

Association Between Menstrual Hygiene Practice and Exposure to Risk of RH Problems among the Female Students of College Level in Surkhet

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Abstract

The goal of this cross-sectional study, carried out in two constituent campuses of Surkhet, was to explore an association between menstrual hygiene practice and exposure to RH risk among female students. Stratified sampling was applied to recruiting 282 female students for this study. For data collection, a self-administrative questionnaire was conducted. The majority of the respondents in this study were between the ages of 19 and 24, the upper-caste Hindus, married and unemployed. The study found that the average age of the menarche among rural and urban female students of the selected campuses was 13.73 years. It was found that many girls in rural campuses faced restrictions during menstruation. Disposable sanitary pads were commonly utilized by them. Reproductive health problems were more common among the female students in the urban campuses, including genital itching, urinary tract infections, and menstrual problems. The computed relative risk of restricting the practice, bathing once a day, and utilizing a sanitary disposal pad was less than 1, indicating that using a sanitary disposal pad minimizes the likelihood of RH problems. The results of the study indicated that those who change absorbents as needed and use homemade pads may have experienced RH problems. Deriving on the results of this study, it is suggested that research and advocacy regarding this issue be raised at campuses.

Keywords: Menstrual hygiene, menstruation, female students, health problems, relative risk

Introduction

Menstruation is an essential component of the reproductive cycle among the females (House et al., 2013) and is a relatively well recognized public health issue that has gained global attention in recent years (Thomson et al., 2019). It has also become a huge concern in international development (Hennegan et al., 2016; Sommer et al., 2015; Thomson et al., 2019). Menstrual health (MH) has

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become more extensively used in advocacy, programming, policy, and research (Hennegan et al., 2021) and increasingly recognized as a vital part of hygiene for women and female adolescents between menarche and menopause (Budhathoki et al., 2018; House et al., 2012; Thomson et al., 2019).

Safe MH practices make people less sensitive to RTIs and their consequences (Das et al., 2015; Dasgupta & Sarkar, 2008). MH is taken for granted in developed nations, but in poorer countries it is inadequate, which negatively impacts females' health (Kuhlmann et al., 2017). Poor MH can have long-term consequences, such as missing schooling and other opportunities (Holmes et al., 2021) and increases the risk of reproductive and genitor-urinary tract infection (Mohammed Gena, 2020). The impact of MH on women's lives is harmful; it reinforces gender inequities, and excludes women (House et al., 2012) and causes RTI (Dasgupta & Sarkar, 2008; Kim & Choi, 2020),

Every day, an estimated 290,000 Nepalese women and female adolescents menstruate (CBS, 2015). This is a neglected public health issue surrounded by taboos and societal restrictions that cause poor health outcomes for women (Bhusal, 2020; House et al., 2013). When it came to menstruation mostly in the past, girls and women faced a range of hygiene issues that were regarded as taboos and shameful, and so, were rarely discussed (House et al., 2013; Thomson et al., 2019). Women who experience menstruation view it as not only a burden, but also as an event that results in anxiety, contempt, and humiliation (Ameade & Garti, 2016). In most parts of the country, women are considered impure during this period. In Karnali and Sudurpashchim Province, the majority of girls (77%) practice *Chhaupadi* (Thomson et al., 2019). They are forced to live in *Chhaupadi* during the period, and are restricted from touching the male family members, attending the temple, participating in celebrations, and cooking or entering their kitchens (Thapa & Aro, 2021; Thomson et al., 2019). Female adolescents have insufficient awareness and hygienic behaviour about menstruation (Dhimal et al., 2021). Only 1 in 10 practices appropriate menstrual hygiene, with 83% of menstruating girls using cloth and only 15% utilizing sanitary pads (Ministry of Health, New ERA, & ICF International Inc, 2012).

According to the literature just mentioned, poor menstrual hygiene negatively impacts women's and girls' reproductive health. Similarly, menstrual-related social beliefs have been demonstrated to promote unsanitary menstrual behavior. Studies on menstrual hygiene and its impact on reproductive health (RH) have been observed in school adolescents to some extent. However, we were unable to locate any research on this topic among campus female students. Thus, the hypothesis of this study is "there is no association between restricting practice, bathing practice, use of absorbents, frequency of using absorbents, and exposure to the risk of RH problems".

Methods

Study design

The study utilized a cross-sectional design and quantitative data.

Sampling strategy

This study was conducted in constituent campuses located in urban and rural areas of Surkhet district of Nepal. There are two constituent campuses in the rural area and one central campus in the urban area under Midwestern University in Surkhet. Tribhuvan University also has a constituent campus in the urban area.

Female students enrolled in Bachelor's degree programs at constituent campuses in the rural and urban areas of Surkhet were the study participants. Using a random sampling method, two campuses (one urban, one rural) were selected. Surkhet Campus (Education) was chosen from the urban area, and Biddyapur Multiple Campus was selected from the rural area. As per the records available at the selected campuses, altogether 1365 female students were enrolled. Of them, 282 (20.65) were taken as a sample using stratified sampling. Two strata were identified: urban and rural. Of the 282, 202 were from Surkhet campus and 80 from Biddyaapur Multiple Campus. Again random sampling was used to select the respondents from each stratum. A Rao-soft sample size calculator was used to determine the sample size.

Data collection tools

The study employed the self-administered semi-structured questionnaire which was carefully designed, pretested, and revised before the collection of the final data. To collect data from the campus students, we developed a semi-structured questionnaire. The questionnaire was divided into two parts. The first was based on the profiles of the campus students (females). The second was based on their MH practices. As part of the menstrual hygiene practice, 13 questions were included, mainly, restriction practices, the use of pads, and frequency of bathing during periods. The exposure to the RH problems was determined through 13 dichotomous questions such as itching reproducing organs, irregular menstruation, vaginal discharge, reproductive track infections (RTIs), urinary track infections (UTIs) etc.

Data analysis method

The set of questions was provided to the participants, and they themselves filled in their responses. The data were analyzed using SPSS 20 (Statistical Package for Social Science) software version. Simple arithmetic calculations like

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percentages, cross-tabulation, and relative risk (RR) were used for data analysis and interpretation (Sistrom & Garvan, 2004).

RR = 1 indicates that the exposure does not affect the outcome
RR < 1 indicates that the risk of the outcome is decreased by the exposure, which can be called a protective factor
RR > 1 indicates that the risk of the outcome is increased by the exposure

Ethical considerations

University Grants Commission, Nepal provided the clearance for the study. Permission was also obtained from the respective campus administration. Verbal consent was obtained from the participants. Since some respondents in this study did not agree to sign any written forms, but agreed to their response, verbal consent was obtained from each participant. All responses to the study were kept anonymous to ensure confidentiality. Participants were not offered any monetary incentives or forced to participate in this study if they did not wish to.

Results

Participant profiles

Out of 282 girls, a higher proportion (45.74%) of the respondents belonged to the 19-21 years (45.74%) and 22-24 years (30.49%) age groups. On the basis of caste, a higher proportion (42.6%) was covered by Chhetri and Brahmin (39%). Almost all (95.7%) belonged to the Hindu religion, and most of them (76.6%) were unmarried. The employment situation of respondents shows that most of them (91.5%) were unemployed. Most of the respondents (39.7%) were in their fourth academic year of the Bachelor's degree. Based on the location of the campus, most of them (71.63%) were from the urban campus (Table 1).

Table 1: Personal profile of the respondents

<i>Age</i>	<i>Frequency</i>	<i>Perecent</i>
16-18	25	8.86
19-21	129	45.74
22- 24	86	30.49
25-27	24	8.51
28-30	14	4.96
31-33	4.0	0.7
<i>Caste</i>		
Brahmin	110	39.0
Chhetri	120	42.6
Dalit	18	6.4

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Others	32	11.3
Missing	2.0	0.7
<i>Religion</i>		
Hindu	270	95.7
Others	10	3.5
Christian	6.0	2.1
Missing	2.0	0.7
<i>Marital status</i>		
Married	64	22.7
Unmarried	216	76.6
Missing	2	.7
<i>Academic year</i>		
First	78	27.7
Second	46	16.3
Third	46	16.3
Fourth	112	39.7
<i>Location</i>		
Urban	202	71.63
Rural	80	29.37

Menstrual hygiene practice

This study found that the majority of the respondents reached menarche between the ages of 13 and 14. Slightly a greater number of the female students from the urban than those from the rural area were found to have had menarche when they were aged between 13 and 14 years. Only a minority of the respondents reached menarche between the ages of 10 (1.4%) and 17 (0.7%). Menarche began in them at the age of ten and ended at the seventeen. The average age of having menarche among the respondents was 13.73 years. A greater number of them (76.2%) in the rural campuses faced restrictions during menstruation than those from the urban campuses (61.9%). During menstruation, most (69.2%) of the rural campus female students bathed once a day, whereas a little smaller number of the from the rural campuses (68.4%) did this. Disposable sanitary pads were commonly used by those from both sites. The percentage of girls who used pads as needed during menstruation was higher in the rural campuses than in the urban campuses. The majority of the female students studying in both urban and rural campuses were found to have experienced health problems. Nonetheless, a few more girls from the rural campuses were found to have had more problems. The majority of them in the

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urban and rural campuses had higher levels of genital itching, UTIs and menstruation problems.

Table 2: Menstrual hygiene practice among the girl students studying in the urban and rural campus

Categories		Campus				Total	
		Urban		Rural			
		N	%	N	%	N	%
<i>Age of menarche</i>							
Years	10	4	.0	0	0.0	4	.4
	11	5	.5	2	2.5	7	.5
	12	9	.5	18	22.5	27	.6
	13	63	31.2	22	27.5	85	0.1
	14	67	3.2	18	22.5	85	0.1
	15	36	7.8	14	17.8	50	7.7
	16	16	.9	6	7.5	22	.8
	17	2	.0	0	.0	2	7
Total		202	1.6	80	28.4	282	000
<i>Restricting practice</i>							
Restricting practice	Yes	125	61.9	61	76.2	186	6.0
	No	77	8.1	19	23.1	96	4.0
Total		202	.6	80	28.4	82	0.0
<i>Bathing time during menstruation</i>							
Bathing time	Once a day	134	8.4	54	69.2	188	8.6
	Twice a day	24	2.2	14	17.9	38	3.9
	Once every 2 days	34	7.3	8	10.3	42	5.3
	Once a period	4	2	2	2.6	6	.2
Total		196	1.5	78	28.5	274	00.0
<i>Use of absorbents</i>							
Absorbents	Menstrual cup	2	1	4	5	6	.1
	Homemade pad	14	.9	10	12.5	24	.5
	Reusable	37	8.3	18	22.5	55	9.5
	Disposal sanitary pad	125	1.9	48	60	173	1.3
	Peace of cloth	24	1.9	0	.0	24	.5
Total		202	1.6	80	28.4	282	00.0
<i>Absorbents changing time</i>							
changing time	Within 4-8 hours	72	3	28	26	100	1.1

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	As required	130	7	52	73.7	182	8.9
Total		202	1.6	80	28.4	282	00.0
<i>Exposure of RH problems</i>							
Exposure	Yes	165	1.7	71	88.8	236	3.7
	No	37	8.3	9	11.2	46	6.3
Total		202	1.6	80	28.4	282	00.0
<i>Types of problems exposure</i>							
Inching the genitals		70	4.7	29	36.2	99	5.1
Menstrual problem		39	9.3	16	20	55	9.5
Urinary tract infection		57	8.2	14	17.5	71	5.2
Vaginal discharge		38	8.8	14	17.5	52	8.4

Association between MH Practice and relative risk of RH problems

Relative risk (RR) is the ratio between the probability of an outcome in an exposed group and the probability of an outcome in an unexposed (uncontrolled) group. In addition to risk differences and odds ratios, relative risk measures/analyses have key associations between exposure and outcome (Sistrom & Garvan, 2004; Wong, 2019).

Restriction practice and relative risk of RH problems. Table 3 shows the association between the restriction practice during of the menstruation and relative risk of RH problems.

Table 3 Association between menstrual restriction practice and relative risk of RH problems

Categories	Value	95% Confidence Interval	
		Lower	Upper
Odds ratio for exposure to RH problems (yes / no)	.639	.314	1.299
For cohort restricting practice = Yes	.871	.716	1.060
For cohort restricting practice = No	1.364	.815	2.285
N of valid cases	282		

The calculated RR was reported to have been 0.63, indicating that the relative risk of adopting restrictions during the period and exposure to the RH problems was found 0.63 times as much as those who did not practice restriction (Table 3). The RR is less than 1.0, suggesting that the risk of RH problems reduces when restriction practices (risk factors) are used. In other words, the RR value is more than 0.5. It means that those female students who followed restriction were more than half as likely to have RH problems (outcome). According to the

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data, OR (0.63) is smaller than RR (0.87). This shows that the probability of RH problems is decreased.

Bathing practice and relative risk of RH problems. Table 4 shows the association between bathing practices once a day during a menstruation period and the relative risk of RH problems. The calculated RR was reported to have been 0.90, indicating that the relative risk of the female students having bathing practice once a day and experiencing RH problems is 0.9 times as much as those who did not practice it once a day during the period. Based on this finding, RR (.90) is less than 1.0, which indicates that restriction practices (risk factor) decrease the risk of RH problems. In other words, the RR value is more than 0.5. It means that those who did not practice bathing once a day during the period (exposed) are more than a half as likely to have RH problems (outcome). As can be seen in Table 4, OR (0.71) is smaller than RR (0.90). This shows that the probability of the RH problems is lower.

Table 4: Association between bathing practices and relative risk of RH problems

Bathing practice	Value	95% Confidence interval	
		Lower	Upper
Odds ratio for exposure of RH problems (yes / no)	.715	.342	1.496
For cohort one a day = yes	.907	.745	1.105
For cohort one a day = no	1.269	.738	2.184
N of valid cases	274		

Use of absorbents and relative risk of RH problem. Table 5 displays the association of those respondents who used disposal sanitary pads and homemade pads, and relative risk of RH problems.

Table 5 Use of menstrual absorption and relative risk of RH problems among the respondents

Disposal sanitary pad	Value	95% confidence interval	
		Lower	Upper
Odds ratio for exposure to RH problems (yes/ no)	.642	.337	1.221
For cohort disposal sanitary pad = yes	.760	.522	1.107
For cohort disposal sanitary pad = no	1.184	.905	1.550
N of valid cases	282		
Homemade pad			
Odds ratio for exposure to RH problems (yes/ no)	1.040	.530	2.039
For cohort homemade pad = yes	1.027	.653	1.614
For cohort homemade pad = no	.987	.792	1.231
N of valid cases	282		

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The calculated RR was reported to be 0.76, indicating that the relative risk of using a disposal sanitary pad and having RH problems is 0.76 times as much with those female students who did not. It shows that using disposal sanitary pads lowers the likelihood of RH problems (RR = .76, less than 1.0). Thus, those who properly disposed their sanitary pads were less likely to suffer from RH problems. As displayed in the Table, OR (0.64) is smaller than RR. It means that the use of disposable sanitary pads does not decrease the likelihood of RH issues. The data show that the RR (1.07) is more than one, indicating that the risk of using a homemade pad and having RH problems is 1.07 times more in those not using it. This means the risk of RH problems is increased. Similarly, OR (1.04) is slightly smaller than RR. This shows that the probability of RH problems is rarely decreased.

Frequency of changing absorbents and relative risk of RH problems. The association between the frequency of changing absorbents and the relative risk of RH problems among the respondents was not significant (Table 6).

Table 6: *Frequency of changing absorbents and relative risk of RH problem*

Frequencies	Value	95% Confidence interval	
		Lower	Upper
Odds ratio for exposure to RH problems (yes / no)	1.292	.629	2.652
For cohort frequency of changing pad = Within 4-8 hours	1.199	.711	2.019
For cohort frequency of changing pad = As per required	.928	.761	1.131
N of valid cases	264		

The calculated RR was reported to be 1.19, indicating that the relative risk of changing menstrual absorbents and having RH problems is 1.19 times in those who changed the absorbent required. This finding shows that RR (1.19) is more than 1.0. This indicates that the risk of the RH problem is increased when the frequency of changing absorbents (risk factor) is present. It means that the girls who followed changing pads within 4 to 8 hours are as likely to have RH problems (outcome). According to the Table, OR (1.29) is slightly larger than RR. This suggests that the probability of RH problems has slightly occurred.

Discussion

This study found that a higher portion of the respondents reached menarche between 13 and 14 years. There is a minimum menarche at age of 10 years and the maximum age is 17 whereas the average age of having menarche among the respondents is 13.73 years. This is similar to the data of Nepal which indicates that the average age of menarche is 13.5 years (Karki et al., 2017). This result contrasts with the findings of some other studies, such as the ones conducted in Nagpur (mean age at menarche 12.85 0.8 years) (Thakre et al., 2011), Egypt (mean age at menarche 12.49 1.2 years) (Abdelmoty et al., 2015), and Gujrat among medical female students (mean age at menarche 14.5 years) (Patel & Patel, 2016). Many girls (76.2%) in the rural campuses had more restrictions during menstruation than in the urban campuses (61.9%). The reason for such a finding is that the female students studying at the urban campus stayed in a rented room. So they don't have to follow strict restrictions. However, the female students in the rural campus lived in their own homes. Because of family pressure and beliefs when living in their own home, they have to follow restrictions. Therefore, the respondents from the rural campuses may experience more restrictions during menstruation than those in the urban campuses. Other studies entailed a similar result of experiencing restrictions during menstruation in 79% (Dhimal et al., 2021), 89% also experienced some form of restrictions or exclusion (Karki et al., 2017), 98.8 % practiced any cultural restriction (Ranabhat et al., 2019) because of social norms, rules and practices about managing menstruation (House et al., 2012) may be due to low education, socio-cultural beliefs, myths, geographical and biological factors (G.C. & Koirala, 2013). Ameade and Garti (2016) found that increased knowledge of menstruation had a positive and significant effect on the appropriate MH.

It is evident that the bathing practices of the female students during menstruation in each campus differed. A little more (69.2%) of the rural campus female students bathed once a day, than the urban campus female students (68.4%) did. In Nepal, one study conducted in Udayapur and Sindhuli revealed opposing conclusions that it is common for girls to bathe on the first and third days of menstruation (Water Aid, 2016). Al Mutairi and Jahan (2021) found that a maximum (96%) of the girls had used a bath on the third day of the period. According to this study, more than half (53.5%) of the respondents used disposable sanitary pads, while only four percent (4.96%) of them didn't use any absorbents during their menstruation. Another study concluded that most of the students (60.5%) were categorized as having unsatisfactory self-hygiene practices (Al Mutairi & Jahan, 2021). A study conducted among college female students supports that higher

proportions of the adequate health-literate females have appropriate MH practices than inadequate health-literate respondents (Khanal, 2019). Another study conducted with school girls found that an inadequate practice of menstrual hygiene (Sharma et al., 2019) found only 18.0% of rural girls cleaned their genital organs during menstruation (Adhikari et al., 2007). According to this study, the girls demonstrated better bathing practices during the period. This is probably due to the fact that the study involved Bachelor's level female students who had learned about menstrual hygiene and were mature.

This study found that disposable sanitary pads were commonly utilized by female students in both urban and rural campuses. According to this study, female students in both urban and rural campuses used disposable sanitary pads commonly but the frequency of changing their absorbents was not appropriate (Table 2). Compared to the urban campuses, rural campuses had a few more female students changed pads as needed during the periods as those in the urban campuses. Similar to the findings of this study, 53% of girls in Bajura district used sanitary pads (Dhakal et al., 2018). A study in Ghana found that the majority of them (57.7%) changed their sanitary pads twice a day (Ameade & Garti, 2016). According to the Ministry of Health, New ERA & ICF Internal Inc (2012), the use of sanitary pads among female adolescents in urban areas is higher in comparison to those in rural areas. A study conducted among University female students of Ghana (2016) showed that only 20.8% of the girls used other sanitary materials than commercially available disposable sanitary pads (Ameade & Garti, 2016).

Health problems were identified in the majority of girls in both urban and rural campuses. A few more rural campus students were reported to have more problems. Most female students in the rural and urban campuses suffered from genital irritation, UTIs, and menstruation difficulties. The results of this study show that those respondents who followed restricted practices, bathed once a day during the period, and used disposal sanitary pads were less likely to experience RH-related problems. However, there was an association between using a homemade pad and changing the absorbents as needed and the likelihood of RH problems. The results of the next hospital-based cross-sectional study showed a robust and consistent correlation between low menstrual hygiene practices and a higher prevalence of low RTIs (Torondel et al., 2018). A study conducted among women found that the women who used unhygienic methods during menstruation were more likely to have any symptoms of RT (Anand et al., 2015).

Limitations

There are several limitations of this study that should be mentioned. Because this study relied on self-administered questionnaires rather than interviews, the responses' reliability could not be validated. This study was only conducted among female students at Surkhet's two constituent campuses. As a result, the findings of this study cannot be applied to all female students in other campuses in Nepal. Another limitation is that only simple arithmetic calculations were used to examine the relationship between the study variables.

Conclusion

Generally, urban and rural campus female students reached menarche at the age of 13.73 years. Additionally, many rural university female students undergo restrictions during menstruation. Students from both campuses used disposable sanitary pads, but they didn't seem to pay attention to how often they changed them. In this study, it was revealed that among the various health problems the females faced during menstruation, most urban girls experienced genital irritation and UTIs. The study shows that avoiding restrictions, bathing only once a day during the period, and changing disposable sanitary pads reduce RH problems. On the other hand, this study notes that using homemade pads and changing absorbents as needed increase RH problems. Based on the study results, advocating for this issue at campuses is recommended.

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