

Menstrual Hygiene Management among Nepalese Adolescent Schoolgirls: Results from a cross-sectional study

Shrestha A, Shrestha S, Koirala S, Subedi P, Tiwari D, Karmacharya BM

Department of Public Health,

Kathmandu University School of Medical Sciences,

Dhulikhel, Kavre, Nepal.

Corresponding Author

Akina Shrestha

Department of Public Health,

Kathmandu University School of Medical Sciences,

Dhulikhel, Kavre, Nepal.

E-mail: akinakoju@kusms.edu.np

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ABSTRACT

Background

Adolescent schoolgirls in Nepal lack adequate support to manage menstruation. Little studies have been conducted to date to learn how menstruation affects daily lives of adolescents and how they were managing it. Menstruation also comes costly in rural Nepal and the majority of them do not have capacity to afford menstrual products due to high price.

Objective

The main objective of this study is to assess about menstrual challenges among adolescent girls of rural Nepal.

Method

We deployed descriptive, cross-sectional study to analyze adolescent girls' experience of menstruation from purposively selected schools in Kavre and Sindhupalanchowk districts of rural Nepal. The data was collected from May to July 2024 among adolescent girls using semi-structured questionnaire of grade 8 and 9. The adolescents were questioned regarding their own experiences with menstruation. The interview included household related information, water, sanitation and hygiene practices, self-menstruation practices and management, challenges they had been facing, and sociocultural taboos about menstruation.

Result

All schools included in this study were government schools. 38% of an adolescents reported of starting their menstruation at an age of 12 years. 39% of the respondents reported of having an ability to challenge the existing social taboos relating to menstruation. Above 60% uses sanitary pads as a menstrual product and for the disposal of these products, 50% respondents reported of throwing them in the dustbin followed by burying (21%) and burning (16%). And 10% of the respondents reported of throwing the used menstrual products into Indrawati river. Majority of respondents reported of not being able to visit temples and performing any religious visits during menstruation and the main reasons behind was family prohibition and fear of divine retribution.

Conclusion

Access to management materials of menstruation is problematic in the surveyed schools especially in the rural areas where almost half of the girls do not have access to sanitary pads and they resort to the use of cloth. Lack of affordability for purchasing sanitary napkins were the most crucial predictors of menstrual hygiene management. The Government of Nepal should take an initiative to provide schoolgirls with sanitary pads in order to improve menstrual hygiene management in all across schools within Nepal, particularly in rural areas.

KEY WORDS

Menstruation, Menstrual hygiene management, Sanitary napkins

INTRODUCTION

Menstruation is a naturally occurring physiological process that shows the fertility ability of adolescent girls, however is severely stigmatized and tabooed in Nepal due to deeply-rooted cultural and religious belief.¹⁻⁴ Menstruation can be challenging times for rural girls in Nepal because socio-cultural beliefs about menstruation are deeply ingrained in societies where adolescent girls believe themselves as an impure, fearful of bringing bad fortune and embarrassment of their natural bodily function.^{4,5} Consequently, adolescent girls of menstruating age are victim of menstrual restrictions such as avoiding entering the kitchen, temple, not attending religious or social gatherings, not touching plants or any male members of the family purifying the bed on the fourth day of menstruation and so on.^{4,6-8} In some parts of rural Nepal, adolescents believe menstruating women can put curses on others and tend to bring bad luck.^{9,10} Hence, instead of accepting menstruation as a natural biological process indicating girl's entry into adulthood, menstruation is still associated with restrictions, curse, shame and superstitious beliefs in Nepal causing them to suffer in silence.⁷

Menstruation also comes costly in rural Nepal. Majority of the adolescent girls do not have capacity to afford menstrual products due to high price. Additionally, clean water, proper toilet or privacy to change or dispose menstrual hygiene materials are also lacking.^{2,4,11} Sanitary pads are often too expensive for many adolescent girls in Nepal, hence the adolescent schoolgirls are compelled to rely on cotton cloths and/or rags and/or newspaper scraps to control menstrual bleeding. Furthermore, they are unable to properly wash and dry their used menstrual cloths, and reuse unhygienic cloths.^{4,9,12} Due to this poor menstrual hygiene practices, there have been multiple reports reporting adolescents developing abnormal vaginal discharges, reproductive tract infections and other serious health problems.^{9,13-17}

The previous studies conducted in Nepal indicated that girls receive inadequate guidance, facilities and materials prior to their first menstrual cycle, hence experience fear, shame, and embarrassment in managing menstruation at school.^{2,18-20} Menstruation is also regarded as an unacceptable issue for discussion in public to the point where adolescent girls finds it too awkward to bring it up even with other people, or health care professional or family members.²¹ According to the UNICEF South Asia, one out of three girls were unaware about their first menstrual cycle and its management.^{22,23} This adds girls' difficulties preventing them from seeking help for proper management of their menstruation and impose restrictions to their diet when menstruating.^{3,24-26}

There are lots of gaps in an understanding about menstruation and its management by adolescent schoolgirls in Nepal. The subject of menstruation is taken as a very sensitive and private issue and many girls

feel uncomfortable discussing about it due to societal taboos.^{9,15} This discomfort then leads to restricted access for adolescent girls to acquire adequate information. Yet, most existing studies on menstrual practices in Nepal have focused on the societies of far-western Nepal highlighting practice of "Chhaupadi".^{5,16} Even in societies where extreme tradition is not practiced, menstrual taboos still affect adolescent girls' daily lives. Menstruation is often made associated with dirt in the societies. According to the belief, the odor of menstrual blood affects the food the menstruating girl cook, it poisons the plant they plant and menstrual dirt is also affecting their body.²⁷ While rituals are often imposed on menstruating adolescent girls, their experiences are important to assess in order to implement programs targeting changes in behavioral expectations.^{3,7,22,23,28,29} To our best knowledge, there are limited studies that have focused on adolescent girls' experiences on existing menstrual practices and restriction and challenges they have been facing on their daily lives in rural Nepal. Hence, the main objective of this study was to assess the menstrual challenges among adolescent girls of rural Nepal.

METHODS

In this study, we deployed descriptive, cross-sectional study to analyze adolescent girls' experience of menstruation from purposively selected schools of the Kavre and Sindhupalanchowk districts of Nepal. The data was collected from May to July 2024 in rural Nepal among adolescent girls thorough semi-structured questionnaire studying in grade 8 and 9. The respondents were questioned regarding their own experiences with menstruation. The interview included household related information, water, sanitation and hygiene (WASH) practices, menstruation practices and management in household and in schools, challenges they had been facing relating to menstruation, and sociocultural narratives about menstruation. This study was a one-time survey and completed in one sitting without follow-ups. The study tools used were pre-designed, pre-tested and structured questionnaire which was developed and translated into the local Nepali languages.

The participants were informed about the objective of the study, and were brief about the sections in the questionnaire. They were also informed about the confidentiality of the survey in order to receive more reliable answers. Signed informed consent was obtained from each participant and their parents, the day before the survey. There was no specific time duration given to answer all the questions. The participants were provided with a room to be able to ask for any clarification with the investigator. No personal identifiers were recorded, and anonymity and confidentiality were maintained throughout the study. The study was approved by the Kathmandu University School of Medical Science Institutional Review Committee (Ref. no: 258/23).

The study population for this study were the higher secondary level students studying in government schools aged between 11 to 19 years. Participants were included in the study based on the following inclusion criteria: participants aged between 11 to 19 years at the time of survey, started menstruating, can speak Nepali, provided informed consent, were of Nepali nationality and are studying in targeted schools of rural Nepal. They were from the five rural schools of Kavrepalanchowk and Sindhupalanchowk district. If any students selected were not interested in participating in the survey, then next participants were approached.

The study has been conducted in five government secondary schools in the Kavrepalanchowk and Sindhupalanchowk districts, Bagmati Province, of Nepal. The study is conducted in Jalpadevi Secondary School, Jhirpu Secondary School, Seti-devi Secondary School, Shree Purna Sanjeevani Secondary School and Jagriti Secondary School. These schools were chosen purposively due to their location in the Kavre and Sindhupalanchowk districts of rural Nepal.

The survey questionnaire was designed and developed based on socio-cultural appropriateness about menstruation, menstrual hygiene practices, social taboos, beliefs, practices and challenges in rural Nepal. All the female research assistants were trained before the study and were well versed with the content and objective of the survey.⁴ Quality control was maintained throughout the study period. The data were translated into English by investigator who is fluent in both Nepali and English language. The surveys were conducted after obtaining informed consent from the school authority and students. The data collection instruments were designed by group discussions with all the stakeholders and included questions to collect data on variables reported in published studies of menstrual hygiene.^{24,30} The girls were asked about school absence during their last three menstrual cycles, the average number of days they were absent per cycle during their last three cycle, and how they feel about menstrual health educational programs and so on.

For this study, we considered difference in proportions of 15% between methods of knowledge level to be relevant. We considered 5% margin of error, 95% confidence interval, 80% power, and 50% likely sample proportion to be. The responses we received was of 292 participants were included in this study, which was sufficient to avoid type II statistical error.

Descriptive statistics are reported using frequency and percentages to summarize the characteristics of adolescent girls. Frequencies and percentages were used to report the findings of sociocultural practices, age, education, family type and menstruation hygiene management practices. Statistical analyses were performed in STATA version 14.

RESULTS

School and adolescent schoolgirls' characteristics

All of the schools included in this study are secondary and government school. Each of the surveyed schools had an average student of 600 students. We selected a total of 300 adolescents for the survey among whom, 292 completed all questionnaire and were included in the analysis. Table 1 shows the socio-demographic and cultural characteristics of the participants who completed the survey. Most of the students included in the study were from Jalpadevi secondary school, where 54% of the students were participated from grade 8. Majority of the participants participated in this study were Brahmins and/or Chhetri (23%).

Table 1. Table showing demographic and cultural characteristics of study participants from two district of Nepal

Characteristics (N=292)	Frequency (percentage) [n(%)]
Name of the school	
Jalpadevi secondary school	69 (29.63)
Shree Jhirpu secondary school	55 (18.84)
Seti-devi secondary school	63 (21.58)
Shree Purna Sanjeevani secondary school	51 (17.47)
Shree Jagriti secondary school	54 (19.49)
Grade	
Eight	159 (54.45%)
Nine	133 (45.55%)
Ethnicity	
Dalit	35 (11.99)
Muslim	3 (1.03)
Brahman/Chhetri	67 (22.95)
Newar	49 (16.78)
Janajati	92 (31.51)
Gurung/Thakali	44 (15.07)
Non-Dalit Terai	2 (0.68)

Water, sanitation and hygiene facilities access to the adolescent schoolgirls

The main drinking water sources for surveyed adolescent schoolgirls were private household taps (37%). Majority of them (46%) uses water filter as a source of water purification and around 67% of them reported of always filtering their drinking water. 78% of adolescents reported of having latrine with septic tanks in their households.

Menstruation details of surveyed adolescent schoolgirls

Thirty eight percent of an adolescent schoolgirls reported that they have started menstruation at an age of 12 years. Above 80% of students have heard about menstruation prior to starting their menstruation and reported of receiving information from their mother (81%) before menarche and then by their friends (14%). Above 50%

Table 2. Table showing water, sanitation and hygiene status of study participants from two district of Nepal

Characteristics (N=292)	Frequency (percentage) [n (%)]
Main drinking water source*	
Private household tap	109 (37.33)
Tap outside house in own premises	74 (25.34)
Public tap	68 (23.39)
Tubewell	4 (1.37)
Unprotected well	21 (7.19)
Tanker	28 (9.59)
Surface water	5 (1.71)
Water purification before drinking*	
Sedimentation	18 (6.16)
Boiling	84 (28.77)
Chlorination	4 (1.37)
Water filter	133 (45.55)
Other	4 (1.37)
Frequency of filtration	
Always	196 (67.12)
Sometimes	70 (23.97)
Once in while	26 (8.90)
Latrine type	
Latrine with septic tank	228 (78.08)
Latrine without septic tank	34 (11.64)
No any facilities	30 (10.27)

*Multiple answers possible

believed menstruation as a normal process when they had menarche and 70% believed as a normal physical process now. Less than half of the adolescent schoolgirls reported of having ability to challenge social taboos relating to menstruation (39%).

Menstruation management from the surveyed adolescent schoolgirls

The majority of the adolescent schoolgirls reported of sleeping in their own bed (75%) during menstruation and 20% of them had avoided spicy food. Above 60% of them uses sanitary pads as a menstrual product and for the disposal of these products, 50% reported of throwing them in the dustbin followed by burying (21%) and burning (16%). 10% of the adolescent schoolgirls also reported of throwing the used menstrual products into the river. Majority of respondents reported of not being able to visit temples during menstruation and perform any religious visits and the main reasons was family prohibition and fear of divine retribution (Table 4).

School absence and menstruation management in school

More than 40% of adolescent schoolgirls reported of school absence during menstruation. Majority missed

Table 3. Table showing menstruation details of study participants from two district of Nepal

Characteristics (N=292)	Frequency (percentage) [n(%)]
Age during menstruation	
11 years	56 (19.18)
12 years	111 (38.01)
13 years	93 (31.85)
14 years	29 (9.93)
15 years	3 (1.03)
Mean age (SD)	12.36 (0.94)
Heard about menstruation before starting menstruation	
Yes	237 (81.16)
No	55 (18.84)
Knowledge about menstruation from*	
Mother	236 (80.82)
Female relative	41 (14.04)
Counselor	2 (0.68)
Friends	64 (21.92)
Teacher	29 (9.93)
Books	7 (2.40)
Health workers	12 (4.11)
Female community health volunteers (FCHVs)	8 (2.74)
Radio	4 (1.37)
TV	16 (5.48)
Internet	33 (11.30)
Others	4 (1.37)
Menstruation reason when had for the first time*	
Normal physical process	167 (57.19)
Some diseases	23 (7.88)
Internal bleeding	13 (4.45)
Curse	4 (1.37)
Dirty blood flow	52 (17.81)
Supernatural thing	2 (0.68)
Don't know	36 (12.33)
Other	0 (0.0)
Menstruation reason now*	
Normal physical process	210 (71.92)
Some diseases	4 (1.37)
Internal bleeding	5 (1.71)
Curse	3 (1.03)
Dirty blood flow	52 (17.81)
Supernatural thing	0 (0.0)
Don't know	16 (5.48)
Other	2 (0.68)
Ability to challenge social taboos relating to menstruation	
No	178 (60.96)
Yes	114 (39.04)

*Multiple answers possible

Table 4. Table showing menstruation management details of study participants from two district of Nepal

Characteristics (N=292)	Frequency (percentage) [n (%)]
Sleeping during menstruation*	0 (0.0%)
Shed	33 (11.30)
Baranda	3 (1.03)
Own bed	219 (75.00)
Different bed in own room	25 (8.56)
Different room than bedroom	9 (3.08)
Other	3 (1.03)
Food avoiding during menstruation*	
Sour food	44 (15.07)
Spicy food	58 (19.86)
Junk food	20 (6.85)
Coffee	4 (1.37)
Oily food	8 (2.74)
Sweet food	6 (2.05)
Nothing	252 (86.30)
Menstrual products*	
Sanitary napkin	179 (61.30)
Cloth and/or rags	158 (54.11)
Menstrual disposal*	
Burn	47 (16.10)
Bury	61 (20.89)
Throw in a latrine	8 (2.74)
Throw in a dustbin	147 (50.34)
Throw haphazardly anywhere	7 (2.40)
Throw in a river	28 (9.59)
Accessibility of shop for buying sanitary napkins	
No	85 (29.11)
Yes	207 (70.89)
Permission to visit temple during menstruation	
No	264 (90.41)
Yes	28 (9.59)
Reason of not visiting temple*	
I don't feel like going and is a right thing to do	115 (39.38)
Fear of punishment by God	48 (16.44)
Family don't allow	117 (40.07)
Permission to attend religious activities	
No	195 (66.78)
Yes	97 (33.22)
Reason for not attending religious activities*	
I don't feel like going and is a right thing to do	65 (22.26)
Fear of punishment by God	137 (46.92)
Family don't allow	212 (72.60)
Permission to visit kitchen during menstruation*	
I fear divine retribution	170 (58.22)
I don't feel like going and is a right thing to do	67 (22.95)
Fear of punishment by God	26 (8.90)
Family don't allow	29 (9.93)

*Multiple answers possible

Table 5. Table showing menstruation management details in schools of study participants in rural Nepal

Characteristics (N=292)	Frequency (percentage) [n (%)]
Missed schools due to menstruation	137 (46.92%)
Number of missed days*	
1 day	47 (16.32%)
2 days	62 (21.53%)
3 days	25 (8.68%)
4 days	9 (3.13%)
Main reasons of being absent*	
Pain	96 (32.88%)
Tiredness	27 (9.25%)
Severe bleeding	35 (11.99%)
Fear of teasing	3 (1.03)
Toilet facility inadequate for management	2 (0.68)
Nowhere to dispose pads	4 (1.37)
No pad	1 (0.34)
Ever experienced teasing about menstruation	69 (23.63%)
Received classes on sexual and reproductive health (SRH) and menstruation	254 (87.0%)
Teaching about SRH and menstruation*	
Health teacher	221 (75.68%)
Another teacher	40 (13.70%)
Reproductive health teacher	66 (22.60%)
Other	15 (5.14%)
Feeling about the class*	
Embarrassing	88 (30.14%)
Interesting	140 (47.95%)
Annoying	48 (16.44%)
Not useful	18 (6.16%)
Preference to learn more about menstruation*	
During school	172 (58.90%)
Educational videos	58 (19.86%)
Educational books	72 (24.66%)
Other	16

*Multiple answers possible

school for an average of two days. When asked why they missed school, 33% reported that they felt pain and had severe bleeding (12%), 24% respondents felt embarrassed at school during menstruation. Eighty-seven percent of the adolescents reported of receiving classes on sexual and reproductive health (SRH) and health teacher mostly addressed about their issues relating to puberty, when it starts, and what happens after this. Eighty-four percent of adolescent schoolgirl found SRH classes interesting and 30% found them embarrassing. Adolescents schoolgirls reported that they prefer to learn about menstruation more during school time (Table 5).

DISCUSSION

Investigation of menstrual health management related challenges in Nepal has primarily focused on identifying gaps and barriers to the proper practices of menstrual health management among adolescent schoolgirls where there are limited cultural and resource conditions. Our study assessed the menstrual health management current status, and practices of adolescent schoolgirls in rural Nepal. The results showed that only around 60% of adolescents use sanitary pads and remaining 54% use cloths and/or rags as an absorbent material. Yet, the type of cloth materials used were not asked. The use of higher percentage of adolescent using cloths may be because of an affordability issue. Additionally, the surveyed schools were not introduced with a school nurse program and also do not have sanitary pads provision in free of cost policy to the adolescent's schoolgirl even for emergency use. Meanwhile, an adolescent does have better access to information about SRH, WASH services at households, and also schools, and availability of commercial sanitary pads access, in addition to well-informed families and school teachers explaining the higher prevalence of satisfactory menstrual health management practices within surveyed schools, compared to previous days. However, still there are more bottlenecks stills exists for good menstrual practice such as sanitary pad disposals and cultural taboos such as accessing to kitchen during menstruation in our surveyed schools. There are still room for improvements as adolescents' schoolgirls are reporting of disposal of their sanitary napkins by throwing into a river. Disposable sanitary pads were uncommon among adolescent schoolgirls in surveyed schools of Nepal. In other hand, there is several restrictions imposed by the guardian and parents due to cultural norms and stigma relating to menstruation and should be addressed by menstrual health and education programs. The issue of restrictions impacting adolescent schoolgirls' education also indicate an importance of broader discussion on menstrual hygiene within school, households and communities.

The health curriculum of schools in rural Nepal identified several weaknesses. The curriculum strictly focused on only biology of reproductive health and provided no opportunity for constructive discussion of healthy menstrual attitudes or salient social and religious issues. Moreover, teaching reproductive health is not mandated by the Government of Nepal. Even where schools had some course materials on menstruation, almost one fourth of the adolescent girls reported that they had never received menstrual hygiene education session at school. Our study suggests several reasons why schools in Nepal provide so little useful education on menstruation. First, the national education curriculum and textbooks do not address the very crucial issues relating to social and cultural issues regarding menstruation; second the lack of timely information relating to menstruation contributed to poor menstrual hygiene management and practices leading to

increased risk of urinary tract infection. Also, the most of the health teachers available in schools were male, and the girls were hence, do not feel comfortable to discuss about menstruation with male teachers. Hence, the menstrual education to Nepalese girls requires mostly two steps as applied in Bangladesh: schools and educational board needs to be persuaded to consider menstrual hygiene as part of their educational mission and the timing, content and delivery of the health curriculum needs to be revised to be better address the needs of girls.³⁰

Menstrual hygiene education is fundamental to promote adherence to safe practices on adolescent health in Nepal. Some studies reported that being learned about menstrual hygiene in the school, and hearing about menstrual hygiene before the onset of menarche were found to be associated with good menstrual health management practices among adolescent schoolgirls. The schoolgirls who are exposed to information regarding menstrual hygiene may increase their knowledge and confidence in menstrual hygiene management. However, in our study, around 75% of the teachers in schools were reported of providing menstrual health education and several students shared about having mixed feeling about the SRH classes. They added about the feeling of being embarrassed and/or annoyed and/or not useful regarding SRH lectures. The society in Nepal has negative attitude about menstruation, such as perceiving it as something unhealthy and shameful and such attitudes may be due to prevalent patriarchal culture in the society.

In our study, we found difficulties in measuring school attendance due to menstruation issues accurately. Some adolescent schoolgirls reported of girls missing more school days during menarche, as they may not have fully developed strategies for coping with menstruation. Other studies had also reported the same.³¹⁻³³ Most of the schoolgirls in our studies were unwilling to mention menstruation as a reason they missed school because of the stigma associated with menstruation. Additionally, the surveyed adolescent schoolgirls might also have leaved school early and missed hours of school days due to menstruation, which would not also have been reported as an absence. Meanwhile, multiple interventions trails have reported of improving facilities for menstrual hygiene may improve girls attendance.^{4,33-35} In Ghana, a menstrual hygiene education programs increased girls school attendance.³⁴ The study conducted in schools of Kenya, reported of toilet access and reduction of girls absence during menstruation.³⁵ Hence, in our study as well, puberty and hygiene training may have better prepared schoolgirls to manage menstruation in surveyed schools.

The study has several strengths and limitations. The major strength of the study is that the questionnaire used in the study had high response rate, therefore the results are highly representative of the respondents. The other strength of the study was the inclusion of adolescent schoolgirls and they have not been included in discussions

relating to situation of menstrual health management in rural Nepal till date, to our best knowledge. Hence, they could capture the voices of girls who may have been under looked by majority of previous studies. The studies have some limitations. The major limitation of the study was that we chose to collect self-reported data in the study in order to capture the voice of girls whose menstrual health management practices were explored. However, self-reported data may have the possibilities of recall bias and under-reporting. Recall bias may have led to girls under or over-estimating menstrual-related absenteeism as a result of selective memory. There is also a possibility of under-reporting as menstruation is sensitive, taboo subject to discuss. A further limitation was the fact that not all concept of the menstruation could be translated into Nepali language leading to some slight inaccuracies in certain results, such as girls reporting that they used tampons or menstrual cups when these products were not available on the local rural market.

CONCLUSION

About two-third of the schoolgirls are knowledgeable in menstrual hygiene but access to management materials is problematic especially in the schools of rural areas where almost half of the schoolgirls do not have access to sanitary pads where they resort to the use of cloth. Lack of affordability for purchasing sanitary pads were the most important predictors of the menstrual hygiene management. The Government of Nepal should take an initiative to provide schoolgirls with sanitary pads in order to improve menstrual hygiene management all across schools within Nepal, particularly in rural areas. Additionally, the national education curriculum and textbooks of Nepal should address the very crucial issues relating to social and cultural issues regarding menstruation.

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