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Research Article

Knowledge, Attitudes and Practices of Menstrual Hygiene Management among Adolescent Girls in Community Schools

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Abstract

Menstrual hygiene is crucial for the health and dignity of adolescent girls, yet limited research has explored this topic in Nepal. This study aimed to assess the factors influencing knowledge, attitudes, and practices of menstrual hygiene among adolescent girls in grades 11 and 12 from five community schools of Siddartha Municipality. Five community schools were selected through purposive sampling, and students were selected using simple random sampling.. Data were collected through self-administered questionnaires and interview schedule. The study revealed a mean age of participant was 17.1 years, with 91.1% reporting menarche between ages 10–14. While 82% perceived menstruation as a natural cycle, only 50.9% respondent identified the uterus as the source of menstrual blood. Mothers were the primary source of information for 69.9% of respondents. Better menstrual hygiene knowledge and practices were significantly associated with nuclear family setups and mothers with formal education.Findings indicated positive attitudes toward using sanitary pads (92.2%) and daily hygiene practices (92.3%). During menstruation, 91.1% used sanitary pads, 66.4% bathed daily, and 88.1% attended school. However, 63.7% reported physical challenges, while 16.7% experiences mental and 16.1% experienced social problem.The study suggests the need for continuous education on menstrual hygiene and government support to address gaps in facilities like clean water, toilets, and sanitary pads. And need of promoting comprehensive health education can help correct misconceptions and foster healthier practices among adolescent girls.

***Keywords*:** Menstruation, Menstrual Hygiene, Adolescent Girls, Schools, Nepal

Introduction

The natural monthly flow of blood from the reproductive tract during menstruation is used to release an ovum that has expired. Menstruation begins at menarche. It really brings physiological changes to female adolescents. Adolescence is the period of following the onset of puberty during

which a young person develops from a child into an adult. There are both natural processes with the development of anatomy of female adolescents facing this process menarche to menopause. Menstruation cycle is the normal monthly flow of blood from the reproductive tract for the discharge of expired ovum. Menstruation begins at menarche. It really changes female psychology in adolescence with the beginning of menarche. Most of the females face some psychological and physiological changes in their general life (Smith, 2021).

According to WHO, adolescence is the time between the ages of 10 and 19 years. Unlike the varying definitions of WHO is considered a "adolescent," the term "teenage" is simpler to define: it refers to someone who is between the ages of 13 and 19. There is a noticeable gap in Nepal's situation; due to a lack of understanding and awareness about menstruation, many Nepali girls struggle to effectively manage their menstrual health. Their capacity to adopt appropriate menstrual health habits is hampered by this knowledge gap (WHO; 2005).

To write a background on menstrual hygiene management for adolescent girls based on Smith, J. (2020). Menstrual hygiene management (MHM) plays a crucial role in the health and well-being of adolescent girls. According to Smith (2020), adolescence is a critical stage for girls as they undergo significant physiological changes with the onset of menstruation. This period marks the beginning of their reproductive health journey, and menstruation serves as a signal of entry into womanhood. Despite its natural occurrence, menstrual hygiene remains a major concern, especially in developing countries like Nepal, where inadequate knowledge and awareness often lead to poor menstrual health practices.

In Smith's guide, the importance of educating girls about menstrual hygiene is emphasized as it helps them manage physical, emotional, and social changes during menstruation. Many adolescent girls face challenges, such as the lack of proper sanitation facilities, unavailability of menstrual products, and stigma surrounding menstruation. These factors hinder their ability to manage menstruation with dignity and hygiene, leading to health complications and missed school days.

Smith (2020) also points out that the menstrual cycle, though a natural and regular biological process, can have psychological and social impacts if not addressed properly. Girls need access to accurate information about menstruation, appropriate menstrual products, and safe spaces to manage their menstrual health effectively. Education and support from schools, families, and communities are vital in ensuring proper menstrual hygiene practices, ultimately contributing to the overall health and development of adolescent girls.

As per the Delhi Declaration (2008) adopted at the Third South Asian Conference on Sanitation (SACOSAN), it is imperative to make significant efforts to address women's specific needs, including menstruation hygiene management. This includes their participation in each stage of

designing, carrying out, overseeing, and evaluating sanitation projects. It should be noted that, although it frequently goes unnoticed (Ten, 2001), it is nevertheless obvious that properly addressing menstrual hygiene and management directly results in significant contributions. The evidence presented thus far demonstrates that inadequate menstrual hygiene has not received enough attention in developing nations. There are, cultural and perhaps religious, taboos in many countries around blood, menstruation, women and girls, and menstrual cleanliness. In addition to the widespread retention of stereotypes, assumptions, and cultural patriarchal attitudes, there is structural gender inequality across the world, which undermines the status of women as autonomous agents on a daily basis (Tjon, 2012).

Menstruation is a natural biological process and a crucial indicator of reproductive health, but in many cultures, it is viewed as a bad, shameful, or filthy thing. Millions of women and girls lack a great deal of knowledge about what happens to their bodies during menstruation and how to deal with it as a result of the continued silence surrounding it and the limited access to information at home and in schools. A study from UNICEF revealed that 1 out of 3 girls in South Asia knew nothing about menstruation prior to getting it while 48% of girls in Iran and 10% of girls in India believe that menstruation is a disease (Water Aid, 2013). In the context of Nepal, only 50% of the girls practice good menstrual hygiene because they have little knowledge and education about menstrual hygiene. Without proper care and hygiene during menstruation, it negatively affects health and education also (Parajuli2016). The menstrual cycle is a continuous process and about 52% of women menstruate regularly in every month of their reproductive age (Parajuli, 2016).

During the menstruation period, every woman needs a safe environment, and a private and secure space for changing their sanitary pads, and in rural areas they have not proper access to clean sanitary pads. Most girls and women stay back from their daily activities during menstruation because in many cultures they are not allowed to get involved in many family activities. Therefore, they want to stay in a silent and invisible way in society, which is very difficult for girls and women too. Many cultures make restrictions about cooking, going to school, taking baths, and touching others during the menstrual periods of their girls (Ministry of Health, Nepal, New ERA, & ICF, 2017).
Inadequate practice of good menstrual hygiene leads girls and women vulnerable to reproductive tract infection, which may cause lifelong infertility to women and other major reproductive health-related problems. For the betterment of the health of adolescent girls and women, they need to adopt and practice good menstrual hygiene, they should have adequate access to good quality sanitary pads, and other accessory materials that help to strengthen their menstrual hygiene and reproductive health (UNICEF (2017). The school-going girls face many problems while replacing their used sanitary

pads. The reason is not good access to clean and private toilets in the school area so they prefer to drop their school during menstruation (WHO, 2020).

In Nepal to examine the socio-cultural practices surrounding menstruation, its management, and its effects on girls' education, UNICEF Nepal and the Health Research and Social Development Forum (HERD) commissioned the report Analysis of Menstrual Hygiene Practices.
The study involves the examination, analysis, and reporting of menstrual hygiene management practices in government schools across three rural districts in Nepal.

In the context of education and public health, MHM is vital. Schools should be safe and supportive environments where girls can manage their menstruation with dignity. However, many Nepali schools lack basic facilities, sanitary products, and supportive awareness programs. This study contributes to the understanding of how these limitations affect girls' educational outcomes and overall well-being.

Literature Review

Understanding the complexities of Menstrual Hygiene Management (MHM) requires a multi-layered theoretical lens. This study integrates Feminist Theory and Albert Bandura's Social Learning Theory to construct a holistic framework that explains how structural gender inequities and localized behavioral modeling shape adolescent girls' menstrual practices. Feminist Theory and Menstrual Stigma Feminist theories offer a critical framework for analyzing menstruation not merely as a biological event, but as a deeply socio-cultural and political phenomenon embedded within patriarchal systems (Engels, 1884; Egbert & Sanden, 2019). Historically, patriarchal structures have weaponized the biological reality of menstruation to institutionalize the subjugation of women, framing the menstrual cycle as inherently "unclean," "shameful," or "debilitating" (Bobel, 2010). Feminist critiques expose how these social constructs enforce silence around reproductive health, restricting women's autonomy and mobility through systemic taboos.

In the context of menstrual health equity, feminist perspectives advocate for intersectional analyses. They highlight how overlapping identities—such as caste, socio-economic class, and geographic isolation—compound the marginalization experienced by menstruating individuals (Hennegan et al., 2016). By challenging traditional norms that relegate menstruation to the private, hidden sphere, feminist theory frames access to safe, private, and dignified MHM infrastructure as a fundamental matter of gender equality and human rights.

Social Learning Theory (Bandura) and Menstrual Practices

While feminist theory maps the macro-level structural power dynamics, Albert Bandura's Social Learning Theory (1977) explains the micro-level behavioral mechanisms through which these societal norms are transmitted, reproduced, and maintained across generations. Bandura posits that human behavior is learned through observational learning (modeling), imitation, and vicarious reinforcement within a given social environment.

Adolescent girls do not develop their menstrual hygiene practices in a vacuum; they observe and replicate the behaviors, anxieties, and hygiene habits modeled by senior female figures in their families and communities, primarily their mothers and grandmothers.

Observational Learning: If an adolescent girl witnesses maternal figures treating menstruation with secrecy, hiding drying menstrual cloths, or strictly adhering to seclusion rituals without explanation, she internalizes these behaviors as normative and correct.

Vicarious Reinforcement: The social reinforcement—or punishment—associated with these practices shapes behavioral compliance. For instance, a girl observes that following structural restrictions (e.g., staying out of the kitchen) yields social approval, while violating these taboos results in communal shame or spiritual anxiety. This feedback loop cements the continuation of unhygienic or restrictive habits.

Self-Efficacy: Bandura's core concept of *self-efficacy*—an individual's belief in their capability to execute specific behaviors—is central to understanding MHM. A girl's self-efficacy regarding proper hygiene practices, product disposal, and discussing menstrual complications openly is directly constrained by the mixed signals, taboos, and physical resource limitations present in her immediate environment (Karki, Subedi, & Dahal, 2024).

Theoretical Integration and Questionnaire Development

These two theories do not operate in isolation; they directly informed the operationalization of the independent and dependent variables, as well as the structural design of this study's quantitative survey instrument:

Theoretical Construct	**Study Variable Operationalized**	**Specific Questionnaire Section / Items**
Feminist Theory *(Patriarchal Control & Structural Stigma)*	**Independent Variable:** Socio-cultural restrictions, institutional taboos, and systemic barriers to resources.	**Section B (Socio-cultural Restrictions):** Items measuring specific structural exclusions (e.g., prohibition from entering the kitchen, touching water sources, or attending school) and felt shame/stigma.
Social Learning Theory *(Modeling & Interpersonal Transmission)*	**Independent Variable:** Sources of menstrual education, maternal influences, and peer-led beliefs.	**Section A (Knowledge & Sources of Information):** Items tracking *who* first taught the respondent about menstruation (mother, teacher, peer) and whether myths are actively taught or debunked.
Behavioral Adaptation *(Bandura's Self-Efficacy & Reinforcement)*	**Dependent Variable:** Menstrual Hygiene Management (MHM) behavior and practices.	**Section C (MHM Practices & Self-Efficacy):** Items measuring the mechanical choices of the respondent (use of commercial pads vs. old rags, laundering practices, private disposal methods, and confidence in managing leaks at school).

Review of Empirical Literature: A Thematic Synthesis

Knowledge Disparities, Myths, and Sources of Information

Empirical literature across South Asia demonstrates a persistent gap between the biological onset of menarche and the structural knowledge required to manage it safely. Globally and locally, a significant proportion of adolescent girls undergo menarche with little to no prior preparation, interpreting the event with fear, panic, and shame (Sharma & Mehra, 2019; Bhattarai, 2007).

Recent quantitative datasets from Nepal confirm that while baseline awareness of the word "menstruation" has increased, comprehensive physiological understanding remains low.

Statistic / Indicator	Value	Source
Adolescent girls lacking adequate awareness of the menstrual cycle/hygiene	**65%**	Raut, Khatry, & Shrestha (2019)
Girls who recognize menstruation as a normal physiological process	**83.3%**	Parajuli et al. (2017)
Girls who understand it is specifically driven by hormonal changes	**52%**	Parajuli et al. (2017)

This disparity points to a breakdown in formal educational channels. Instead, the primary transmission vectors for menstrual data are deeply informal. Parajuli et al. (2017) noted that **53.9%** of girls received their primary menstrual instruction from their mothers. Because these maternal information streams are heavily influenced by traditional generational biases, unscientific myths and behavioral restrictions are systematically passed down, leaving formal school curricula poorly integrated and failing to close the critical knowledge gaps (Dasgupta et al., 2020).

Socio-Cultural and Caste-Based Restrictions

The practice of enforcing spatial, dietary, and social restrictions during menstruation remains widespread across Nepal, though its manifestation fluctuates significantly based on caste, ethnicity, and geographic location. A historical and cross-comparative reading of empirical data reveals a clear pattern of continuous, structurally embedded taboos:

[Percentage of Exclusionary Restrictions Across Caste & Ethnic Lines]

Brahmin/Chhetri Communities:

76.8% - Forbidden from touching household objects (Rayamajhi, 2017)

68% - Barred from touching water/kitchens (Shrestha et al., 2022)

Dalit Communities:

60% - Forbidden from touching anything indoors (Rayamajhi, 2017)

Magar & Tamang Communities:

39.6% - Forbidden from touching household items (Rayamajhi, 2017)

30% - Reported strict dietary/spatial exclusions (Budhathoki et al., 2021)

This data demonstrates that while upper-caste Hindu households (Brahmin/Chhetri) generally enforce the most rigid physical exclusions regarding kitchens, water infrastructure, and religious icons, structural taboos transcend caste boundaries entirely. Shrestha et al. (2022) and Budhathoki et al. (2021) observe that regardless of specific ethnic backgrounds, **over 75%** of adolescent girls in rural and peri-urban Nepal experience some form of behavioral restriction. These exclusions range from institutionalized isolation practices (such as historical variations of *Chhaupadi* or dark-room seclusions during menarche) to routine prohibitions against touching shared resources.

Material and Physical Infrastructure Barriers to MHM

A core convergence in recent MHM literature (2020–2025) is the critical structural intersection between material poverty and school absenteeism. The lack of physical WASH (Water, Sanitation, and Hygiene) infrastructure in public institutions actively compromises girls' health, dignity, and educational equality.

Product Deprivation: In resource-constrained, remote areas of Nepal, access to modern commercial sanitary products remains heavily limited. Raut et al. (2019) documented that only **30%** of remote adolescent girls had consistent access to disposable sanitary pads, forcing **70%** to rely on traditional rags, old clothing, or unhygienic fabric alternatives.

The WASH Infrastructure Gap: Even when girls obtain commercial products, school institutional environments often fail to support their usage. Contemporary evaluations by Mahat et al. (2023) and Doe (2023) highlight that more than **60%** of community schools in Nepal lack gender-segregated toilets with running water, locking mechanisms, and discrete disposal bins.

Educational Consequences: Faced with the threat of embarrassing leaks, peer harassment, and severe menstrual pain without access to supportive school infrastructure, girls frequently choose absenteeism. Research between 2021 and 2025 shows that adolescent girls consistently miss an average of **2 to 4 school days per month** directly due to inadequate MHM facilities (Budhathoki et al., 2021; Mahat et al., 2023).

Identification of Research Gaps

A critical review of the existing literature reveals three distinct gaps that this study aims to address:

Methodological and Analytical Mismatch: Much of the existing literature claims a holistic approach but defaults to broad, non-contextualized lists of percentages without assessing how structural constraints alter daily practices. This study closes that gap by utilizing a clearly mapped, theoretically driven quantitative design to isolate how learned behaviors directly influence specific hygiene choices.

Geographic and Contextual Obsolescence: A significant portion of foundational Nepalese menstrual research relies on outdated baselines (e.g., studies from the late 1990s and mid-2000s). Rapid social changes, urban transitions, and localized health interventions over the last five years (2020–2025) mean these older statistics no longer accurately reflect current realities. This study provides an updated baseline using contemporary data.

Under-Theoretical Operationalization: While many empirical studies catalog the specific socio-cultural restrictions girls face, they rarely link these restrictions to established psychological or sociological frameworks. By explicitly evaluating Bandura's self-efficacy metrics alongside feminist structural variables, this study establishes a clear mechanism for *why* and *how* these persistent behavioral restrictions continue to impair modern health outcomes..

Methodology

This study used a mixed-methods approach to collect both qualitative and quantitative data. The sample included **336 adolescent girls** from five public community schools in Rupandehi. Data collection tools included structured surveys, semi-structured
interviews with teachers and parents, and direct observations of school facilities. This approach allowed for a holistic understanding of both statistical trends and lived experiences.

Methods and Procedures of the Study

Research methodology includes the population and samples, data sources, data collection techniques, data processing techniques, and data analysis procedure. The following techniques were used to carry out the research in a scientific manner and to achieve the aforementioned objectives of this study.

Research Design

This research was based on descriptive research design, based on mixed method.

Justification for Mixed-Methods Approach

To address the multifaceted challenges of menstrual hygiene management among adolescent girls, a mixed-methods approach is necessary.

Quantitative methods, such as surveys, will help measure the prevalence of knowledge gaps, school absenteeism, and health complications. For instance, statistics from UNICEF and the World Bank provide crucial quantitative insights into the scale of the problem.

Qualitative methods, including interviews and focus group discussions, will uncover the nuanced socio-cultural dynamics influencing menstrual hygiene practices. These methods will allow for an in-depth exploration of personal experiences, attitudes, and the psychological and emotional barriers faced by girls. Thematic analysis of these narratives will provide a comprehensive understanding of the social and cultural factors contributing to the issue.

By integrating quantitative and qualitative approaches, this study aims to offer a holistic understanding of the challenges surrounding menstrual hygiene management. It will not only quantify the problem's magnitude but also reveal the underlying socio-cultural barriers, paving the way for actionable solutions to improve menstrual hygiene practices and support adolescent girls in Nepal.

The Philosophical Base of the Study

The analysis of the philosophical bases for the study of menstrual hygiene management (MHM) among adolescent girls in community schools highlights the importance of epistemology, ontology, and axiology. Epistemology examines the nature and scope of knowledge, helping researchers decide between prioritizing subjective experiences or objective data. Feminist epistemology, for example, critiques male-dominated narratives and emphasizes the voices of marginalized groups through participatory methods. Ontology, which investigates the nature of reality, prompts questions about whether menstruation is a biological phenomenon, a social construct, or a blend of both, with postcolonial perspectives exploring the influence of colonial histories on menstrual practices. Axiology focuses on ethical considerations, such as ensuring respect, dignity, and equity for participants, guided by theories like utilitarianism and Onora O'Neill's ethical framework. These philosophical underpinnings are further strengthened by feminist, critical, postcolonial, and human rights theories, each addressing systemic inequalities and cultural dynamics. Together, these perspectives ensure a comprehensive approach to understanding and improving MHM, encompassing theoretical insights and practical implications.

Population of the Study

The study focused on adolescent girls attending community schools to explore the intricacies of menstrual hygiene management (MHM). This population, representing a diverse group, often faces intersecting challenges related to socio- economic status, cultural beliefs, and access to resources. Adolescent girls in community schools encounter barriers to adequate MHM, such as limited access to menstrual hygiene products, lack of sanitation facilities, and stigma surrounding menstruation. Understanding their MHM practices and experiences is crucial as it highlights the unique challenges they face in managing menstruation within educational environments, the impact of socio-economic factors and cultural norms, and the importance of addressing MHM for girls' health, dignity, and educational attainment. The study was carried out at five community schools in the Rupandehi district of Lumbini province, Nepal, focusing on students in grades 11 and 12, with a total population of 1,083.

Sample Size and Sampling Procedure

The total number of female students in five schools of Siddhartha Nagar Municipality in Rupandehi district is 1,083. Among them, girls studying in grades 11 and 12 in the schools of Siddhartha Nagar Municipality make up a total of 1,083.Five community schools were chosen using sampling, and the sample size was determined using Slovin's formula. The head teachers of the five schools were selected for in-depth interviews, and five students of guardian from each school were chosen based on caste using purposive sampling to understand their needs. Environmental sanitation is also observed in these schools.

Using Slovin's formula with a 5% margin of error, the adjusted sample size was calculated as 292. To account for an estimated 15% non-response rate, the final sample size was adjusted to 336.

The total population (N) was 1,083, and the sample size (n) was 336. A proportion allocation formula was used to calculate the samples from each school based on the total sample size:

Sample size needed in the present study has been calculated according Slovin'sFormula provides the sample size (n) using the known population size (N) and the acceptable error value (e). Fill the N and e values into the formula n = N ÷ (1 + Ne2). The resulting value of n equals the sample size to be used.

To the formula, $n = \frac{N}{1+N(e)^2}$(here, e= error of margin 5%, error of margin is estimated which is 0.05.)

Adjusted sample size (n) needed in the present study has been calculated according to the formula:

n= (S)/1+(S−1)/Population

We have the total sample size as 1083 adolescent girl students. student from the five school which is mentioned below) Applying above formulas, we get the adjusted sample size (n) for the prospective study as 292. Sample size needed in the present study has been calculated according

Adjusted sample size (n) needed in the present study has been calculated according to the formula:

n= (S)/1+(S−1)/Population

Estimating 15% of the samples will be the as non-responders, (here, e= error of margin 5%, error of margin is estimated which is 0.05.)

We get the modified sample size as follows: 292+15% of 292=292+43.8= 335.80=336

Sampled School and number of sample:

1. School A (Shree RupandehiLilaramMa.Vi	315	98
2. School B (BhanuMa.Vi)	90	28
3. School C (Bhairahawa.Vi)	325	101
4. School D (Bal bairaMA.Vi)	53	16
5. School E (SusanskritMA.VI.)	300	93
Total	1083	336

Here, total population (N):1083 Sample size(n): 336

For the selection of individual stratum, the proportion allocation formula was used as n=N(n/N). Since our sample size was 336, a proportion of allocation was used to calculate the samples that would be taken from each school based on the given formula:

Data Collection Tools and Techniques

The data collection involved in-depth interviews, and questionnaires:

In-depth Interview Schedule: A structured set of questions designed to guide interviews, exploring issues in detail while allowing flexibility for follow-up questions. These interviews focused on knowledge, behavior, and attitudes towards menstrual hygiene.

Questionnaires: Standardized questions, including both closed-ended and open-ended questions, to gather data on demographic character tics and knowledge attitudes and behaviors, related to menstrual hygiene.

The combination of these tools enabled comprehensive data collection, incorporating both quantitative and qualitative perspectives.

Validation of the Tools

The questionnaire and interview schedule were pretested on 10 teenage females from a nearby school. Feedback was obtained from a supervisor, and t the tools were revised accordingly to ensure reliability and validity.

Data Collection Procedure

The researcher visited the selected schools with a request letter from the Graduate School of Education to seek approval. After obtaining permission, female students from classes eleven and twelve were gathered in the school's conference room.

Then Questionnaires were filled with the students and in- depth interviews were conducted with five head teachers of five schools and five family members of the students from each school representing different castes. School environment was also observed.

Data Analysis and Interpretation Techniques

Data analysis involved reviewing, coding, and tabulating raw data. Software such as SPSS was utilized to analyze and organize the results, which were presented in formats like tables with cross-tabs, frequencies, and percentages. Thematic analysis was applied to delve deeply into qualitative data, adhering to steps including data familiarization, generating initial codes, identifying themes, evaluating and defining themes, and producing the final analysis.

Ethical Considerations

The study adhered to ethical standards, ensuring that participation was voluntary and respondents' identities and personal information were kept confidential. Informed consent was obtained from each respondent, and permission was taken from all concerned authorities. Respondents had the right to refuse participation and withdraw from the study at any time. Plagiarism-related ethical issues were addressed by properly crediting and citing all sources.

Major Findings

Personal Characteristics of the Respondents

a. The mean age of these students girls was 17.1 years (SD=1.5).
b. Most of these girls (91.1%) reached their menarche between 10 to14 years.
c. Majority of our students (295, 87.8%) were Hindu by religion, and belonged to Janajati by ethnicity (66.4%).
d. There was almost equal distribution of nuclear (169, 50.3%) and joint (164, 48.7%) family types (Table no 1).

e. While assessing the level of education of mothers amongst our students, we found 191 (55.8%) of them were either illiterate or received only basic informal education. The remaining 260 (42.9%) of them received some form of school level education.
f. Majority of their mothers (229, 68%) were house-wife and/or helping their family members in agriculture.
g. The majority of our students (283, 84.2%) reported that they stay in their own houses
h. Compared result based on their family set-up. It was found that the two groups did not differ significantly in most of the parameters except on the type of residences they were staying in. Students staying in a joint family set- up mostly stayed in their own house.
i. Comparing mother's level of education and various socio-demographic parameters, it is found that the two groups differed significantly in several parameters. Mothers of janajati students had higher level of formal education; educated mother's husbands were also better educated. These mothers were more involves as housewife and also helping their husbands in the cultivation Their fathers were significantly more involved in business and thus their monthly income is more than the students whose mothers are illiterate.
j. Comparing mother's occupation and various socio-demographic parameters of students it is found that working women's husbands were significantly better educationally qualified .
k. It showed that parents of Janjati students were significantly less educated than their counterparts, and they were more involved in agriculture.

Knowledge on Menstruation of Students

a. Regarding the question on what these students perceive as the 'meaning of menstruation', a majority (82.7%) of them consider menstruation as a normal natural cycle.
b. Upon asking question regarding the possible causes of menstruation, (83.3%) of them believe that menstruation is a hormone induced phenomenon.
c. On questions regarding the source of menstrual blood, (50.9%) of them believe that the source is from the uterus, (33.9%) of them said the source is from vagina.
d. The majority of our students (80.1%) experienced lower abdominal pain during menstruation, 17 (5.1%) of them reported vomiting and 34 (10.1%) reported prolonged bleeding period.

e. The main source of information regarding menstruation these girls received were from their mother (69.9%).
f. Questions on how to manage the problems during menstruation (39.3%)of the young girls responded by taking adequate rest and sleep, 127 (37.8%) by massaging using hot water, 40 (11.9%) of them ignored pain and 30 (8.9%) used medicine.
g. Regarding the questions means to us during menstruation, (73.1%) of them responded that the ideal thing to use during the menstruation is sanitary pad, and the ideal number of absorbents to be changed in a day in a normal blood loss is three or more times per day (48.5% of girls).
h. Questioning what was their experience of menarche (54.4%) of them gave a frightening response, for (19.6%) of them it was a confusing experience, (22.0%) of them were mentally ready for it.
i. It was compared the level of knowledge about menstruation between the students who stays in a nuclear family set-up vs students who stays in a joint family set-up, it is found that the students who stay in a nuclear family set-up attend their menarche comparatively at an earlier age than their counterpart who stays in a nuclear family set-up. They are also better equipped with the knowledge of the belief that the menstrual blood is unhygienic, and they use significantly a greater number of absorbents to manage themselves during menstrual days.
j. Comparing the knowledge of menstruation between the two groups of students on the basis of literacy rate of their mothers, there is no difference between the two groups on most of the parameters compared, except on the question on the cause and source of menstrual blood and problems faced during menstruation. It was found that the students, whose mothers have some level of formal education, have better knowledge on the cause of menstruation.
k. Comparing mothers occupation and knowledge of menstruation it is seen that the two groups did not differ in most parameters compared except two. Girls whose mothers were housewife has significantly better knowledge that uterus is the source of menstrual blood and these girls received this information mostly from their mothers only.
l. There was a significant difference on the issue of first experience of menstruation between the janjati and other girls and the ideal number of absorbents to be used during menstruation.

Attitude of Students towards Menstruation

a. Upon question on whether rest is needed during menstruation, (95.8%) of them either agreed or strongly agreed to it.
b. Upon questioning the use of commercially available sanitary pads as absorbent material during menstruation, (92.2%) of them either agreed or strongly agreed to it
c. Regarding the question of the need to clean clothes with soap and water, (92.3%) of them either agreed or strongly agreed with it.
d. Regarding the question on the need to dry the cloth pads under sunlight, (74.7%) of them either agreed or strongly agreed to it.
e. On questioning whether it is better to dispose of used sanitary pads in a dustbin, (76.8%) of them either agreed or strongly agreed to it.
f. Regarding the question whether it is better to burn clothes or pads used in menstruation, (65.2%) of them either disagree or strongly disagree with it. But a significant number of students (75, 22.3%) expressed agreement/strongly agreed to it, which indicated their ignorance of the question at hand.
g. Regarding the question whether it is better to dispose of used sanitary pads by wrapping them in a paper, (69.4%) of them either agreed or strongly agreed with it.
h. Upon questioning whether it is better to take bath daily with soap during menstruation, (78.9%) of them either agreed or strongly agreed with it.
i. Regarding the question whether there is a need to clean external genitalia during menstruation, (84.3%) of them either agreed or strongly agreed to it.
j. Upon questioning whether dietary influence is there in the causation of menstruation, (71.4%) of them either agreed or strongly agreed to it.
k. When comparing the level of attitude on menstruation between our 11th & 12th grade students, it is found significant differences on a number of variables The eleventh standard student has expressed a significantly better attitude on the need to dry clothes pad in sunlight and the need to bath with soap daily. But 12^{th} standard students have significantly better attitude on the questions of burning clothes/pad and the use of paper to dispose of pads.
l. Comparing the level of attitude about menstruation between our students according to their family set-up, it is found significant difference on following parameters: using paper to wrap and dispose sanitary pads and on the attitude of cleaning the external genitalia during menstruation. On these two issues students who stay in joint family set-up have a significantly better level of attitude.

m. When comparing the various attitude levels of menstruation between these two groups of students based on the level of their mother's education. A statistically significant difference was found in a few variables like the need to use paper to dispose pads (X^2=18.1; p=0.000***), and the influence of dietary influence on menstruation (X^2=3.7; p=0.05*). It means that the students whose mothers had some degree of formal education are better placed regarding various attitude levels on the questions of menstruation.

n. When we compared the two groups of students on various questions on the attitude of menstruation, we see that the two groups did not differ in most parameters compared except one. Significantly a greater number of students, whose mothers were housewives, had a better attitude on the need to use paper for proper disposal of pads (X^2=4.2; p=0.03)

Practice of Girls Students during Menstruation

General Practices: Regarding questions on where you are kept during menstruation, 259 (77.1%) of them responded that they stay with their family members only, 56 (16.7%) of them stay in a separate room. Surprisingly, 12 (3.6%) of them reported to be staying in a cowshed during menstruation. One hundred eighty- three (54.5%) of them reported having enough food during menstruation.

Hygiene and Comfort: Question on how often you take bath during menstruation days, 223 (66.4%) of them admitted taking bath daily, 81 (24.1%) takes bath once in every 2 days. Three hundred-six (91.1%) students admitted using a sanitary pad to manage menstrual blood. On questioning how frequently they change their sanitary pad, 297 (88.4%)) of them said that they changed their sanitary pad daily, and when they use homemade pad the majority of them (211, 62.8%) would dry their pad under direct sunlight.

Two-hundred and twenty-eight (67.9%) of these girls clean their vagina before changing pad during menstruation, and 88 (26.2%) students do the cleaning while changing pad, 244 (72.6%) girls admitted keeping their vagina dry after washing.

On questioning the preferred method of cleaning vagina 291 (86.6%) reported use of either only water or using both soap and water. While 144 (42.9%) students had a fearful experience during their first menstruation (Menarche), 121 (36.0%) of them felt shy, 45 (13.4%) were happy experiencing it for the first time, and 19 (5.7%) reported a sense of worry at the time of menarche.

Problem Experienced during Menstruation: The majority of these girls (214, 63.7%) experienced some physical problems during menstruation, 56 (16.7%) had some mental issues, 54 (16.1%) reported some social issues. One hundred and fifty-eight (47.0%) students faced problems related to vaginal or urinary symptoms during menstruation. Most of the girls (296, 88.1%) attended their school even during their menstruation and the majority of them (247, 73.5%) received help from their mates in the school and received normal behavior from their fellow classmates.

School Attendance and Social Impact: One-hundred forty-six (43.5%) of them responded "yes" to the question whether they have missed any school activities during menstruation, 46 (13.4%) of them missed their exam, 56 (16.7%) missed study tours, 63 (18.8%) missed regular classes, 93 (27.7%) missed extra activities in their school, while a significant 73 (23.5%) of them decided not to give any response to above question. Only 56 (16.7%) students responded "yes" to the question whether they were treated as untouchable during menstruation in their family. Majority of them (281, 83.6%) were allowed to carry out routine puja rituals/idol warships during those menstrual period days.

Practice of Menstruation: When comparing the actual practice of menstrual hygiene between our students who stays in a nuclear family set-up vis-a-vis students who stays in a joint family set-up, it is found the students who were staying in nuclear family set up gave significantly better understanding on following parameters: practice on how long to keep a single pad and on the question of dropping school during menstruation (X^2=6.1; p=0.01)

When we compared the various practices during the menstruation between these two groups of students based on their mother's level of education. There is no difference between the two groups on most of the parameters compared, except on the questions on the type of food consumed during menstruation, number of baths they take during menstruation , and whether they faced any problems during menstruation. Girls belonging to families with mother better education had better quality of food (X^2=13.7; p=0.000***), had a greater number of baths regularly, (X^2=4.7; p=0.02*) and admitted having a greater number of mental and social problems during menstruation (X^2=19.4; p=0.000***).

When we compared these two groups of students on various questions on the attitude of menstruation based on mothers occupation we see that the two groups differed in a number of parameters compared. Girls whose mothers were housewife mostly stayed at home with all other family members, (X^2=3.7; p=0.05*), they preferred daily bath during menstrual period (X^2=5.9; p=0.01**)., they had better knowledge on how to dry home-made pad under sun (X^2=10.6; p=0.001***). They had reported significantly lesser number of urinary/vaginal problems during their period (X^2=5.3;

p=0.02*). and they missed school activities significantly less than their counterparts, whose mothers were involved in some job (X^2=11.2; p=0.001***).

Socio-Cultural Context Cultural Practices and Stigma: Cultural stigmas around menstruation, such as viewing it as impure, are prevalent in Hindu societies (Adhikari et al., 2007). The data show that 16.7% of students felt treated as untouchable during menstruation, and 22.3% agreed with burning menstrual cloths, indicating persistent cultural misconceptions and stigmas.

Discussion

Research on the knowledge levels of girls regarding menstruation and proper menstrual hygiene is crucial for understanding their needs and designing effective educational programs. Various studies have explored this topic, shedding light on the awareness and understanding among adolescent girls. These all supports the results with this study

One such study by Sharma and Mehra (2019) surveyed 500 adolescent girls from urban and rural areas to assess their knowledge about menstruation and menstrual hygiene practices. The findings revealed that a significant percentage of girls lacked comprehensive knowledge about menstruation, including its biological aspects and hygienic practices. Many respondents exhibited misconceptions and myths surrounding menstruation, indicating a need for targeted education. Additionally, research by Dasgupta et al. (2020) focused on evaluating the effectiveness of menstrual hygiene management programs in schools. The study highlighted the importance of integrating menstrual health education into school curricula to improve girls' knowledge and promote hygienic practices. It emphasized the role of teachers and community health workers in delivering accurate information and debunking myths related to menstruation. Using the guidelines by Vaismoradi et al. (2016), thematic analysis involves several stages: initialization, construction, rectification, and finalization.

Overall, these studies underscore the importance of enhancing girls' knowledge about menstruation and proper menstrual hygiene to ensure their well-being and empower them to manage their menstrual health effectively.

Health Considerations and Risk of Infection: Proper menstrual hygiene is essential for preventing infections (Bajracharya, 1998). The data reveal that a significant number of girls experience physical problems during menstruation, such as abdominal pain (80.1%) and prolonged bleeding (10.1%).This underscores the need for improved education on menstrual health and hygiene practices.

MHM is critical for preventing infections and maintaining hygiene (WHO & UNICEF, 2012). The data of this study (Table no 4) show that 91.1% of students use sanitary pads, and 66.4% bathe daily during menstruation, indicating a good level of awareness and practice of MHM. However, there are still gaps, as evidenced by 16.7% of students reporting inadequate food during menstruation and some students using unsafe methods like staying in cowsheds (3.6%).Health Considerations and Risk of Infection. Proper menstrual hygiene is essential for preventing infections (Bajracharya, 1998).

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Education and Access to Menstrual Products:The lack of adequate menstrual education and outdated hygiene practices were significant issues (Dutta, 1997). The majority of students received menstrual information from their mothers (69.9%), which suggests that improving maternal education could enhance menstrual knowledge among girls.

Access to affordable menstrual products remains a challenge, impacting girls' ability to manage menstruation effectively (Doe, 2023).

Knowledge and Practices on MHM: The data indicate that while there is a general awareness of menstruation as a natural process, significant misconceptions remain, particularly regarding the source of menstrual blood and hygiene practices. This is consistent with the literature highlighting the need for comprehensive menstrual education (WHO & UNICEF, 2012).

Impact of Socio-Demographic Factors: The empirical data show that students' menstrual knowledge and practices vary significantly based on socio-demographic factors such as family setup, mother's education, and occupation (Tables no 10, 14, and 18). This aligns with feminist theory's focus on the intersectionality of gender, education, and socio-economic status (Egbert & Sanden, 2019)

Menstrual Hygiene Management (MHM) is critical for preventing infections and maintaining hygiene (WHO & UNICEF, 2012). The data (Table no 4) show that 91.1% of students use sanitary pads, and 66.4% bathe daily during menstruation, indicating a good level of awareness and practice of MHM. However, there are still gaps, as evidenced by 16.7% of students reporting inadequate food during menstruation and some students using unsafe methods like staying in cowsheds (3.6%).

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Overall, my perspective also advocates for a holistic approach, integrating education, facilities, and institutional support to ensure the well-being of girls in school environments. For instance, girls who come from families where open discussions about reproductive health are encouraged tend to have a better grasp of menstruation and hygiene practices. They are more likely to know about menstrual cycles, the importance of using sanitary products, and maintaining personal hygiene during menstruation.

In my opinion, effective menstrual hygiene management in community schools requires comprehensive MHM education, improved quality of sanitary pads, compulsory health-related teachers, adequate female toilets, and regular government supervision. Additionally, government-led awareness programs for parents are crucial. Addressing these areas will support the well-being of female students and ensure effective MHM. From different point of view of students, teachers, and guardian found like same version regarding knowledge attitude and practice of menstrual hygiene among school girls.

Conclusion

The study draws several key conclusion regarding the knowledge, attitude, and practices related to menstruation among adolescent girls.

Based on the quantitative data regarding knowledge on menstruation 82.7% of respondents' perceived menstruation as a natural cycle, and 83% believed it is induced by hormones. Of the source 50.9% correctly identified the uterus as the source of menstrual blood. However, knowledge gaps were evident in understanding the menstrual interval and the source of menstrual blood. Regarding pain and hygiene awareness, 80.1% of participants experienced lower abdominal pain during

menstruation, and 80.7% were aware about sources of information: The primary source of menstrual information was mothers, with 69.9% of respondents receiving their knowledge from them. While concerning attitude towards menstruation, high agreement on the need for rest (95.8%), use of sanitary pads (92.2%), and cleaning clothes with soap and water (92.3%). Mixed attitudes were observed regarding disposing of used pads and drying cloth pads in sunlight. Significant differences in attitudes were based on grade level, family setup, mothers' education, and mothers' occupation. With the question on practice during menstruation among the girls some stayed in separate rooms or cowsheds,77.1% stayed with family members during menstruation; used sanitary pads, .91.1% and 66.4% bathed daily. Among the respondents , 67.9% cleaned their vagina before changing pads. The majority attended school during menstruation, but 43.5% missed school activities. Significant differences in practices were based on grade level, family setup, mothers' education, and mothers' occupation

While talking about the problem of the girls students schools lack proper toilet facilities with separate toilets for girls and boys. Due to lack of proper management of used sanitary pads, leading to poor sanitary condition. Lack of first aid medicine boxes in schools, it is difficult to solve students with menstrual problems that indicates a need for better health support. Boys often have negative views on menstruation, showing a lack of awareness and sensitivity. Menstrual discomfort and inadequate facilities lead to absenteeism among student

Based on the qualitative data, different religions and castes impact students' knowledge and practices related to menstruation. For example, Muslim girls face fewer menstrual restrictions, which influence their understanding and practices. Students' knowledge of menstrual hygiene varies significantly due to cultural beliefs, family upbringing, and access to educational resources. These findings underscore the importance of family influence and maternal education on shaping students' attitudes towards menstruation.

The variations in attitudes between different grades and family setups suggest areas where targeted educational interventions could further enhance menstrual hygiene practices and beliefs among young girls. Proper education and consistent messaging on menstruation can help in addressing misconceptions and promoting healthier attitudes and practices.

Recommendations:

Based on the findings of this study following recommendations are proposed:

Recommendations for Policy:

a. Develop comprehensive menstrual hygiene management policies that address knowledge gaps and promote healthy practices.
b. Implement initiatives to improve menstrual education in schools and communities, targeting both students and mothers.
c. Inclusion in Curriculum: MHM education should be made a compulsory part of the school curriculum for both boys and girls to foster understanding and appropriate behavior.
d. Develop and implement national guidelines for MHM in schools, including standards for toilet facilities, waste disposal, and hygiene practices.

Recommendation for Practice

a. Infrastructure Improvements: Schools need better sanitation facilities, including clean, functional toilets, and proper menstrual waste disposal systems.
b. Teacher Training: Teachers should be trained to provide support and accurate information about menstruation and to help create a supportive environment for menstruating students.
c. Provide accessible and affordable menstrual hygiene products to all adolescent girls.
d. Conduct awareness campaigns to stigmatize menstruation and promote positive attitudes towards menstrual hygiene. Establish programs to address emotional challenges associated with menstruation in order to improve emotional support.
e. Upgrade existing toilet facilities and build additional ones to ensure separate, clean, and functional toilets for girls.
f. Ensure consistent access to clean water within school premises.
g. Manage proper disposal systems for sanitary products, including disposal bins and incinerators.

Recommendation for Further Study:

a. Investigate the effectiveness of existing menstrual hygiene interventions in improving knowledge and practices among adolescent girls.
b. Investigate the cultural practices and beliefs around menstruation in different communities to tailor MHM programs more effectively.
c. Investigate the impact of teacher training on the quality of MHM education and the support provided to students.

d. By implementing these recommendations, policymakers, educators, and healthcare professionals can contribute to improving menstrual hygiene management among adolescent girls, ultimately promoting their health, well- being, and educational oppor es.

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