

**Menstrual Hygiene Practice among Adolescent Girls in the Public Schools of Mahalaxmi Municipality in Lalitpur District**Anju Bajracharya<sup>1</sup>, Archana Pandey Bista<sup>2</sup><sup>1</sup>Nepal Institute of Health Science, Jorpati, Kathmandu,<sup>2</sup>Maharajgunj Nursing Campus, Maharajgunj, Kathmandu**ABSTRACT**

**Introduction:** Sustainable maintenance of good menstrual hygiene practice is crucial for sound reproductive health, education, dignity, and empowerment of adolescent girls. Menstrual hygiene is less addressed in Nepalese context. So this study aimed to assess the menstrual hygiene practices among adolescent girls in the public schools of Mahalaxmi Municipality in Lalitpur district.

**Methods:** A cross sectional study was adopted among 190 respondents of grades 8, 9 and 10 from three public schools of Mahalaxmi Municipality in Lalitpur District. Sample was selected by using simple random technique through lottery method. Data were collected using pre-tested self-administered semi-structured questionnaire and analyzed in SPSS version 16 for window. Bivariable and multivariable logistic analysis were computed to identify factors associated with good menstrual hygiene practice.

**Results:** The mean age ( $\pm$ SD) of the study participants and menarche were  $15.04 \pm 1.10$  years and  $12.86 \pm 0.96$  years. About 43.7% used sanitary pad to absorb their menstrual bleeding, 65.8% disposed the used absorbent in dustbin, 41.1% took daily bath and 40% changed their absorbent three or more times during menstruation. Overall, 62.1% of them had good level of menstrual hygiene practices. Good menstrual hygiene practice was significantly associated with increase in age (AOR: 1.186, 95% CI: 0.540-2.603) living in nuclear family (AOR: 1.664, 95% CI: 0.884-3.281) up in grade (AOR: 2.688, 95% CI: 1.216-5.940) having regular menstruation one year and more (AOR: 1.763, 95% CI: 0.838-3.711) and availability of water inside the toilet (AOR: 1.226, 95% CI: 0.533-2.820).

**Conclusion:** Considerable percentages of adolescent girls in the public schools have poor menstrual hygiene practice. Therefore, provision of appropriate school health programs and basic sustainable sanitation is needed to enhance menstrual hygiene practices among adolescent girls.

**Keywords:** Adolescent girls, Menstruation, Menstrual hygiene practice

**INTRODUCTION**

Adolescent is the transition phase from childhood to adulthood with initiation of menstruation between 10 to 19 years of age. Though menstruation is the natural physiological process, it is still considered unclean, embarrassing and less important subject matter to discuss in developing countries.<sup>1-4</sup>

Good menstrual hygiene practices regarding use of proper absorbents, frequency of changing absorbent, taking bath daily and cleaning genitalia with water are important during menstruation to develop confidence in many aspects. In contrast, poor menstrual hygiene with unsafe use of absorbents will result into reproductive health problems and adopt unhealthy behavior.<sup>4-6</sup> Studies done in Belgaum showed 43.4% used sanitary pad, followed by 33.1% using cloth, 69.3% disposed in dustbin whereas a study in Dang district of Nepal reported 67% had good

menstrual practice in which 72.2% used sanitary pad, 59.4% changed it three times or more and 16.5% took bath daily.<sup>4,7</sup>

Many studies showed lack of school facilities such as adequate water supply, lock in the toilet, many restrictions, lack of menstruation information to girls, inadequate activities and policies in menstrual hygiene resulting into unhealthy menstruation hygiene practice leading to degradation of their health, dignity and empowerment.<sup>2,3,8</sup>

A study conducted in Bangladesh among schools girls in 2013 stated that 41% of girls missed their schools during menstruation. Students felt uncomfortable in school due to embarrassment, no place to change the absorbent and

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sitting beside boys during menstruation. In developing countries, girls usually face different aspects of menstrual hygiene problems mainly at schools.<sup>9</sup> Although there are many literatures on menstrual hygiene, limited studies are available in Nepal. Hence, this study aimed to assess practices of the menstrual hygiene and its associated predictors among adolescent public school girls of Mahalaxmi Municipality in Lalitpur district.

## METHODS

A cross-sectional study was conducted among 190 adolescent girls who had at least three regular menstrual periods, age between 12 to 19 years and studying 8, 9, and 10 in three secondary public schools namely, Shree Lubhoo Secondary School, Shree Gambhir Samudra Setu Secondary School and Shree Mahendra Adarsha Secondary School. These schools were selected through probability proportionate to size sampling method (PPS) out of eleven schools.

The sample size was determined by using Cochran, 1977 formula ( $gZ^2pq/d^2$ ) with prevalence (p) value 0.129 of good menstrual hygiene practice based on previous study,<sup>10</sup> permissible error 7% as considering total population of adolescent girls, 1.96 as standard deviate (Z) and 2 as design effect. So 178 as sample size and including 10% non-response rate, 196 were obtained but study included 200 samples.

There were 332 students as sample frame in these three schools. Twenty samples out of 33 students from Shree Lubhoo Secondary School, 87 out of 144 from Shree Gambhir Samudra Setu Secondary School and 93 samples out of 155 from Shree Mahendra Adarsha Secondary School were selected by using simple random sampling technique through lottery method. Data were collected from 2<sup>nd</sup> September 2018 to 29<sup>th</sup> September 2018.

The semi-structured self-administered questionnaire, adapted from different literatures was used to collect the data.<sup>2,11-13</sup> Content validity was established through extensive review of literatures and consultation with subject experts. Content validity index was obtained with S-CVI/average 0.916 and S-CVI relevance 0.5 item level and scale level CVI was done with six raters in menstrual hygiene practices questionnaires with its relevance, importance and clarity. Instrument was pretested among 20 adolescent girls in Prabhat Secondary School in Tyagal, Lalitpur Metropolitan. After pre-testing the instrument, the modification was done by replacing the item 'disposal of absorbent (sanitary pad/reusable cloth)' instead of 'place to wash the absorbent'.

There were ten menstrual hygiene practice related questions. The response was scored '1' for correct answers and '0' score for incorrect in each item. Then total score was calculated and those scores were further categorized into good practice ( $\geq$  median value of 6) and poor practice ( $<$  median value of 6).<sup>2,11,12</sup>

Written informed parental consent a day before study and assent consent from respondents prior to study were obtained. Ethical approval from Institute Review Committee of Institute of Medicine, Tribhuvan University, and authorized permission letter from Mahalaxmi Municipality, and data collection permission from each school principal were obtained prior to data collection. The school principals, class teachers and participants were explained about purpose of study, risk, benefits, tools and technique used in data collection. They were ensured confidentiality of given information by not disclosing to anyone and just used for study purpose only. Respondents were explained for their voluntary participation and allowed withdrawing at any time without giving any reason. Data were collected during school hours in their leisure period. Hence, 190 respondents had actively responded. Researcher herself collected the data.

The data were analyzed in SPSS version 16 for window. Descriptive statistics such as frequency, percentage, mean, median and standard deviation were applied to describe the characteristics of respondents and level of menstrual hygiene practice. Pearson's Chi square test was performed to identify the association between level of menstrual hygiene practices and selected variables (socio-demographic characteristics and school environment and source of information). Those significant variables were entered to multivariable analysis. The p-value  $<0.05$  was considered as significant.

## RESULTS

### Socio-demographic and menstrual characteristics

There was 190 students were participated in the study making 95% response rate as 5% withdrew the study. The mean age ( $\pm$ SD) of participants was 15.04  $\pm$ 1.107 years and their age ranged between 12 to 18 years. Less than half (43.7%) of the participants were studying in grade nine, 33.2% belonged to disadvantaged Janajatis, 68.4% belonged to nuclear family, 58.4% were urban residence and 72.6% followed hindu religion. Nearly half (41.6%) of the respondents mothers' were unable to read and write. The mean age ( $\pm$ SD) of menarche was 12.86  $\pm$ 0.96 years which ranged from ten to fourteen years (not shown in table).

**Menstrual hygiene practices**

All respondents used the absorbents during their menstruation. Among them, less than half of the respondents used sanitary pad only 83 (43.7%) and took daily bath 78 (41.1%). (Table 1)

Table 1: Menstrual hygiene practices among respondents  
n=190

Variables	Number	Percent
<b>*Use of absorbent during menstruation Type of Absorbents</b>		
* Sanitary Pad only	83	43.7
Cloth only	26	13.7
Sanitary pad as well as cloth together	81	42.6
<b>Frequency of Change of Absorbent</b>		
*Three or more in a day	76	40.0
Twice daily	94	49.5
Once daily	20	10.5
<b>Cleaning the genitalia with</b>		
*Only with water	138	72.6
Soap and water	51	26.8
Not washing	1	0.5
<b>Frequency of cleaning the genitalia</b>		
*Every time while changing the pad	155	81.6
Once a day	15	7.9
Twice a day	18	9.5
Not cleaning at all	2	1.1
<b>Frequency of bath taken during menstruation</b>		
First day of Period	13	6.8
Second day of Period	29	15.3
*Daily	78	41.1
Forth day of Period	68	35.8
Not taking bath any time	2	1.1
<b>Material used for Cleaning absorbent</b>		
*Soap and water	100	52.6
Water only	7	3.7
Not applicable(sanitary pad user)	83	43.7
<b>Drying of washed reusable absorbent material</b>		
*Sunlight	94	49.5
Inside the house without sunlight	13	6.8
Not applicable(sanitary pad user)	83	43.7
<b>Storage of washed absorbent and sanitary pad</b>		
*With clothes in cupboard	46	24.2

Separately	144	75.8
<b>Disposal of used absorbents:</b>		
Open Field	47	24.7
*Dustbin	125	65.8
Others(toilet pan)	18	9.5

\* Correct response that scores 1.

**Level of menstruation hygiene practice**

Out of 190 respondents, nearly two-third (62.10%) had good level of menstrual hygiene practice, whilst more than one third of them (37.89%) had poor menstrual hygiene practice as (Table 2)

Table 2: Level of menstruation hygiene practice among respondents  
n=190

Level of menstruation hygiene practice	Number	Percent
Good ( $\geq 6$ , median )	118	62.10
Poor ( $< 6$ , median)	72	37.89

**The selected variables related to menstrual hygiene**

More than half of the respondents answered that school environment was uncomfortable during menstrual period 98 (51.6 %) and there was only 6 (3.2%) of them responded about having separate room to change the absorbent.

Table 3: School environment related to menstrual hygiene practices among respondents  
n=190

Variables	Number	Percent
Discussion on menstrual hygiene practice at school	157	82.6
Uncomfortable school environment during menstrual period	98	51.6
Separate room to change the absorbent	6	3.2
Availability of dustbin in the toilet	153	80.5
Lock system inside the toilet	177	93.2
Separate toilet for girls and boys	183	96.3
Available of water inside the toilet	149	78.4
Provision of soap and water for hand washing in the toilet	137	72.1

**Source of information related to menstrual hygiene practice**

Regarding the source of information on menstrual hygiene practice, 185 (97.4%) of them answered they received the information on menstrual hygiene practice. Among them, more than half got it from mother 103 (54.2%) followed by teachers 25 (13.2%). (not shown on the table)

**Culture restriction on menstrual hygiene practices**

During menstruation, majority 166 (87.4%) of them, agreed that there were religious restriction to them and less than half of them 77 (40.5) had restriction on some food and drink. About 75.3% reported sour food was restricted to eat during period. (not shown in table)

**Association between level of menstruation hygiene practice and selected variables**

Table 4 reveals that there is statistically significant association between age, type of family, grade, duration of menstruation with level of menstrual hygiene practice.

Table 4: Association between level of menstruation hygiene practice and socio-demographic characteristics of respondents

Characteristics	Menstrual Hygiene Practice		Chi Square	p-value
	Good n %	Poor n%		
<b>Age group in years</b>				
10-14	27 (48.2)	29 (51.8)	6.510	0.011
15-19	91 (67.9)	43 (32.1)		
<b>Ethnicity</b>				
Upper caste	40 (71.4)	16 (28.6)	3.084	0.379
Relatively Advantaged Janajatis	16 (55.2)	13 (44.8)		
Disadvantage Janajatis	37 (58.7)	26 (41.3)		
Other	25 (59.5)	17 (40.5)		
<b>Religion</b>				
Hindu	87 (63.0)	51 (37.0)	0.189	0.664
Others (Buddhism, Muslim, Christian)	31 (59.6)	21 (40.4)		
<b>Type of Family</b>				
Nuclear	87 (66.9)	43 (33.1)	4.060	0.044
Joint	31 (51.7)	29 (48.3)		
<b>Grade</b>				
8 grade	23 (38.3)	37 (61.7)	21.056	0.001
9 and 10 grade	95 (73.1)	35 (26.9)		
<b>Duration of menstruation</b>				
Less than one year	37 (46.8)	42 (53.2)	13.397	0.001
More than one year	81 (73.0)	30 (27.0)		

Significant level at  $p < 0.05$

Table 5 shows that there is statistically significant Association between lock system and availability of water inside the toilet with level of menstrual hygiene practice.

Table 5: Association between level of menstruation hygiene practice and environment related variables of respondents.

Variables	Menstrual Hygiene Practice		Chi Square	p-value
	Good n %	Poor n%		
<b>Hygiene practice at school discussion on menstrual</b>				
Yes	100 (63.7)	57 (36.3)	0.970	0.325
No	18 (54.5)	15 (45.5)		
<b>School environment is comfortable</b>				
Yes	56 (60.9)	36 (39.1)	0.116	0.734
No	62 (63.3)	36 (36.7)		
<b>Attendance in school during period</b>				
Yes	95 (62.1)	58 (37.9)	0.000	0.994
No	23 (62.2)	14 (7.8)		
<b>Available of dustbin to dispose the used pad</b>				
Yes	91 (59.5)	62 (40.5)	2.306	0.129
No	27 (73.0)	10 (27.0)		
<b>Lock system inside the toilet</b>				
Yes	106 (59.9)	71 (40.0)	4.11	0.042*
No	12 (92.3)	1 (7.7)		
<b>Available of water inside the toilet</b>				
Yes	99 (66.4)	50 (33.6)	5.520	0.019
No	19 (46.3)	22 (53.7)		

Significant level at  $p < 0.05$  \*continuity correction.

**Factors associated with good menstrual hygiene practices.**

Table 6 reveals that increase in age, staying with nuclear family, up in grade, a year or more duration of menstruation and availability of water inside the toilet were the factors identified are associated with good of menstrual hygiene practices among respondents.

Table 6: Factors associated with menstrual hygiene practices among respondents

Variables	Menstrual Hygiene Practice		COR (95% CI)	AOR (95% CI)
	Good	Poor		
<b>Age in Years</b>				
10-14 years	27 (48.2)	29 (51.8)	1 2.273	1.186 (0.540-2.603)
15-19 years	91 (67.9)	43 (32.1)	(1.202-4.300)	

Type of Family				
Nuclear	87 (66.9)	43 (33.1)	1.893(1.014-3.534)	1.664(.844-3.281)
Joint	31 (51.7)	29 (48.3)	1	
Grade				
8 grade	23 (38.3)	37 (61.7)	1	2.688(1.216-5.940)
9 and 10 grade	95 (73.1)	35 (26.9)	4.366(2.282-8.355)	
Duration of menstruation				
Less than 1 year	37(46.8)	42(53.2)	1	1.763(0.838-3.711)
More than 1 year	81(73.0)	37(61.7)	3.065(1.667-5.634)	
Availability of water inside the toilet in school				
Yes	99(66.4)	50(33.6)	2.293(1.137-4.625)	1.226(.533-2.820)
No	19(46.3)	22(53.7)	4.625	1

P value significant at 0.05, 1- reference category

## DISCUSSION

The study findings revealed that less than half of the adolescent school girls used sanitary pad to absorb their bleeding, which is similar to the study conducted in Belgaum, India, where 43.4% of girls used sanitary pad.<sup>4</sup> However, other studies done among schools girls in western Ethiopia with 66.2%, Adama town in Ethiopia with 5.2%, Ebony state of Nigeria with 12.3% and Doti district of Nepal with 21.3% used sanitary pad that contrasted to this findings.<sup>11-14</sup> The difference might be due to the study conducted in different time periods and geographical regions.

Less than half of the adolescent school girls changed their absorbents three times or more in a day (40%), dried their washed reusable absorbent in sunlight (49.5%) and took daily bath (41.1%) as well as, majority (81.6%) of them clean their genitalia every time while changing the pad and more than two third (72.6%) of them cleaned their genitalia only with water during menstruation. A contrasting result showed that half of them changed their pads and clothes three times or above in a day and 45.2% of them washed and dried their reused cloth in sunlight.<sup>11</sup> Another consistent result showed that 41.1% of them took daily bath.<sup>15</sup> A study done in Mysore, India found 82.9% of respondents cleaned their genitalia every time they visit the toilet, which was nearly similar to the current study result.<sup>5</sup> A study done on field area of Gandhi Medical College, Bhopal showed that 15.7% of respondents washed genitalia with only water which contradicts with present study with 72.6 percentage.<sup>15</sup> This discrepancy might be due to difference in geographical variations of the adolescent girls and their accessibility to information

through different media regarding menstrual hygiene.

This study revealed that 62.1% of the respondents had good level of menstrual hygiene practice which is higher than findings from other studies.<sup>11,14,16</sup> The differences might be due to the difference in the study area and period.

Present study revealed that mothers were the main source of information regarding menstrual hygiene practice (54.2%) for adolescent girls. This is nearly similar to the study done in Khobar, Saudi with 58.8%,<sup>17</sup> but is contrasted by another study conducted in Lebanon revealing 86.9% considering mother as main source of information for menstruation.<sup>18</sup>

In this study, half of the respondents (51.6%) answered that school environment was uncomfortable during menstruation and 87.4% answered they did not participate in religious activities. The contrasting studies conducted in Bangladeshi school girls showed that 31% of adolescent school girls reported school environment being uncomfortable for them during menstruation and 54% had restriction to religious activities and eighty two percentage of girls mentioned school facilities were inappropriate.<sup>9</sup> In most of the public schools in developing countries, there is no separate toilet facilities for boys and girls and no lock inside the toilet and no separate place to change their absorbent at school. Girls feel quite awkward to speak about menstruation with their male school teachers. So these might be the reason for students to feel school as uncomfortable during their menstruation. Despite having higher education level, the traditional cultural taboo is seen to influence their menstrual hygiene practice leading to difficulty in following it.

The findings of this study showed there are statistical significant association between level of menstrual practice and age with p- value 0.011, duration of menstruation with p-value 0.001, grade of respondents with p-value 0.001 and type of family with p-value 0.044. The factors, age 15years and over (AOR:1.186, CI: 0.540-2.603), studying in grade 9 and 10 more than two times (AOR: 2.688, CI 1.216-5.940 ) are likely to have good menstrual hygiene practices among the respondents.

However, ethnicity, permanent residence, religion, educational status of mother and father, living with, occupational status of father and mother and socio-economic status were found to have insignificant association with level of menstrual hygiene practice. This finding is consistent with studies done in India and Nigeria<sup>4,13,16</sup> which reported that level of menstrual hygiene was associated with age with p-value <0.001

and (AOR:1.71, CI: 1.22-2.39). This can be explained that the menstrual hygiene practice is taken as a routine part of their life as the adolescent girls' age grows. As the girls become more habitual in regular menstruation and become more educated, their experience in menstruation hygiene practice becomes better. However, the insignificant association between living with and level of menstrual hygiene practice in this study was consistent with another study conducted in southern Ethiopia among adolescent schools girls with p-value less than 0.25 in living with.<sup>16</sup>

The present study showed level of menstrual hygiene practice was significantly associated with school facilities and environment and availability of water inside the toilet (AOR:1.226, CI: 0.533-2.820) and lock system inside the toilet (p=0.042) which is in congruence with the study done in Ethiopia where access of water inside the toilet (AOR: 6.504, CI: 2.082-20.323) were significantly associated with good menstrual hygiene practices.<sup>2</sup> However, current study indicated there was no significant association between menstrual hygiene of practice and source of information (0.628). Contrasting result in study done among female Mehalmeda high school students in Amhara regional state, Ethiopia showed significant association between source of information and menstrual hygiene practice with p-value <0.01.<sup>2</sup> These differences might be due to the similar genital hygiene practice of the respondents.

#### LIMITATION

This study was conducted among adolescent girls of government secondary schools of Mahalaxmi municipality of Lalitpur district. So it cannot be generalized to private schools.

#### CONCLUSION

Nearly two-third of the adolescent girls in the school have good menstrual hygiene practices. Age, type of family, grade, duration of menstruation, and availability of adequate water inside the toilet at school were factors identified to be associated with good menstrual hygiene practices. However, considerable percentages of adolescent girls have poor menstrual hygiene practice, feel school environment as uncomfortable and still following cultural restrictions during menstruation. Hence, appropriate school health programs on menstrual hygiene and provision of basic sustainable sanitation at school is necessary to promote menstrual hygiene practices among adolescent girls.

#### REFERENCES

1. World Health Organization. programming for adolescent health and development [ Internet ].

- WHO Technical Report Series No.886,1996:2 [ Cited 2018 July 08]. Available from:[https://www.who.int/maternal\\_child\\_adolescent/documents/trs\\_886/en/](https://www.who.int/maternal_child_adolescent/documents/trs_886/en/)
2. Gultie TK. Practice of menstrual hygiene and associated factors among female Mehalmeda high school students in Amhara regional state, Ethiopia. *Science Journal of Public Health*. 2014 April 30;2(3):189-195. Available from:<http://www.sciencepublishinggroup.com./j/sjph> doi:10.11648/j.sjph.20140203.18.
  3. Karki KB, Poudel PC, Rothchild J, Pope N, Bobin NC, Gurung Y, et al. Scoping Review And Preliminary Mapping Menstrual Health and Hygiene Management in Nepal. *Nepal: Population Services International Nepal* [Internet]. 2017 June [Cited 2018 July 08];1-96. Available from: [https://www.researchgate.net/publication/318393272\\_2017\\_SCOPING\\_REVIEW\\_AND\\_PRELIMINARY\\_MAPPING\\_Menstrual\\_Health\\_and\\_Hygiene\\_Management\\_in\\_Nepal\\_Population\\_Services\\_International\\_Nepal](https://www.researchgate.net/publication/318393272_2017_SCOPING_REVIEW_AND_PRELIMINARY_MAPPING_Menstrual_Health_and_Hygiene_Management_in_Nepal_Population_Services_International_Nepal)
  4. Kanyadi S, Metgud C. Factors influencing menstrual hygiene practice among late adolescents girls in an urban area of Belgaum. *Annals of community health* [Internet]. 2016 Oct-Dec [Cited 2018 Sep. 07]; 4(4):20-24. Available from: <https://menstrualhygieneday.org/wp-content/uploads/2017/03/Factors.pdf>
  5. Omidvar S, Begum K. Factors influencing hygiene practices during menses among girls from India-A cross sectional study. *International Journal of Collaborative Research on Internal Medicine and Public Health*. 2010 Dec 10;2(12): 411-23. Available from: <https://pdfs.semanticscholar.org/7abd/98c69c826e4da6997f49e3cadd158edaef4.pdf>
  6. Prajapati DJ, Shah JP, Kedia G. Menstrual hygiene: knowledge and practice among adolescent girls of rural Kheda district. *National Journal of Community Medicine* . 2015 Sep 30;6(3):349-53. Available from: [http://www.njcmindia.org/uploads/6-3\\_349-353.pdf](http://www.njcmindia.org/uploads/6-3_349-353.pdf)
  7. Bhusal KC. Practice of menstrual hygiene and associated factors among adolescent girls in Dang district, Nepal. *Advance in preventive medicine*; Hindwani. 2020. Available from: <https://doi.org/10.1155/2020/1292070>
  8. Sumpter C, Torondel B. A systematic review of the health and social effects of menstrual hygiene management. *PloS ONE*. 2013 April 26; 8(4): e62004. Available from: doi: [org/10.1371/journal.pone.0062004](https://doi.org/10.1371/journal.pone.0062004)
  9. Alam MU, Luby SP, Halder AK . Menstrual hygiene management among Bangladeshi adolescent school girls and risk factors affecting school absence: result from cross-sectional survey. *BMJ open*. July

- 2017 July; e-015508. Available from: doi:10.1136/bmjopen-2016-05508
10. Adhikari P, Kadel B, Dhungel SI, Mandal, A. Knowledge and practice regarding menstrual hygiene in rural adolescent girls of Nepal. Kathmandu University Medical Journal. 2007 July 01; 5(19):382-86: PMID:18604059. Available from: <https://europepmc.org/article/med/18604059>
  11. Upashe SP, Tekelab T, Mekonnen J. Assessment of knowledge and practice of menstrual hygiene among high school girls in Western Ethiopia. BMC women's health. 2015 Oct; 15:84. Available from: doi: 10.1186/s12905-015-0245-7
  12. Anchebi HT, Shiferaw BZ, Fite RO, Abeya SG. Practice of menstrual hygiene and associated factors among female high school students in Adama Town. Journal of women's health care. 2017 June 6;6(3):70. Available from: doi:10.4172/2167-0420.1000370
  13. Ilo CI, Nwimo IO, Onwunaka C. Menstrual Hygiene Practices and Sources of Menstrual Hygiene Information among Adolescent Secondary School Girls in Abakaliki Education Zone of Ebonyi State. Journal of Education and Practice [Internet]. 2016 [Cited 2018 July 12]; 7(31):88-95. Available from: <https://files.eric.ed.gov/fulltext/EJ1122548>.
  14. Yadav RN, Joshi S, Poudel R, Pawan P. Knowledge, attitude and practice on menstrual hygiene management among school adolescents. J Nepal Health Research Council.[internet].2017 Sep-Dec; 15(37):212-16. Available from: <https://www.nepjol.info/index.php/JNHRC/article/view/18842>
  15. Neelkanth N, Singh D, Bhatia P. A study to assess the knowledge regarding practices of menstrual hygiene and RTI among high and higher secondary school girls: An educational interventional study. International Journal of Community Medicine and Public Health. 2017 Dec; 4(12):4520-4526. Available from: doi:http://dx.doi.org/10.18203/2394-6040.ijcmph20175323.
  16. Belayneh Z, Mekuriaw B. Knowledge and menstrual hygiene practice among adolescent schools girls in southern Ethiopia: a cross-sectional study. BMC public health [Internet]. 2019 Nov 29 [cited 2020 Nov. 27]; 19(1):1595. Available from: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-7973-9> doi: 10.1186/s12889-019-7973-9. PMID: 31783741; PMCID: PMC6884885
  17. Karout N. Knowledge and beliefs regarding menstruation among Saudi nursing students. Journal of Nursing Education and Practice. 2015 Sep; 6 (1). Available from: doi:10.5430/jnep.v6n.1p23
  18. Santana T, Wehbe-N, Ziade FM, Nehme M. Assessment of beliefs and practices relating to menstrual hygiene of adolescent girls in Lebanon. International Journal of Health Sciences. 2013 Dec; 3(12):75-88. Available from: <https://pdfs.semanticscholar.org/ee-81/66011fc65b823100a2d0226ccc9b1aa9b6dc.pdf>