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Menstrual health affecting school absenteeism during menstruation among adolescent girls in Nepal

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ABSTRACT

Background: Girls' adolescence, characterized by multiple changes and the significant one, is the initiation of menarche. Despite being the natural regular normal process, there are some menstrual abnormalities female adolescents may encounter in their life. Inability to manage those anomalies efficiently can affect physical, psychological, and emotional well-being, including their education because of school absenteeism.

Objectives: The main aim of the study was to assess characteristics of menstruation and examine its association with school absenteeism among adolescent girls in Nepal.

Methods: A quantitative, community based cross sectional analytical study was conducted among 317 adolescent girls who had already experienced menstruation in 11 different study sites. The questionnaire was self-administered by adolescent girls which was collected on the same day as data collected. Collected data were entered in Epi-data version 3.1 which was further imported to SPSS for further analysis. Multiple logistic regression analysis was used to examine association between school missed due to menstruation and menstrual characteristics.

Results: The study showed the mean age of menarche as 12.9±0.97 years. The majority of adolescent girls (89.6%) had normal length of menstrual cycle whereas 42.0% of them had moderate amount of bleeding, and 35.3% of them had irregular menstruation cycle. Concerning the menstrual symptoms, adolescent girls experienced depressed mood (30.6%), rapid mood change (24.0%), and dizziness (15.31%). Almost half (46.7%) of adolescent girls had missed school due to menstruation. Dysmenorrhea (AOR=1.75, 95% CI=1.08-2.83), experience of lower back pain (70.8%, AOR=2.81, 95% CI=1.11-7.10), dizziness (72.0%, AOR=2.82, 95% CI=1.12-7.10), and use of clothes as absorbent (50.6%, AOR=1.87, 95% CI=1.04-3.38) during menstruation were found significantly associated with missing school during that period.

Conclusion: Majority of adolescent girls had normal menstruation however there are still many experiencing various menstrual issues which influence school absenteeism during menstruation.

Keywords: Adolescent, Menstruation, School absenteeism during menstruation

1. Introduction

Menstruation is a normal physiological process experienced by every woman occurring every month throughout the reproductive age starting with menarche and ending with menopause [1,2]. Despite being the natural regular normal process, there are some menstrual abnormalities female adolescents may encounter in their life [3]. Inability to manage those anomalies efficiently can affect their well-being, including education and quality of life of adolescent girls [4,5]. There are multiple taboos related to menstruation, mostly considering it as polluting or impure despite being a normal phenomenon [6-8]. So, people rarely communicate about their menstruation with girls to instruct them about it. This affects the health and quality of life of adolescent girls including, the academic performance [9,10].

Lack of privacy and poor hygiene, lack of water and sanitary material and lack of proper place to dispose sanitary materials in school leads many girls to drop out of school which has been considered as one of the great challenges for many countries [10]. To address it, multiple interventions related to menstrual health and hygiene management have been implemented in schools including provision of information about hygiene, distributing sanitary products in schools, and manage their menstruation [11]. The reason for school dropout and absenteeism in Nepal is similar to the global context [12]. So, different programs have also been launched by the Ministry of Education, Nepal as Menstruation Hygiene Management in the education packages. WASH facilities in schools, including water sanitation, and provision of gender friendly facilities and free sanitary pads in schools are the prioritized program [13,14]. Still a national report has shown that 26.7% of adolescent girls missed school in the last 12 months due to dysmenorrhea and heavy bleeding menstrual management [15-17]. Unnecessary shame, fear, and confusion to discuss menstruation challenges further leads them to face many challenges and health issues [17,18].

Menstrual pain or discomfort during menstruation are considered as issues only after sanitary facilities. But experience of pain and discomforting symptoms during menstruation is common for which they suffer silently [19,20]. In Nepal as most studies have identified menstrual characteristics faced by adolescent girls or assessed association between hygiene and school absenteeism but very few studies have explored the relation of menstrual characteristics and school absenteeism. Hence, the study aims to assess characteristics of menstruation and examine its

association with school absenteeism among adolescent girls of Nepal.

2. Methods

2.1 Study design

It was a cross-sectional study conducted among adolescent girls from schools in Bahunepati, Baluwa, Dapcha, Solambu, Godamchaur, Manekharka, Bolde, Dhungkharka, Kirnetar and Hindi, and a school of Dhulikhel Municipality. This study was conducted from April to November 2019.

2.2 Sample size and sampling procedure

All adolescent girls attending schools of study site and who had experienced menstruation by the time of data collection were included in the study. Adolescent girls who had not experienced menstruation were excluded from the study. For data collection, a consent form was distributed to all the eligible adolescent girls present in school a day before data collection, which they were asked to return if they did not want to be involved in the study. The consent was distributed to 329 adolescent girls but only 317 adolescents were willing to participate in the study.

2.3 Data collection

Questionnaires were prepared with rigorous literature review and discussed among the group consisting of sociodemographic characteristics, and information related to menstruation. The questionnaire was translated to Nepali language. After its preparation, the tool was pretested in a school of Dhulikhel municipality which was not included in the study. Few questions were modified based on pretesting. Permission was obtained from each school to conduct study. From those schools, class rooms were provided for data collection. In those class rooms, adolescent girls who had experienced menstruation till the day of the data collection were included in the study after a consent. During the day of data collection in each study site, only girl participants were allowed inside the classroom where data was collected. Trained nurses distributed questionnaires to each of them. Questions were explained to them and if any of them were not clear about the questions, they were allowed to ask questions. After they filled in the questionnaire, the completeness of the questionnaires was checked and gathered on the same day.

2.4 Data analysis

Collected data were entered into EpiData version 3.1 and extracted to SPSS (version 18) for further analysis. Descriptive statistics were summarized into frequency and percentage for categorical variables and the mean and standard deviation for continuous variables.

Association between school missed due to menstruation and menstrual characteristics were examined by simple logistic regression analysis for which crude odds ratio values (Crude OR) and 95%Cl were included. For the significant variables, multivariable analysis using backward elimination method was performed which showed Adjusted OR (AOR) and 95%Cl with a statistical relationship level at $p < 0.05$.

2.5 Ethical Approval

Ethical approval was obtained from KUSMS IRC (Approval No.: 79/2019), respective schools and class teachers before conducting the study. Written consent in Nepali language was taken by the trained nurses from each participant. They were pre informed about the voluntary participants, confidentiality and right to decline from the study. They were also informed that there will not be any mischievous in future for rejecting to participate in the study.

3. Results

Socio-demographic characteristics of Adolescent girls

Table 1 shows the distribution of respondents by socio-demography. The mean age of the respondents was 14.6 (±1.22) years. Majority of them were from the Tamang/ Gurung caste (36.3%) followed by Hindu religion (63.1%). The occupation of mothers and fathers of the respondents were mostly agriculture or animal husbandry 54.3% and 52.4% respectively. Regarding the education of their mothers and fathers, the majority (53.6%) of their mothers were illiterate and 36.0% of their fathers had secondary level education.

Table 1: Socio-demographic characteristics of Adolescent girls (n =317)

Characteristics	Frequency (n)	Percentage (%)
Age (Years)		
Mean ± SD	14.6 ± 1.2	
Min-Max	12-18	
Caste		
Brahamin	66	20.8
Chettri	66	20.8
Newar	28	8.9
Tamang/Gurung	115	36.3
Dalit	42	13.2
Religion		
Hindu	200	63.1
Buddhist	100	31.5
Christians	17	5.4
Types of family		
Nuclear	128	40.4
Joint	189	59.6
Mothers' occupation		
Housewife	70	22.1

Characteristics	Frequency (n)	Percentage (%)
Agriculture/Animal Husbandry	172	54.3
Business	39	12.3
Service	9	2.8
Daily Labour	11	3.5
Foreign worker	16	5.0
Fathers' occupation		
Agriculture/Animal Husbandry	166	52.4
Business	52	16.4
Daily Labour	41	12.9
Service	31	9.8
Foreign worker	27	8.5
Mothers' education		
Illiterate	170	53.6
Primary	42	13.3
Secondary	66	20.8
Higher	39	12.3
Fathers' education		
Illiterate	86	27.1
Primary	29	9.1
Secondary	114	36.0
Higher	88	27.8

Characteristics of Menstruation

Table 2 exhibits the characteristics of menstruation in which the mean age of menarche was 12.9±0.97 years. The majority of adolescent girls (89.6%) had a normal length of menstrual cycle (28 to 35 days). Majority of adolescent girls (45.6%) had menstruation for 4 or less than 4 days. Among them, 42.0% of them had moderate amounts of bleeding whereas 35.3% of them had irregular menstruation cycles and 34.7% of them have not experienced dysmenorrhea. Regarding premenstrual symptoms, the majority of girls (25.87%) experiences rapid mood change and 14.82% experiences lower abdominal change as premenstrual symptoms. Concerning the menstrual symptoms, adolescent girls experienced depressed mood (30.6%), rapid mood change (24.0%), dizziness (15.31%) and other symptoms.

Table 2: Characteristic of Menstruation (n =317)

Variables	Frequency	Percentage
Mean age at menarche (Years)		
Mean ± SD	12.9± 0.9	
Min-Max	10-15	
Length of Menstrual Cycle		
Less than 28 days	18	5.7
28 to 35 days	284	89.6
More than 35 days	15	4.7
Duration of menstrual bleeding		
4 or less than 4 days	145	45.7
5 to 6 days	117	36.9

Variables	Frequency	Percentage
More than 7 days	55	17.4
Amount of bleeding (perceived)		
Slight	123	38.8
Moderate	133	42.0
Heavy	61	19.2
Regularity of menstruation		
Regular	205	64.7
Irregular	112	35.3
Dysmenorrhea		
None	110	34.7
Mild	112	35.3
Moderate	45	14.2
Severe	50	15.8
Premenstrual symptom		
Rapid mood change	82	25.9
Lower Abdominal pain	47	14.8
Breast tenderness	43	13.5
Lower back pain	35	11.0
Acne	32	10.1
Decreased appetite	10	3.1
Change in weight	5	1.6
Problems during menstruation (Multiple Responses)		
Depressed mood	97	30.6
Rapid mood change	76	24.0
Painful or tendered breast	32	10.1
Diarrhea	30	9.5
Dizziness	25	7.9
Lower back pain	24	7.6
Fatigue	20	6.3
Bloating	9	2.8

Menstrual Hygiene

Regarding menstrual hygiene 78.23% used clothes as absorbent during menstruation and cleaned their genitals every time inside the rest room (86.8%) Similarly, most of them had cleaning facilities in school (74.8%) and had enough water there (65.9%) (table 3).

Table 3: Menstrual Hygiene (n =317)

Variables	Frequency	Percentage
Use clothes as absorbent during menstruation		
Yes	253	79.8
No	64	20.2
Frequency of cleaning genital during menstruation		
Every time during toilet	281	88.6
During bathing	36	11.4
Cleaning facility in school menstruation		
Yes	237	74.8
No	80	25.2
Enough water in school for menstruation		
Yes	209	65.9
No	108	34.1

Ever missed school due to menstruation by adolescent girls

Figure 1 illustrates the frequency of missing school by adolescent girls due to menstruation. Among adolescent girls, 53.3% of girls never missed their school due to menstruation but still 46.7% missed school due to menstruation with 3.8% had missed their school almost every month

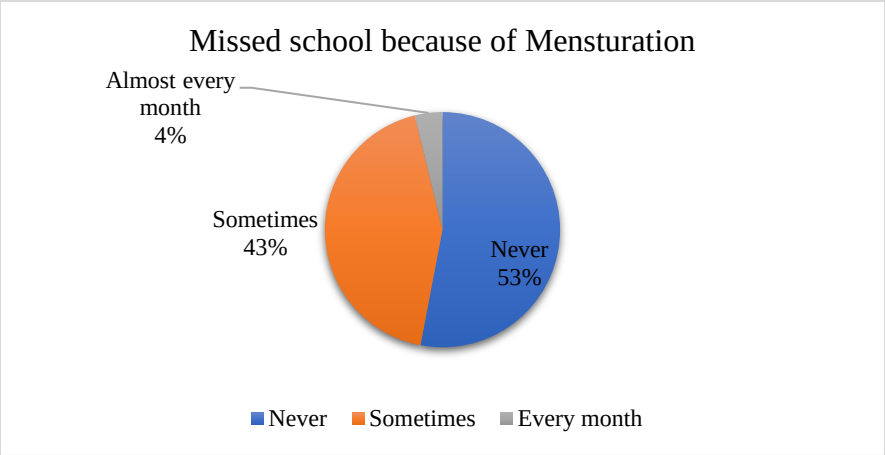

Figure 1: Ever missed school due to menstruation by adolescent girls

Table 4: Association of menstrual characteristics and school absenteeism during menstruation among adolescent girls

Table 4 elucidates the association between menstrual characteristics and school absenteeism during menstruation among adolescent girls. The study reveals experience of heavy bleeding, dysmenorrhea, experience of low back pain, depressed mood, and dizziness is statistically associated with school absenteeism during menstruation. Regarding heavy bleeding, the majority of adolescent girls who experienced heavy bleeding (60.7%) had missed school in comparison to the one who had not experienced it which was found significantly associated (AOR=1.98, 95% CI=1.12-3.50). Similarly, regarding dysmenorrhea, 57.3% of adolescents missing school experienced dysmenorrhea which also had significant association (AOR=1.75, 95% CI=1.08-2.83). Additionally, adolescent girls who experience a lower back pain (70.8%, AOR=2.81, 95% CI=1.11-7.10) and dizziness (72.0%, AOR=2.82, 95% CI=1.12-7.10) during menstruation were found significantly associated with missing school during menstruation. Regarding the use of clothes as absorbent, the study revealed that girls who used clothes as absorbent during menstruation had higher odds of missing the school (50.6%, AOR=1.87, 95% CI=1.04-3.38) as compared to those who do not use clothes as absorbent.

Table 4: Association of menstrual characteristics and school absenteeism during menstruation among adolescent girls (n =317)

Factors	School Absenteeism during menstruation Frequency (%)	Crude OR (95% CI)	Adjusted OR (95% CI)
Regularity of cycle			
No	54 (48.2%)	1	ns
Yes	95 (46.3%)	0.92 (0.58-1.47)	
Duration of flow			
4 or less than 4 days	65 (44.8%)	1	ns
5 to 6 days	55 (47.0%)	1.16 (0.86-1.56)	
7 or more days	29 (52.7%)	0.69(0.40-1.21)	
Self-perceived heavy bleeding			
No	112 (43.8%)	1	ns
Yes	37 (60.7%)	1.98 (1.12-3.50)	
Dysmenorrhea			
No	86 (41.5%)	1	1
Yes	63 (57.3%)	1.89 (1.18-3.01)	1.75 (1.08-2.83)
Experiences during menstruation			
Rapid mood change			
No	120 (49.8%)	1	ns
Yes	29 (38.2%)	0.62 (0.37-1.05)	
Depressed mood			
No	95 (43.4%)	1	ns
Yes	54 (55.7%)	1.09 (0.66-1.81)	
Lower back pain			
No	132 (45.1%)	1	1
Yes	17 (70.8%)	2.96 (1.19-7.36)	2.81 (1.11-7.10)
Dizziness			
No	131 (44.9%)	1	1
Yes	18 (72.0%)	3.16(1.28-7.80)	2.82 (1.12-7.10)
Use of clothes as absorbent			
No	21 (32.8%)	1	1
Yes	128 (50.6%)	2.10 (1.18-3.73)	1.87 (1.04- 3.38)
Cleaning facility in school menstruation			
No	39 (48.8%)	1	ns
Yes	110 (46.4%)	0.91 (0.55-1.51)	
Enough water in school for menstruation			
No	53 (49.1%)	1	ns
Yes	96 (45.9%)	0.88 (0.55-1.40)	

**ns: non-significant*

Discussion

The cross-sectional study was conducted in different sites of Nepal to assess the characteristics of menstruation of adolescent girls and its association with school absenteeism. In the study, menstrual characteristics of adolescent girls were assessed including the length of menstrual cycle and duration of bleeding, amount of bleeding, regularity of bleeding, experience of dysmenorrhea, and problems during menstruation. Along with menstrual health, school facilities for menstrual hygiene also have been assessed. Both menstrual health and

hygiene has been assessed to identify association with school absenteeism. The study has shown that menstrual health issues are also associated with school absenteeism along with hygiene.

Abnormal menstrual bleeding is a common menstrual problem in adolescent girls which are mainly abnormal in duration, volume, frequency and/or regularity. They affect their quality of life related to school and functionality. They experience lower physical function and emotional function [21,22]. In this study, all abnormalities were not associated with missing school during menstruation, but experience of perceived heavy bleeding and dysmenorrhea was found associated with missing school during menstruation. Kocaoz S. et.al has studied the prevalence and impact of heavy bleeding anemia, fatigue and quality of life among reproductive age women has revealed that heavy menstrual bleeding is a common issue and has negative effects on anemia, fatigue and some subdimensions of the Quality of life [23]. Similarly, study has found dysmenorrhea is associated with missing school during menstruation but 58.5% were not absent in school despite dysmenorrhea in compared to 41.5% missed school despite dysmenorrhea. It might be different from other studies that majority adolescents had mild dysmenorrhea (35.3%) and very few (15.8%) had severe dysmenorrhea. The finding in other studies in different countries related to dysmenorrhea is that dysmenorrhea plays a role on school performance and absenteeism [24-26]. Studies in different part of Nepal has also found that dysmenorrhea was associated with school absenteeism [27-29].

Along with menstrual symptoms such as dysmenorrhea, heavy menstrual bleeding, other symptoms include mood disorders common among women. Mood disorders are mostly premenstrual symptoms that appear a week or two before menstruation and go away within a few days after menstruation starts [30]. These symptoms affect the productivity, quality of life, interpersonal relationships, daily living activities including academic performance increasing school absenteeism in adolescent girls and young women [31,32]. In the study also, association between school absenteeism during menstruation with experience of rapid mood changes and depressed mood was assessed. It was revealed that depressed mood was associated with school absenteeism. The study in India has also revealed that adolescent girls experienced a change in mood, and feelings stressed during menstruation influenced school absenteeism in rural areas [33]. Shehadeh, J. et al studied prevalence and

association of PMS in university students of Jordan also revealed that mood was associated with academic performance [34].

Further other menstrual symptoms assessed in the study were the experience of dizziness and back pain during menstruation. The study revealed that girls missing school during menstruation was associated with experience of dizziness during menstruation. The report on WASH in school in Philippines had also revealed that, girls feel weak and dizzy during menstruation, resulting the in decreased participation in the classroom and absenteeism [35]. If menstruation comes too frequently or last longer or flow is heavy may lead to iron deficiency anemia or low hemoglobin and one of the experiences may be dizziness. When menstrual blood losses are accompanied with rapid growth, iron requirements increase [36].

The study also explored association of missing school during menstruation by adolescent girls with hygiene and sanitation. It reveals that using clothes as the pad is associated with school absenteeism but availability of cleaning facilities and enough water in school is not associated with school absenteeism. It might be because the schools might have cleaning facilities in school of study sites. Regarding the use of sanitary pads in Nepal, absence of suitable and affordable menstrual care products, girls use unhygienic and inappropriate products such as old rags, old cotton fabric to absorb menstrual blood. It has been reported that adolescent girls are not able to buy sanitary pads as the products are not easily available. So, they mostly rely on reusable cloth pads which they wash and use again.

Menstrual health and hygiene interventions has been considered as one of the programs to improve sexual and reproductive health education and life skills development of adolescents which has been addressed in SDG [37]. To focus this on Nepal, most programs related to menstruation are emphasized on hygiene and sanitation. Hygiene and sanitation have been identified to result in a negative effect on school performance and girls' education so they have provided provision of free pads in schools and toilet facilities in schools [17,38]. A systematic review on menstruation in Nepal has indicated that WASH facilities in school leads to school absenteeism, which is similar in different studies as well [12].

Different interventions may be needed to manage menstrual pain and disorders, rather than just focusing hygiene and sanitation to improve academic performance among adolescent girls in Nepal. As menstrual health

issues, such as premenstrual syndrome, uncomfortable or painful periods, irregular or delayed menstrual periods, excessive bleeding, or delayed or early commencement of menstruation are common, they need timely and efficient clinical care [39]. But most studies in Nepal have focused on dysmenorrhea for school absenteeism.

The study was conducted in rural areas of Nepal so the findings of the study may not be generalizable to urban settings where facilities are better than in rural areas. Along with this, limited menstrual issues have been included in the study affecting school absenteeism. But there may be more symptoms and problems that affect school absenteeism during menstruation among adolescent girls.

Conclusion

Our findings in the study have unveiled that many adolescent girls have normal menstruation but still there are many girls experiencing various menstrual issues which influence school absenteeism. Experience of dysmenorrhea, low back pain, dizziness was found to be associated with school absenteeism due to mensuration. Along with menstrual symptoms hygiene has also been associated with missing school during menstruation. So, menstrual health also should be prioritized to reduce school absenteeism among adolescent girls which is still lacking behind to improve the school attendance along with scaling up the provision of sanitary pads in schools for adolescent girls during menstruation.

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Conflict of interest

The authors have declared that no competing interest exists.

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