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Original Research Article

Unveiling menarche: insights into the knowledge, attitudes, and practices of adolescent girls in Dhangadhi sub-metropolitan city

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ABSTRACT

Background: Menarche refers to the onset of first menstruation. Despite being a normal, physiological process, menarche is still regarded as a taboo topic in some communities and ethnic groups. This situation makes many adolescent females vulnerable because of lack of knowledge, products, and infrastructure to deal with menarche. This study aims to assess the knowledge, attitude, and practices on menarche among adolescent girls in government schools of Dhangadhi sub-metropolitan city, a region where menstrual taboos are highly prevalent.
Methods: A descriptive cross-sectional study was conducted among 383 adolescent school girls in Dhangadhi through a pre-tested semi structured questionnaire. Quantitative research method was applied through a self-administered questionnaire.
Results: The study showed that the median age of menarche was 13 years. The main source of information about menarche was mother or grandmother (58.2%). Approximately, three fourth (71.4%) of the respondents had adequate knowledge, less than two third (61.6%) had positive attitude and nearly half (51.7%) of them had good practices on menarche. Factors like parents education and occupation, mother's age, age at menarche, grade and family type were found to be significantly associated with knowledge, attitude and practices on menarche.
Conclusions: Despite the fact that the majority of respondents had an adequate level of knowledge on menarche, the level of practices on menarche was still poor. This study highlights the need for policy makers to focus on implementing knowledge and awareness programs in government schools to educate students and their parents about menarche and menstrual hygiene.

Keywords: Menarche, Adolescent girls, Menstrual hygiene, Menstruation, KAP, Nepal

INTRODUCTION

Menarche is the onset of first menstruation, which usually occurs during early adolescence (10-14 years of age). It is a significant pubertal milestone in adolescence. It signals a biological and often social transition as well as the onset of accompanying menstrual health needs.[1] There are numerous restrictions on menstruation in our societies due to which most families knowingly or unknowingly create an environment in which girls are still hesitant and frightened to discuss their menarche. Due to various taboos and myths surrounding menstruation, there is gender inequality, school dropout, and restrictions on a girl's participation in ceremonies, cooking, and visits to her home and family during this time. A key indicator for monitoring performance toward menstrual health is awareness of menstruation prior to menarche.[1] Adolescents cannot learn about menarche because of the

prevalent stigma and taboos surrounding menstruation. For young women, the start of menstruation can be difficult in many cultures. The ability of the parents to support their children may be further limited by their lack of accurate knowledge on menstrual health. In 2018, the United Nations (UN) reported that the shame, stigma, and false information that surrounds the periods can lead to serious health and human rights concerns.[2] Since the government schools are mostly found lacking enough resources, the magnitude of the problems associated with menarche can be expected to be greater. Girls, who have adequate knowledge and understanding of menarche are more able to cope with it and maintain hygiene during the menstruation period. Thus, the study is focused on knowledge, attitude and practices on menarche among adolescent girls in government schools.

METHODS

A cross-sectional, descriptive study was conducted among adolescent girls of government schools in order to assess their knowledge, attitude, and practices on menarche in Dhangadhi Sub-metropolitan City. It was calculated by using the formula for finite population developed by Cochran. A pretested semi-structured questionnaire was used for data collection from sample schools. The sampling method used was stratified proportionate sampling. The schools were selected by using Stratified Sampling while the students from grades 6, 7 and 8 were selected by using Proportionate Sampling. Ethical approval was taken from the IRC (893) and from the municipality where this study was conducted along with all the sample schools and students. The study was conducted from November 2022 to April 2023. After data collection, the collected data were cleaned manually, coded, entered and analyzed using Statistical Package for Social Sciences (SPSS) version 26. All the collected data were reviewed, checked and rechecked for its completeness. Descriptive analysis was done to describe background characteristics and prevalence. Chi-square test was used to test the difference between the categorical variables, and $p<0.05$ was considered statistically significant. Similarly, logistic regression was used to test the degree of association between the variables.

RESULTS

More than half (65.0%) of the mothers were of age group more than 35. More than a quarter (28.2%), 33.2%, and 38.6% of the respondents were in grades six, seven, and eight, respectively. Majority of the respondents (33.9%) were Chhetri community, followed by 26.6% Janajati, 17% Dalits and 12.8% Brahmin. Among the respondents, less than half (45.2%) were living in a nuclear family type whereas 54.3% were living in joint and extended families. among the respondents, 11.3% fathers had completed their higher education followed by 33.9% secondary level and 17.8% primary level. Similarly, 23% of the fathers were literate and 18.6% were illiterate. Furthermore, 6.3% mothers had completed their higher education followed by 25.6% secondary level and 17.5% primary level. Similarly, 20.6% of the mothers were literate and 30% were illiterate. Majority (32.4%) of the fathers' occupation was farmer followed by wage and foreign labour (28.2%) and government and private jobs (25.3%). Nearly half (47.5%) of the mothers' occupation was farmer followed by government and private jobs (26.1%) and home maker (19.3%) (Table 1).

Table 1: Socio-demographic and economic characteristics of the respondents.

Variables	N (%)
Age of mother in years	
≤35	134 (35)
>35	249 (65)
Grade	
Six	108 (28.2)
Seven	127 (33.2)
Eight	148 (38.6)
Ethnicity	
Brahmin	49 (12.8)
Chhetri	130 (33.9)
Janajati	102 (26.6)
Dalit	65 (17.0)
Others	37 (9.7)
Family type	
Nuclear	173 (45.2)
Joint	166 (43.2)
Extended	44 (11.5)
Father's education	
Illiterate	53 (13.8)
Literate	88 (23.0)
Primary	68 (17.8)
Secondary	130 (33.9)
Higher education	44 (11.5)
Mother's education	
Illiterate	115 (30.0)
Literate	79 (20.6)
Primary	67 (17.5)
Secondary	98 (25.6)
Higher education	24 (6.3)
Father's occupation	
Farmer	124 (32.4)
Wage and foreign labour	108 (28.2)
Government and private jobs	97 (25.3)
Business	54 (14.1)
Mother's occupation	
Farmer	182 (47.5)
Wage and foreign labour	27 (7.0)
Government and private jobs	100 (26.1)
Home maker	74 (19.3)

Respondents have had their menarche from 10 years to 15 years of age. Majority (58.2%) of the respondents had known about menarche from their mothers, followed by elder sisters (21.1%) and friends (12.5%). Majority of the

respondents (37.5%) shared their experience of menarche with their parents or grandparents, 22% with their siblings and 38.2% with their friends. Absorbent materials were provided by family members to more than half (57.7%) and by school to 18% of the respondents.

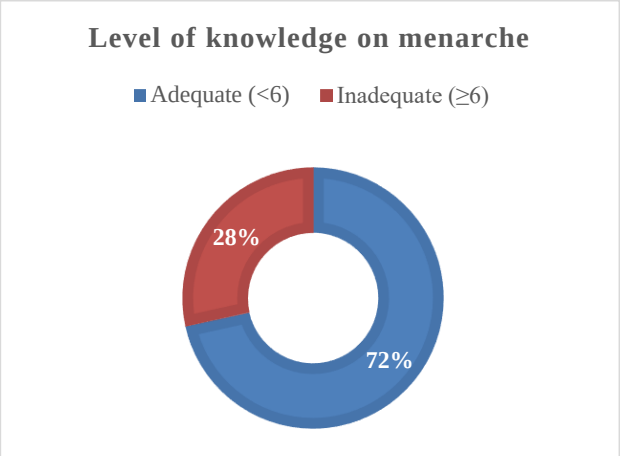

Figure 1: Level of knowledge on menarche.

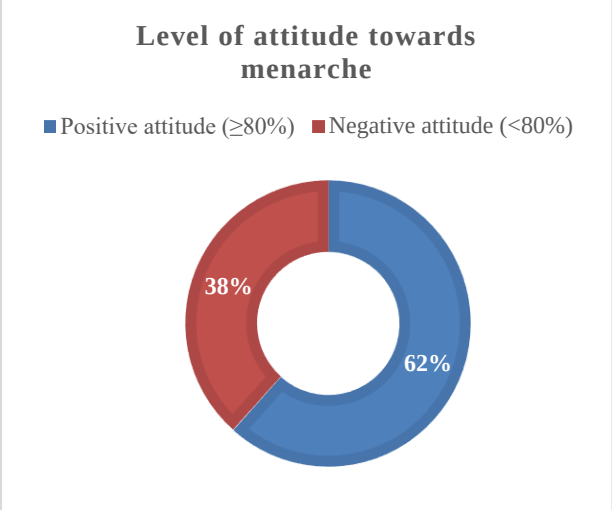

Figure 2: Level of attitude towards menarche.

Figure 1 shows the respondent's level of knowledge on menarche. The knowledge level was categorized as adequate and inadequate by the median score of the knowledge obtained. Majority of the respondents (71.4%) had adequate knowledge on menarche and more than one third (28.5%) of the respondents had inadequate knowledge on menarche.

Figure 2 shows the respondent's level of attitude on menarche. The attitude level was categorized as positive attitude and negative attitude by the percentage of attitude obtained. Majority of the respondents (61.6%) had positive attitude towards menarche and less than half (38.4%) of the respondents had negative attitude towards menarche.

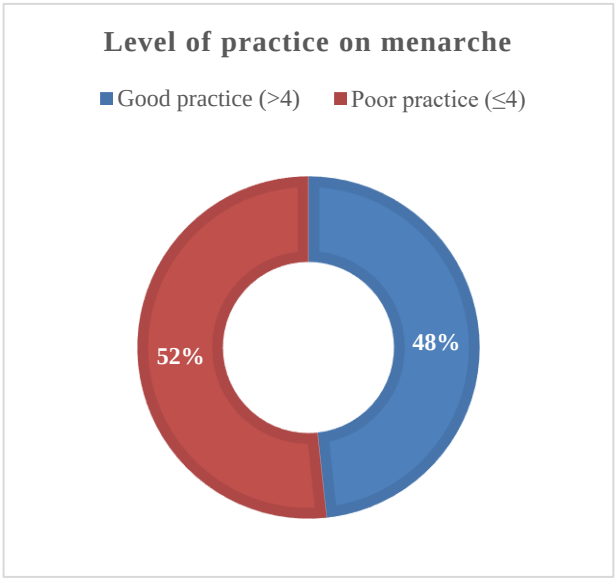

Figure 3: Level of practice on menarche.

Figure 3 shows the respondent's level of practices on menarche. The practice level was categorized as good practice and poor practice by the median score of the practice obtained. It was found that less than half of the respondents (48.3%) had good practice and the other half (51.7%) had poor practice on menarche.

Table 2: Association of knowledge on menarche with socio-demographic, socio-economic and menarche history factors.

Variables	Knowledge on menarche		$\chi 2$	P value
	Adequate	Inadequate		
	N (%)	N (%)		
Age of mother in years				
≤35	86 (64.2)	48 (35.8)	5.486	0.019*
>35	188 (75.5)	61 (24.5)		
Grade				
Six	156 (66.4)	79 (33.6)	7.945	0.005*
Seven and eight	118 (79.7)	30 (20.3)		

Continued.

Variables	Knowledge on menarche		χ2	P value
	Adequate	Inadequate		
	N (%)	N (%)		
Family type				
Nuclear	109 (63.0)	64 (37.0)	11.288	0.001*
Joint/ extended	165 (78.6)	45 (21.4)		
Father's education				
Basic and below	139 (66.5)	70 (33.5)	5.724	0.017*
Above basic	135 (77.6)	39 (22.4)		
Mother's education				
Basic and below	176 (67.4)	85 (32.6)	6.79	0.009*
Above basic	98 (80.3)	24 (19.7)		
Father's occupation				
Others	155 (68.8)	77 (33.2)	6.467	0.011*
Government and private jobs	119 (78.8)	32 (21.2)		
Age at menarche				
10-12	89 (61.8)	55 (38.2)	10.71	0.001*
13-15	185 (77.4)	54 (22.6)		
Preparations for menarche				
Yes	172 (76.1)	54 (23.9)	5.645	0.018*
No	102 (65.0)	55 (36.0)		

*P value <0.05 indicating the statistical significant between the variables.

Table 3: Multiple regression analysis of knowledge on menarche.

Variables	COR (95% CI)	P value	AOR (95% CI)	P value
Age of mother in years				
≤35	Ref	0.020*	Ref	0.06
>35	1.72 (1.090-2.715)		1.631 (0.979-2.718)	
Grade				
Six	Ref	0.005*	Ref	0.045*
Seven and eight	1.992 (1.228-3.231)		1.779 (1.014-3.122)	
Family type				
Nuclear	Ref	0.001*	Ref	0.002*
Joint/Extended	2.153 (1.371-3.382)		2.164 (1.333-3.512)	
Father's education				
Basic and below	Ref	0.017*	Ref	0.816
Above basic	1.743 (1.103-2.755)		1.069 (0.607-1.884)	
Mother's education				
Basic and below	Ref	0.010*	Ref	0.052
Above basic	1.972 (1.177-3.304)		1.706 (0.996-2.919)	
Father's occupation				
Others	Ref	0.012*	-	-
Government and private jobs	1.847 (1.147-2.975)		-	
Age at menarche in years				
10-12	Ref	0.001*	Ref	0.501
13-15	2.117 (1.346-3.329)		1.231 (0.671-2.258)	
Preparations for menarche				
No	Ref	0.018*	Ref	0.054
Yes	1.718 (1.097-2.689)		1.630 (0.992-2.677)	

*P value <0.05 indicating the statistical significant between the variables.

Table 2 states that the age of mother (p=0.019), grade (p=0.005) and family type (p value= <0.001) showed significant association with knowledge on menarche. Father's education (p=0.017), mother's education (p=0.009), father's occupation (p=0.011), age at menarche (p=0.001) and preparations made for menarche (p=0.018)

also showed significant association with knowledge on menarche. However, ethnicity (p=0.659), mother's occupation (p=0.512) and source of information (p=0.256) were not significantly associated.

Table 3 revealed that the odds of having adequate knowledge among mothers of respondents of age group greater than 35 years was 1.6 times (AOR=1.631, 95% CI= 0.979-2.718) more likely than those of age group less than or equal to 35 as compare to the counterparts adjusting other explanatory variables included in the model. The odds of having adequate knowledge among respondents of grade seven and eight was 1.7 times (AOR=1.779, 95% CI=1.014-3.122) more likely than those of grade six as compare to the counterparts adjusting other explanatory variables in the model. The odds of having adequate knowledge among respondents with joint or extended family type was 2.1 times (AOR=2.164, 95% CI=1.333-3.512) more likely than those with nuclear family type as compare to the counterparts adjusting other explanatory variables in the model. The odds of having adequate knowledge among respondents with father's education above basic was 1 time (AOR=1.069, 95% CI=0.607-1.884) more likely as compare to the counterparts adjusting other explanatory variables in the model. The odds of having adequate knowledge among respondents with mother's education above basic was 1.7 times (AOR=1.706, 95% CI=0.996-2.919) more likely as compare to the counterparts adjusting other explanatory variables in the model. The odds of having adequate knowledge among respondents with age at menarche in age group 13-15 was 1.2 times (AOR=1.231, 95% CI=0.671-2.258) more likely than those of age group 10-12 as compare to the counterparts adjusting other explanatory variables in the model. Moreover, the odds of having adequate knowledge among respondents with preparedness for menarche was 1.6 times (AOR=1.630, 95% CI=0.992-2.677) more likely than those not having preparedness as compare to the counterparts adjusting other explanatory variables in the model.

Table 4: Association of attitude towards menarche with socio-demographic, socio-economic and menarche history factors.

Variables	Attitude towards menarche		$\chi 2$	P value
	Positive	Negative		
	N (%)	N (%)		
Age of mother in years				
≤35	71 (53.0)	63 (47.0)	6.496	0.011*
>35	165 (66.3)	84 (33.7)		
Ethnicity				
Brahmin/Chhetri	79 (44.1)	100 (55.9)	43.442	<0.001*
Others	157 (77.0)	47 (23.0)		
Father's education				
Basic and below	117 (56.0)	92 (44.0)	6.183	0.013*
Above basic	119 (68.4)	55 (31.6)		
Mother's education				
Basic and below	152 (58.2)	109 (41.8)	3.961	0.047*
Above basic	84 (68.9)	38 (31.1)		
Father's occupation				
Others	122 (52.6)	110 (47.4)	20.300	<0.001*
Government and private jobs	114 (75.5)	37 (24.5)		
Mother's occupation				
Others	166 (58.7)	117 (41.3)	4.020	0.045*
Government and private jobs	70 (70.0)	30 (30.0)		
Age at menarche				
12-Oct	78 (54.2)	66 (45.8)	5.419	0.020*
13-15	158 (66.1)	81 (33.9)		

*P value <0.05 indicating the statistical significant between the variables.

Table 4 shows the age of mother (p=0.011), ethnicity (p=0.000), father's education (p=0.013), mother's education (p=0.047), father's occupation (p=0.000), mother's occupation (p=0.045) and age at menarche of the respondents (p=0.020) showed significant association with attitude towards menarche. However, grade (p=0.300), family type (p=0.353), source of information (p=0.447) and preparedness for menarche (p=0.424) showed no association with attitude towards menarche.

Table 5: Multiple regression analysis of attitude towards menarche.

Variables	COR (95% CI)	P value	AOR (95% CI)	P value
Age of mother in years				
≤35	Ref	0.011*	Ref	0.020*
>35	1.743 (1.135-2.667)		1.827 (1.101-3.030)	
Ethnicity				
Brahmin/Chhetri	Ref	<0.001*	Ref	<0.001*
Others	4.228 (2.274-6.563)		6.297 (3.780-10.489)	
Father's education				
Basic and below	Ref	0.013*	Ref	0.199
Above basic	1.701 (1.117-2.590)		1.428 (0.829-2.460)	
Mother's education				
Basic and below	Ref	0.047*	Ref	0.498
Above basic	1.585 (1.005-2.499)		1.221 (0.685-2.176)	
Father's occupation				
Others	Ref		Ref	<0.001*
Government and private jobs	2.778 (1.769-4.364)	<0.001*	3.412 (1.959-5.946)	
Mother's occupation				
Others	Ref	0.046*	Ref	0.293
Government and private jobs	1.645 (1.009-2.681)		1.369 (0.762-2.458)	
Age at menarche in years				
10-12	Ref	0.020*	Ref	0.164
13-15	1.651 (1.081-2.520)		1.522 (0.842-2.750)	

*P value <0.05 indicating the statistical significant between the variables.

Table 6: Association of practices on menarche with socio-demographic, socio-economic and menarche history factors.

Variables	Practices on menarche		χ 2	P value
	Good practice	Bad practice		
	N (%)	N (%)		
Age of mother				
≤35	56 (41.8)	78 (58.2)	3.500	0.061
>35	129 (51.8)	120 (48.2)		
Grade				
Six	115 (48.9)	120 (51.1)	0.098	0.755
Seven and eight	70 (47.3)	78 (52.7)		
Ethnicity				
Brahmin/Chhetri	83 (46.4)	96 (53.6)	0.503	0.478
Others	102 (50.0)	102 (50.0)		
Family type				
Nuclear	94 (54.3)	79 (45.7)	4.598	0.032*
Joint/extended	91 (43.3)	119 (56.7)		
Father's education				
Basic and below	89 (42.6)	120 (57.4)	6.026	0.014*
Above basic	96 (55.2)	78 (44.8)		
Mother's education				
Basic and below	114 (43.7)	147 (56.3)	7.018	0.008*
Above basic	71 (58.2)	51 (41.8)		
Mother's occupation				
Others	125 (44.2)	158 (55.8)	7.415	0.006*
Government and private jobs	60 (60.0)	40 (40.0)		

*P value <0.05 indicating the statistical significant between the variables.

Table 5 revealed that the odds of having positive attitude among mothers of respondents of age group greater than 35 years was 1.8 times (AOR=1.827, 95% CI= 1.101-3.030) more likely than those of age group less than or equal to 35 as compare to the counterparts adjusting other explanatory variables included in the model. Likewise, the odds of having positive attitude among respondents of ethnicity others was 6.297 times (AOR=6.297, 95% CI=3.780-10.489) more likely than those of ethnicity brahmin/chhetri as compare to the counterparts adjusting other explanatory variables in the model. The odds of having positive attitude among respondents with father's education above basic was 1.4 times (AOR=1.428, 95% CI=0.829-2.460) more likely as compare to the counterparts adjusting other explanatory variables in the model. The odds of having positive attitude among respondents with mother's education above basic was 1.2 times (AOR=1.706, 95% CI=0.685-2.176) more likely as compare to the counterparts adjusting other explanatory variables in the model. Lastly, the odds of having positive attitude among respondents with age at menarche in age group 13-15 was 1.5 times (AOR=1.522, 95% CI=0.842-2.750) more likely than those of age group 10-12 as compare to the counterparts adjusting other explanatory variables in the model.

Table 6 shows the association of practices on menarche with socio-demographic, socio-economic and menarche history factors. Family type (p=0.032), father's education (p=0.014), mother's education (p=0.008) and mother's occupation (p=0.006) showed significant association with practices on menarche while the other variables showed no any significant association.

Table 7: Multiple regression analysis of practices on menarche.

Variables	COR (95% CI)	P value	AOR (95% CI)	P value
Family type				
Joint/Extended	Ref	0.032*	Ref	0.013*
Nuclear	1.556 (1.038-2.333)		1.703 (1.120-2.591)	
Father's education				
Basic and below	Ref	0.014*	Ref	0.211
Above basic	1.659 (1.106-2.489)		1.349 (0.844-2.158)	
Mother's education				
Basic and below	Ref	0.008*	Ref	0.074
Above basic	1.795 (1.162-2.774)		1.585 (0.956-2.630)	
Mother's occupation				
Others	Ref	0.007*	Ref	0.019*
Government and private jobs	1.896 (1.192-3.015)		1.780 (1.099-2.885)	

*P value <0.05 indicating the statistical significant between the variables.

Table 7 revealed that the odds of having good practice among respondents with nuclear family type was 1.7 times (AOR=1.703, 95% CI=1.120-2.591) more likely than those with joint or extended family type as compare to the counterparts adjusting other explanatory variables in the model. The odds of having good practice among respondents with father's education above basic was 1.3 times (AOR=1.349, 95% CI=0.844-2.158) more likely as compare to the counterparts adjusting other explanatory variables in the model. The odds of having good practice among respondents with mother's education above basic was 1.5 times (AOR=1.585, 95% CI=0.956-2.630) more likely as compare to the counterparts adjusting other explanatory variables in the model. Likewise, the odds of having good practice among respondents with mother's occupation as government and private jobs was 1.7 times (AOR=1.780, 95% CI=1.099-2.885) more likely as compare to the counterparts adjusting other explanatory variables in the model. This study was conducted in the school setting and could not reflect the experience and knowledge of those adolescent girls who are not enrolled in school and deprived of educational opportunities.

DISCUSSION

The age at menarche in the current study was 37.6% in the age group 10-12 and 62.4% in the age group 13-15 which is similar to findings from a study done on reproductive age women in India which was 37% in age group 10-12 and 60% in age group 13-15.[3]

This study revealed that the source of information for the majority of the respondents were mother or grandmother followed by elder sister which is comparable to studies done on adolescent girls in Kathmandu, Gujarat, Nagpur, and Nigeria, where major source of information was mother followed by elder sister.[4-7] In this study, majority of the respondents shared their experience of menarche to their parents, specifically mothers which is in line with a study in Turkey where majority (64.9%) of them first reported their experience of menarche to their mothers.8

The simple fact that children are typically closer to their mothers could be an explanation to this. The study also emphasized the value of intergenerational interaction in reproductive health education.

This study revealed that more than two thirds of the adolescent girls had adequate knowledge on menarche which is comparable to a study done in Dang where knowledge on menarche was found to be 89.6% and another study done in Nigeria where 69.3% of the respondents had good knowledge score of menarche.[9,10] In contrast to this study, the adolescent girls have average knowledge (49.44%) about menarche and menstrual hygiene in a study done in Maharashtra, India.[11] Similarly, in Karnataka, only 10.5% of the adolescent girls had good knowledge and 88% had average knowledge on menarche.[12] This disparity could be explained by societal factors as well as the various measurement categories used to assess respondents' knowledge levels. In the current study, more than three quarters of the respondents knew about types of absorbent materials, half were aware about correct way of using sanitary pads and half were aware about proper disposal of absorbent materials which contrasts with a study done on school going girls in Ethiopia where half of the respondents were aware of sanitary pads, less than a quarter knew how to use absorbent materials and half were aware of disposable sanitary pads.[13] The possible explanation to this difference might be due to lack of health education regarding menstrual hygiene prior to menarche in schools.

In this study, very few of the respondents believed menarche to be a curse from God and nearly two third of the respondents believed girls should not participate in religious activities. This finding is supported by research conducted among female students of Western Cape.[14] This may be due to the fact that the majority of respondents practiced Hinduism, where menstruation is believed to be unclean and impure. Also, the cultural upbringing of the respondent plays a big role in it. Nearly a quarter of the respondents believed they should not touch family members and less than a quarter believed God would curse the family members if the restriction practices were not followed on menarche which is less than the findings reported by study done in Doti.[15] The differences might be due to disparity in psychological and social factors of respondents.

In the current study, less than half of the respondents were found to follow good practice on menarche. Similar study conducted among adolescent girls in Ethiopia had 39.7% good practice.[13] In contrast, the findings from the study conducted in Doti showed only 9% of the adolescent girls to be following poor practice.[15] The variation could be attributed to differences in study settings, an incompatible scoring system for measuring practice level, and the fact that the study classified knowledge as fair, good and poor.

The study showed that half of the respondents used sanitary pads as absorbent materials, which is quite in line findings from Doti however, contradicts with findings from Nigeria which is 87%.[7,15] In comparison to the respondents in Chennai (49.2%), in this study, less than two thirds stayed in their regular rooms, with half changing absorbent materials thrice a day which is more than 34.4% in Chennai.[16] Less than a quarter of respondents properly disposed of materials in dustbins after use in contrast and majority follow restriction practices similar to the Chennai study.[16] This study showed nearly two third respondents washed their hands with soap and water after using washrooms during menarche which is similar to study done in Doti.[15] This indicates good awareness on hand hygiene. However, significantly lower figure on taking bath during the first menstruation (10.7%) was observed in the current study which contrasts the findings from Doti (78.7%).[15] This variance might be caused by level of awareness on personal hygiene and difference in the number of days of practicing restrictions on menarche.

This study showed positive association between mother's level of education and good knowledge of menarche (p=0.009) which is supported by similar study done in Ethiopia, and Dang (p= <0.001).9,17 Mother's higher education was 1.7 times (AOR=1.706, 95% CI=0.996-2.919) more likely to have adequate knowledge and are likely to talk to their children about menstruation compared to mothers who are not. Significant association was found between age at menarche and attitude towards menarche (p=0.020) which might be due to the fact that adolescent girls who get menarche earlier are often unprepared for menarche and hence, they tend to get scared along with forming negative attitude towards menstruation. Nuclear type family showed a positive association with good practices on menarche (p=0.032).

The explanation could be that people who live in a joint or extended family are less likely to discuss menarche openly and/or buy sanitary products, which makes them less likely to use sanitary products.

CONCLUSION

The objective of the study was to assess the knowledge, attitude, and practices on menarche among adolescent girls in government schools of Dhangadhi. The study revealed that more than two third of the adolescent girls had adequate knowledge on menarche. However, less than two third of the adolescent girls had positive attitude and nearly half of them followed good practices. Nearly half of the respondents relied on sanitary pads and more than a quarter used both sanitary pads and cloth yet very few reported proper disposals of the absorbent materials in a dustbin after use. Health education program regarding the awareness of menstruation prior to menarche and healthy practices of menstrual hygiene must be conducted within the government schools in order to improve the knowledge and practices on menarche.

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