges experienced by students who have reported facing difficulties during their menstrual periods. These challenges are either internally related to the individual's body or externally influenced by the surrounding environment. The challenges have been analyzed thematically and discussed as follows.

(i). Stomach Pain

This is one of the challenges reported by pupils, especially when they are on their menstrual periods. Regarding this challenge, the pupils provided the following explanations. For example, one respondent from School A stated, "I get stom-

ach pain below the navel when I am on my period." Another respondent from School B reported, "My stomach feels upset, and I have diarrhea." A respondent from School C mentioned, "My stomach fills with air and becomes painful." Also, a respondent from School D explained, "I feel a burning sensation and pain in my stomach." Additionally, respondent from School C said, "I get nausea and an upset stomach."

By examining the respondents' descriptions, we find that stomach pain involves issues such as pain below the navel, an upset stomach with diarrhea, a sensation of fullness with pain, a burning sensation, and nausea. These stomach pain-related challenges of menstrual discomfort among pupils, including pain below the navel, upset stomach with diarrhea, a sensation of fullness with pain, burning sensations, and nausea, undoubtedly cause significant distress that greatly affects the students' learning and their other daily extracurricular activities throughout the menstrual period. To address these challenges, enhanced support within schools is needed, such as access to medical care, menstrual hygiene products, and other practical measures to help students manage these issues while continuing their studies effectively. Since some students may still be unaccustomed to seeing vaginal bleeding alongside these pains, they might experience fear and significant discomfort, which requires education about menstrual health to help them manage these issues and reduce stigma, thereby contributing to a more supportive learning environment. In their study involving 10 adolescent girls in Moshi, Tanzania, Cherenack et al. found that many girls experience severe abdominal pain during their menstrual periods. They explain that dysmenorrhea negatively impacts both the physical and psychological well-being of girls, hindering their ability to participate in school, work, and social events [3]. Additionally, in their study, Method et al. affirm that abdominal pain is the most common physical experience during menstruation, accompanied by other symptoms such as headaches and tiredness. Most girls experience more than one symptom, with 91.5% of the girls reporting this [19]. Therefore, to improve girls' ability to manage dysmenorrhea, Cherenack et al. suggest that it is crucial to address medication hesitancy and inconsistent access to effective medication and other menstrual supplies [3].

(ii). Lack of Appetite

Lack of appetite is one of the challenges reported by students during menstruation. For example, one respondent from School D states, "During my period, I have no appetite, unlike the days when I am not on my period." Another respondent from School C said, "During my period, I have a lot of trouble eating because whenever I try to eat, I end up vomiting a lot." By examining these responses, we observe two key challenges related to lack of appetite: a general loss of appetite and experiencing trouble eating due to frequent vomiting. Itani, Soubra, Karout, Rahme, Karout and Khojah confirm that the issue of disturbed appetite, nausea, and vomiting is a challenge faced by many girls during their menstrual periods [10].

In our view, if the inability to eat persists throughout the menstrual period, it is clear that the health of these pupils is at risk, which could lead to weakness and potentially affect their cognitive abilities, as there is a strong connection between proper nutrition, feeling full, and mental health. Therefore, we recommend that nutrition education be taught to pupils in schools, including guidance on the types of food that girls should eat during their periods to maintain both physical and mental health.

(iii). Uncomfortable Body Condition

The issue of menstruation appears to cause physical discomfort, putting the body in an uncomfortable state. Pupils describe their experiences, as one of them from School B states, *“During my menstrual period, I become too lazy to work.”* Another respondent from School A said, *“Different parts of my body feel more tired than on other days.”* Additionally, a respondent from School D stated, *“I lack the desire to do any work, and I feel constant tiredness.”*

Based on participants’ responses, it is evident that fatigue and lack of motivation to work are common among girls during their menstrual period. According to Davydov, Shapiro, Goldstein, and Chicz-DeMet, reviews of psychological processes associated with the menstrual cycle indicate that depression, irritability, insomnia, fatigue, and anxiety are most frequently linked to the luteal phase. Hence, changes in mood in some women during the menstrual cycle may result from disruptions in this process [4]. In our view, this condition is not ideal for a student, especially when it occurs during exams, as it may lead to reluctance to study and prepare for the upcoming tests, ultimately causing them to perform poorly due to inadequate preparation. Therefore, we recommend that girls be educated about these conditions and how to manage them, especially when they have important tasks to accomplish, regardless of their physical health condition.

(iv). Lack of Sanitary Pads

The lack of sanitary pads also appeared to be another challenge faced by schoolgirls during their menstrual periods. One respondent from School D reported that, *“Some of us cannot afford to buy sanitary pads for use during the menstrual cycle. Instead, we use pieces of cloth or pads for extended periods without changing them, which sometimes leads to issues like fungal infections or urinary tract infections (UTIs).”*

Based on this challenge as described by the respondent, various problems can arise, such as using homemade cloths that are sometimes unsuitable or may be dirty, potentially causing issues in the vaginal area. Another issue is the use of pads for extended periods without changing them due to a lack of spare pads, which increases the risk of infections, such as fungal infections and urinary tract infections (UTIs). In our view, it is clear that these health complications not only cause physical discomfort but can also have broader impacts on overall well-being, potentially affecting daily activities,

school attendance, and quality of life. According to World Bank Group, when girls and women have access to safe and affordable sanitary materials to manage their menstruation, they reduce their risk of infections. This can have cascading effects on overall sexual and reproductive health, including reduced rates of teen pregnancy, improved maternal outcomes, and enhanced fertility. Poor menstrual hygiene, however, can pose serious health risks, such as reproductive and urinary tract infections, which can lead to future infertility and birth complications [38]. On the other hand, in her study, Lopez found that, regarding menstrual materials, the most commonly used alternative among both women and adolescent girls is menstrual cloth. Even though pads are generally preferred over cloth and perceived as a cleaner and more hygienic option, the feelings of embarrassment when purchasing these products, along with their high prices, were cited as the main reasons why they are not used regularly or at all [14].

However, to eliminate the existing confusion regarding the use of industrial sanitary pads and homemade cloths, we recommend that it is crucial for parents or schools, in collaboration with stakeholders, to establish a proper system to ensure that schoolgirls have adequate access to sanitary pads during their menstrual periods. On the other hand, it is also important to provide training by health professionals on the proper use of homemade cloths, especially when there is no possibility of affording sufficient sanitary pads during menstruation or when a schoolgirl prefers not to use industrial sanitary pads for any personal reasons. This will help in improving menstrual health and ensuring that pupils’ physical and educational needs are met.

(v). Insufficient School Facilities and Infrastructure Support

The issue of the lack of supportive environments and girl-friendly infrastructure in schools for girls during their menstrual periods was identified as a challenge affecting female pupils when they are on their periods. The students provided the following statements. One respondent stated that, *“Our school does not have designated rooms for changing sanitary pads or cloths for those who do not use pads. Often, when we need to change sanitary pads, we go to the toilets to do so.”* In the same vein, a respondent from school D said, *“A major issue is that once we have changed the pads, there are no deep bins to dispose of the used pads. Instead, we have to throw them into trash bins that are often too short, causing the pads to remain on top of the bins.”* On the other hand, another respondent from school C explained that, *“Here at our school, water is a problem. The taps often do not provide water, so you might go to the toilet to change pads and find there is no water at all. When water is available, it is often so dirty that using it can pose health risks, such as contaminating oneself and potentially leading to infections like UTIs.”*

Based on the respondents’ feedback, several challenges arise from the lack of necessary infrastructure and services in schools that are crucial for managing menstrual disorders. Firstly, the

absence of designated rooms for changing pads forces schoolgirls to use toilets, which lack adequate privacy since they are used by all students. This lack of privacy creates significant inconvenience and discomfort. Secondly, schools lack designated areas specifically for disposing of used pads, such as deep bins or other suitable waste disposal facilities that respect privacy. Instead, the available disposal options are small bins that often result in used pads remaining visible on top, where they are seen by many people. The visibility of used pads undermines the privacy of the girls, particularly in the presence of boys, and diminishes their sense of freedom. Thirdly, schools lack adequate clean water services. Sometimes there is no water available from the taps, and instead, water is stored in buckets, which is often not clean enough for a girl to use for personal hygiene during menstruation. This increases the risk of developing infections such as UTIs.

According to the study conducted by Masatu and Msoka involving secondary schools in Dodoma, it is evident that many schools lack a supportive environment and menstrual hygiene management facilities for schoolgirls. For instance, Masatu and Msoka found that most girls faced various challenges at school, including insufficient water, soap, pads, scarce toilets, and a lack of private rooms. Many of them waited until the end of the session to leave class, often wrapping sweaters around their waists when they did. Additionally, they discovered that none of the schools visited had private changing rooms; female students had to use conventional restroom facilities as personal changing areas [17]. Additionally, World Bank Group explains that, disposable sanitary products do contribute significantly to global waste. Ensuring that women and girls have access to sustainable and high-quality menstrual products, and improving the management of the disposal of these products, can make a substantial difference in reducing environmental impact [38]. So, in our view, if secondary schools, where it is already well-known that many girls experience menstrual periods, have poor conditions regarding menstrual hygiene management facilities and supportive environments, this likely indicates that the situation in primary schools, where menstrual hygiene management (MHM) may not be prioritized, is even worse. This is especially concerning given the younger age of menstruating girls.

Therefore, we recommend that all these challenges should be addressed collectively by schools in collaboration with the government, parents, and other stakeholders in education and reproductive health to improve school infrastructure and create supportive environments for girls during their menstrual periods, ultimately leading to better menstrual hygiene management in schools.

3.2. Measures Taken to Address Difficulties Faced During Menstrual Periods

This section addresses the second objective, which aimed to identify the measures taken to address the challenges faced by pupils during their menstrual periods. These measures

involve the efforts of teachers in assisting girls during their menstrual periods, as well as the personal efforts taken by the girls themselves when they are on their periods. These measures have been presented and analyzed thematically. The efforts taken by the teachers are as follows.

3.2.1. Providing Painkillers

In assisting schoolgirls during their menstrual periods, teachers take several measures, including providing painkillers as a form of first aid. In this regard, one teacher from School D explained, *“Sometimes, some students report to the office and ask for painkillers. Since the school has a first aid kit, it’s easy to provide help. We also advise them to go to the hospital if their condition worsens.”* In the same line, a teacher from School A described, *“During class hours, we always try our best to prevent pupils from returning home due to the pain they experience during menstruation. We have a procedure in place to give them pain medication, allowing them to recover and continue their studies effectively.”*

In the statements provided by the teachers during the interview, this effort is highly commendable. However, providing painkillers as first aid for girls during their menstrual periods is only a short-term solution to alleviate menstrual discomfort, which only addresses the immediate symptoms, not the underlying menstrual health challenges. Additionally, the fact that teachers advise students to visit hospitals if their conditions worsen indicates that schools may lack adequate resources or infrastructure to manage more severe menstrual health issues on-site. The Centre for Infectious Disease Research in Zambia (CIDRZ) suggests that at the school level, the challenges faced by girls during menstruation must be tracked, and action plans to address these challenges should be developed. Additionally, schools should include menstrual hygiene management (MHM) in their budgets to ensure adequate funding is available. The community should be informed about the challenges faced by girls in school during menstruation and play a supportive role in MHM [2]. In our view, this suggestion should be accompanied by the introduction of adequate long-term support, which includes a broader menstrual health support system and a comprehensive care approach to menstrual health management, addressing emotional, physical, and hygienic needs during menstruation.

3.2.2. Educational Provision on Menstrual Disorders Management

Another effort made by teachers is providing education on menstrual disorders management to students who are menstruating. For instance, a teacher from school B reported that, *“We use several methods that are not clear to identify those who have already reached menarche and then provide them with specific advice on what to consider during their menstrual periods. Often, we do not give these instructions to their peers who have not yet started menstruating due to*

their age. Once a pupil reaches menarche, there is a risk that they might be publicly identified by their peers, which can cause discomfort for those who are known to have started menstruating." In addition, another teacher from school D said, "We help pupils manage menstrual issues by advising them on hygiene practices during menstruation to prevent urinary tract infections (UTIs) and other conditions such as fungal infections. We also encourage them to maintain exercise habits and reduce the consumption of fatty foods."

In the statements provided by teachers on how they assist schoolgirls during their menstrual periods, we discover that education on menstrual management is not uniformly provided, particularly for those who have not yet started menstruating. This selective approach may leave some pupils without essential information about menstrual health until they reach menarche. On one hand, this approach seems to have a valid reason, which is to protect the privacy of those who have already started menstruating from their peers who have not yet begun, aiming to avoid discomfort and embarrassment for students who are known to have started menstruating from being publicly identified. However, on the other hand, we see that providing education only to those who have already reached menarche while excluding those who have not yet started can be a form of discrimination. This may deny them the opportunity to learn important information about MHM early, which would help them perform better when their time comes. Nnennaya, Atinge, Dogara, and Ubandoma state that regardless of culture, age, and marital status, adolescents need basic, accurate, and comprehensive information about their body structure and functions, as well as other sexual and reproductive health issues [25]. Additionally, Swedish International Development Cooperation Agency (SIDA) emphasizes that, receiving factual and comprehensive information about biology and the various aspects of good menstrual hygiene management (MHM) is crucial to ensure that women and girls can address their needs. However, in many low- and middle-income countries, there is no mandated education on menstruation, and the education provided in schools is very limited [34]. In this regard, we suggest that there is still a need to find a better way of delivering this education by adopting a more inclusive and sensitive approach to menstrual health education. This will ensure that privacy is respected, and comprehensive support is provided to all pupils, regardless of their menstrual status.

In addition to the efforts made by teachers in assisting students with menstrual discomforts, the students themselves, as the affected individuals, explained the measures they take to cope with menstrual disorders as follows.

3.2.3. Integrating Herbal Remedies and Painkillers for Menstrual Pain Management

This theme is based on the explanations provided by schoolgirls, who described how they manage menstrual discomfort by sometimes using traditional herbal remedies and modern painkillers to cope with the pain experienced during

their periods. For instance, one respondent from School B stated, "When I experience menstrual challenges like pain, my mother gives me herbal medicines at home to help reduce the discomfort." A respondent from school A mentioned, "One week before my period, I take boiled herbal medicines so that when my menstruation starts, I don't experience severe pain." Additionally, another respondent from school D said, "During my period, I use pain relievers like paracetamol and other medications. When I go to the pharmacy, they provide me with pain relief."

Based on pupils' explanations, we identify some key issues arising from the efforts they make to manage menstrual pains during their periods. Some use traditional herbal medicines given by their parents to relieve pain during menstruation, while others take these remedies before menstruation begins to control pain. While this may seem beneficial if it helps them, we think that these remedies could potentially have long-term effects on reproductive health, considering that their use is not scientifically validated. In their study involving 150 secondary school students, Mohamed, Attia, Omran, Elsayed-Afifi found that less than two-thirds of the students consistently used various traditional practices to relieve dysmenorrhea. The most common method was drinking natural herbs, followed by taking a warm bath, massaging the abdomen, raising the legs during sleep, ensuring full comfort, using certain oils to apply to the painful area, and, finally, doing exercises [21]. In our analysis, although these efforts seem to help schoolgirls manage menstrual disorders, they clearly indicate that the students lack professional medical advice or guidance in applying these methods. Therefore, we believe that without proper knowledge, they may unintentionally cause harm that could affect their reproductive health in the future. Thus, we recommend that, in addition to receiving support from their mothers when using herbal remedies, students should exercise caution and seek professional medical advice to ensure their health and safety.

3.2.4. Individual Beliefs

The issue of menstrual disorder management among schoolgirls is also accompanied by matters of religious beliefs and inherited traditions from parents who experienced these periods when healthcare services were limited in their environments. For instance, a respondent from School D explained, "I always go to pray at church because my mother and brothers have a strong belief in prayer." In the same vein, a respondent from school C mentioned, "My grandmother told me that it's normal, and the pain will end when I grow up. She said that once I have a child, the severe pain during menstruation will stop."

According to the explanations provided by these pupils, it shows how religious beliefs and inherited family traditions passed down through generations, particularly in environments with limited access to healthcare, shape the management of menstrual disorders among schoolgirls instead of considering medical advice on how to control menstrual disorders. In their

study conducted in Cameroon, Touko, Mboua, Dongmo, Tagne, and Ngatchou report that, in general, across all locations, mothers sometimes, either implicitly or explicitly, encourage their daughters to maintain silence once menstruation begins. This advice is given in utmost secrecy, reflecting a strong cultural determinism of silence and taboo. The study highlights that cultural and religious beliefs are significant determinants of communication about menstruation and related practices. These beliefs often focus on the management of menstrual blood, sanitary protection, and associated prohibitions. Additionally, the researchers noted that traditional beliefs include the notion that menstrual products might be used for mystical purposes to harm women, such as preventing conception, causing death, hindering marriage, determining their fate, or even killing their children [35].

Therefore, in light of these religious beliefs and the advice given by elders, whose upbringing and health challenges differed from the current environment, we believe that such beliefs may delay or prevent students from receiving appropriate medical advice or treatment for menstrual discomfort. Consequently, this could result in inadequate management of their symptoms and potential long-term health consequences, as these traditional practices are not scientifically validated.

3.2.5. Avoiding Eating Certain Foods

Avoiding eating certain foods has been reported as one of the efforts taken by schoolgirls to manage menstrual pain. For example, one respondent from school B explained that, *“During menstruation, I try hard to eat fruits and drink plenty of water so that I can stay strong and feel like I do on days when I am not on my period.”*

Based on the information provided by this respondent, it appears that there is a belief that certain foods should be consumed, including drinking plenty of water, while others should be avoided to manage menstrual pain experienced by schoolgirls during menstruation, even though this approach may not be scientifically validated. Similarly, in line with this approach, the United Nations Children’s Fund (UNICEF) reports that, in some communities, particularly in developing countries, menstruating girls are also prohibited from cooking and consuming sugary foods, excessive amounts of pepper, peas, and tomatoes due to the belief that these foods may increase or prolong menstrual flow [36]. It appears that this belief in food restrictions is a personal effort without any scientific evidence, even though it may seem to help in managing menstrual pain. This indicates a lack of professional medical advice recommended for dealing with menstrual discomfort. Therefore, we still emphasize the need for schoolgirls to adhere to scientifically supported approaches to menstrual health management for their overall health and safety.

3.3. The Effects of Menstrual Disorders on Girls’ Academic Performance

This section addresses the third objective, which aimed to

explore the effects of menstrual disorders on girls’ academic performance in primary schools. These effects have been presented and analyzed thematically as follows.

3.3.1. Absenteeism

Teachers reported frequent absenteeism among girls, often due to severe pain experienced during menstruation. For example, a teacher from School A explained, *“During menstrual disorders, students may not attend school at all or miss lessons, which affects their academic performance compared to boys.”* A teacher from school B mentioned, *“Some girls do not attend school at all during their menstrual period due to various challenges with their bodies, which negatively impacts their studies because staying home while their peers continue with their lessons causes them to miss out on essential skills, which slows down their performance.”* Additionally, another teacher from school C stated, *“Many students miss school when they menstruate due to their attitudes about menstruation, as they perceive it as a disease.”*

Based on the teachers’ explanations, it is clear that the act of schoolgirls missing classes each month during their menstruation has a significant negative impact on their academic performance compared to their male peers. This is because they miss out on essential skills and knowledge, which are crucial for improving their overall educational progress. Additionally, on the other hand, it shows that some pupils hold inappropriate views about menstruation, perceiving it as an illness and consequently using it as an excuse to stay home from school during their menstrual period. This perception continues to negatively affect their academic performance. Miiró et al. confirm in their study that menstruation is associated with school absenteeism. They found that girls reported missing school four times more frequently during their period compared to when they were not menstruating. Among those who missed school during menstruation, the main reasons cited were pain, fear of leaking, and lack of privacy. The fear of leaking was slightly more common among those who changed protection frequently, suggesting that this fear may be related to anxiety about leakage or heavier flow rather than an inability to afford adequate protection [20]. Additionally, Femi-Agboola, Sekoni and Goodman affirm that dysmenorrhea is a prevalent condition among these girls, with resulting negative effects on school activities and attendance [6].

Therefore, given the reality that many girls miss school by staying home during their menstrual periods, it is crucial to educate them that menstruation is not an illness and that they should not stay home while their peers continue with their studies, as this poses a significant risk to their educational future. This should be accompanied by creating an environment that supports them in managing the challenges of menstruation while continuing their education alongside their peers.

3.3.2. Reduced Confidence Among Girls

The fact that girls are menstruating was reported to signif-

icantly contribute to lowering their confidence level while in the school environment and in their overall learning. A teacher from School D explained, *“Menstrual disorders cause female students to lack confidence and fail to participate in various school activities. They also isolate themselves and feel stigmatized by their classmates.”* Similarly, a respondent from School A explained, *“This situation makes them weak, especially those with severe challenges, and as a result, they are often afraid and hesitant, which prevents them from fully participating in their studies.”* Additionally, a teacher from school B added, *“Girls who have started their periods often feel different from their peers, which hinders their ability to socialize properly. They become shy and lack the confidence to speak in front of other students.”*

Based on the teachers' observations regarding how they see their students during menstruation, it is clear that menstruation not only causes physical challenges but also significant emotional and psychological disturbances for girls in school. During this period, many students experience a decrease in confidence, leading them to feel isolated, as most of them end up distancing themselves from their peers. Additionally, many of them find themselves in great fear, worrying that the blood may leak through their clothes, causing them embarrassment. Consequently, they end up feeling fearful and hesitant, which automatically limits their full participation in various school and academic activities. Munro, Keep, Hunter, and Hossain affirm that only a minority of students feel completely confident in managing their menstruation. This limited level of confidence is influenced by physical menstrual symptoms, negative perceptions of menstruation, perceived stigma, and the use of menstrual cups or period underwear [23]. Hence, we contend that the decreasing level of confidence among schoolgirls who are menstruating greatly affects their mental health, ultimately hampering their ability to perform well academically and engage in the learning process at the same level as their peers. Therefore, we recommend that teachers, parents, mental health professionals, including life coaches, implement a practical strategy for building girls' confidence to handle any life situation with assurance, including during menstruation.

3.3.3. Decreased Learning Concentration

In this theme, students demonstrated how their morale for studying decreases during menstruation. For example, a pupil from School B stated, *“During my menstrual period, I become so weak that my desire to study decreases significantly, whether it is studying on my own or with my peers.”* Another student from School A said, *“During my menstrual period, I experience abdominal pain and find myself just lying down in class, unable to study properly. Sometimes, I even fail to answer questions, especially when the teacher asks a question in class. This situation can sometimes be perceived as laziness or a lack of understanding of the lesson being taught during that period.”*

In these descriptions, it is evident that menstruation causes

students to feel weak, diminishing their ability to participate in learning activities. Additionally, severe pain can prevent them from answering questions and may be misinterpreted as laziness. These issues impact their seriousness in learning and overall academic performance. Goda, Mohamed, Hassa, El-Aty, and Saad reported that approximately three-quarters of participants (73.6%-74.8%) in their study mentioned that dysmenorrhea affected their concentration and ability to complete homework [8]. In the same line, Ghandour, Ham-moudeh, Stigum, Giacaman, Fjeld, and Holmboe-Ottesen confirm that high levels of dysmenorrhea have a debilitating effect on the lives of adolescent girls, significantly affecting their well-being and impeding their academic performance in several ways, including increased school absenteeism, reduced ability to complete homework and prepare for exams, and decreased capacity to focus and concentrate in class [7]. Therefore, considering the impact of reduced learning concentration among schoolgirls due to menstrual disorders, we recommend that it is crucial to build students' resilience and emphasize the importance of adhering to medical advice in managing menstrual pain while continuing their education.

4. Conclusion and Recommendations

This study provides vital insights into the awareness and challenges of menstruation among primary school girls, highlighting a crucial yet often neglected developmental stage in educational system. The progressive increase in menstrual awareness from Standard Five to Standard Seven underscores the need for earlier menstruation education to prepare girls adequately before menarche. The study reveals that as pupils advance in grade, the likelihood of menstruation onset increases, signaling the need for structured educational interventions tailored to this transition. The study also identifies significant challenges, including stomach pains, lack of appetite, physical discomfort, and inadequate access to sanitary products, exacerbated by poor school infrastructure. While short-term measures like painkillers offer limited relief, a comprehensive approach is needed to address broader menstrual health management issues. Traditional practices, while culturally significant, underscore the necessity for integrating professional medical advice to prevent long-term health complications. Furthermore, menstrual challenges severely impact academic performance through absenteeism, decreased concentration, and reduced confidence, contributing to gender disparities in education. Thus, equipping girls with knowledge, resources, and emotional support not only mitigates these adverse effects but also enhances their overall well-being and academic success. This study introduces new knowledge by framing menstruation as a socio-educational issue that demands a holistic, integrated response from all stakeholders.

Building on the findings of this study, we propose the following key recommendations to be implemented to ensure effective menstrual health management and address the challenges faced by primary school girls.

- i. The government should introduce menstrual health education early in the curriculum whereby schools should offer age-appropriate information on menstruation, ensuring that all pupils—both girls and boys—are adequately informed about reproductive health before they reach menarche.
- ii. School authorities, with support from the government and other educational stakeholders, should improve MHM facilities and infrastructure in schools, including building private and safe changing areas for girls, providing clean water, and ensuring proper waste disposal facilities for sanitary products.
- iii. Schools, in collaboration with local governments and non-profit organizations, should create programs to provide free or affordable sanitary products to students in need, along with offering training on the safe and hygienic preparation and use of homemade cloths where preferred, under the guidance of health professionals.
- iv. Schools should adopt a holistic approach to menstrual health management by providing pain relief, emotional support, and counseling for students with severe symptoms, while training teachers to support students and reduce menstruation-related stigma in the classroom.
- v. Schools should establish partnerships with healthcare providers to offer regular health check-ups and workshops on menstrual health management.
- vi. Schools, in collaboration with healthcare providers, should provide education on the safe use of traditional methods while encouraging students and their families to seek medical advice when managing menstrual pain.
- vii. Schools should adopt strategies that enable girls to continue their education with minimal disruption during their menstrual periods by providing additional academic support for those who miss classes due to menstrual health challenges.

Hence, we believe that if these recommendations are implemented, primary school girls can receive the necessary support to manage their menstrual health, which will lead to improved academic performance and enhanced overall well-being.

Abbreviations

BMIZ	Body Mass Index Z-score
CIDRZ	Centre for Infectious Disease Research in Zambia
HAZ	Height-for-Age Z-score
MHM	Menstrual Hygiene Management
SIDA	Swedish International Development Cooperation Agency
UNICEF	United Nations Children's Fund
UTIs	Urinary Tract Infections

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Author Contributions

Noel Julius Ntawigaya: Conceptualization, Formal Analysis, Methodology, Project administration, Resources, Supervision, Validation, Writing – review & editing

Joyce George: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft

Ethics Approval

This study was approved by the Ethical Committee of Teofilo Kisanji University, Tanzania, with reference number TEKU/ETHC/FED/01/03/2022, dated 25/02/2023.

Conflicts of Interest

The authors declare no conflicts of interest.

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