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Prevalence and Associated Factors of Menstruation Pattern among Schools Adolescents

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ABSTRACT

Introduction

Menstruation, also known as a period, is a natural process that occurs in the female body as a part of the menstrual cycle. The menstrual cycle is the monthly hormonal cycle that prepares the female body for pregnancy. The objective of this research is to find the prevalence and associated factors of menstruation pattern among schools adolescents.

Methods

A descriptive cross sectional study was conducted among 355 adolescent girls of (10-19 years) in five boarding and government school of Bharatpur municipality, Chitwan. Self-structure questionnaire was then distributed to those students who had already attended their menstruation. Data was entered and analyse by using descriptive and inferential statistical tools in SPSS 20. P-value <0.05 were considered as statistically significant.

Results

The mean±SD of age was found 14.60±1.54 years. In 63.9% (With 95 %CI 58.9% to 68.9%) students had irregular menstruation cycle. Likewise18.87% students had Oligomenorrhoea, 17.18% had Polymenorrhoea and 11.3% students had menorrhagia. Family history of students was found as statistically significant with menstruation problem (p-value<0.05).

Conclusions

Dysmenorrhea, Irregularities in menstruations cycle and Pre menstruation symptoms was found to be major problems in adolescents girls.

Keywords: Dysmenorrhea; Menstruation; Polymenorrhoea; Oligomenorrhoea.

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INTRODUCTION

The World Health Organization (WHO) defines adolescents as those people who are in between 10 and 19 years of age.[1] Adolescent's population occupied 1.2 billion, which is one fifth of the world's population. Developing countries have large population of adolescents.[2] It is the time when there are sudden changes in their body and the changes bring along problems with them. The most challenging problems are related to menstruation; in girls.[3] Menstruation, also known as a period, is a natural process that occurs in the female body as a part of the menstrual cycle. The menstrual cycle is the monthly hormonal cycle that prepares the female body for pregnancy. If pregnancy does not occur, the lining of the uterus is shed through the vagina, resulting in bleeding that typically lasts 3-7 days.[4] The menstrual cycle is controlled by a complex interplay of hormones, including estrogen and progesterone. It usually lasts between 21 and 35 days and consists of four phases: the menstrual phase, the follicular phase, the ovulatory phase, and the luteal phase. Menstrual blood is made up of blood and the lining of the uterus, and the amount and colour of the blood can vary from person to person. Many women experience symptoms such as cramping, bloating, headaches, and mood changes during their period. It's important for women to maintain good menstrual hygiene to prevent infections. This includes changing sanitary pads or tampons regularly, washing the genital area with clean water, and avoiding the use of scented products. Women who experience severe or unusual symptoms during their period should consult a healthcare provider.[5] Menstruation is a monthly endometrial shedding leading to the discharge of blood from the uterus occurring in every 28 ± 7 days.[4] Dysmenorrhoea and heavy menstruation are main menstrual disorders which affect the quality of life of adolescents and young adult women.[6] As well as health problems there can be consequences such as limitations on attendance at work and school which hinder academic achievements and employment prospects.[6] Menstruation is characterized by variability in regularity, volume, and pattern.[7] The prevalence of irregular menstruation was found to be 64.2% in Pokhara.[8] Of which 71.5% had dysmenorrhoea, 53.2% had mild, 37.6% had moderate and 9.1% had severe dysmenorrhoea. There was a statistically significant difference on menstrual cycle regularity by ethnicity.[8] There is significant association to irregular menstruation cycle, Polymenorrhea, Hypomenorrhea with body mass index.[9] Proper attention to adolescent girls is of paramount importance as "A nation's wealth is its manpower" and Adolescent girls are the future progenitors.[10] The objective of this research is to find the prevalence and associated factors of menstruation pattern among schools adolescents.

METHODS

A descriptive cross sectional study conducted among adolescent girls of (10-19 years) in five boarding and government school of Bharatpur municipality, Chitwan. A study conducted in Pokhara showed the prevalence of dysmenorrhea 71.5%[10] using this as a prevalence with 95% CI and 5% margin of error sample size was calculated by using this formula $n= z^2pq/e^2=355$. The optimal sample size for this research was calculated 355. Sample was selected by using non probability purposive sampling technique. Ethical approval was taken from Institutional Review Committee of College of Medical sciences and teaching Hospital (Ref no. COMSTH-IRC/2023-05). Data collection approval was taken from concerned authority of school (Principal's). The informed and written consent was taken from girl students. Self-structure questionnaire was then distributed to those students who had already been attended their menstruation. Each question was explained in Nepali and time given to tick the answer. Weight was measured using weight machine while height was measured using scale in standing position. Collected data was

entered and analyse by using SPSS 20. Data was analysed by using descriptive and inferential statistical tools. In the descriptive statistics for categorical variables frequency and percentage were calculated while in inferential statistics to find the association Chi square test was used. P-value <0.05 were considered as statistically significant.

RESULTS

The mean±SD of age among 355 students was found 14.60±1.54 years with range 11-19years. Majority of the students were in the age group 11-13 years. The proportion of students from each class is equal except XI class. Majority (73.5%) of students were from Hindu while 41.7% were Janjati caste (Magar, Tamang, Gurung). Most (45%) of the students were from the service holding family with family income more than 48000 Nepali rupees per month. Likewise in BMI, 10% students were overweight (≥25 kg/m^2). The mean±SD of BMI was 21.47±2.73kg/m^2 (Table 1).

Table 1. Sociodemographic characteristics of the students (n=355).

Variables	Frequency	Percent
Age (Years)		
<11	91	25.6
11-13	217	61.1
>13	47	13.2
Mean±SD	14.60±1.54	
Class		
VIII	106	29.9
Ix	99	27.9
X	102	28.7
XI	48	13.5
Religion		
Hindu	261	73.5
Buddhist	74	20.8
Christian	13	3.7
Muslim	6	1.7
Others	1	0.3
Caste		
Brahmin	64	18
Chhetri	67	18.9
Newar	18	5.1
Janajati	148	41.7
Dalit	32	9
Madhesi	12	3.4
Others	14	3.9
Occupation of Head of family		
Business	98	27.6
Service	161	45.4
Farmer	52	14.6
Labour/daily wage	29	8.2
Others	15	4.2
Education of head of the family		
Illiterate	24	6.8
Literate	23	6.5
Basic level	114	32.1
Secondary level	139	39.2
Undergraduate level	42	11.8
Post graduate level	13	3.7
Income of family (Rs.)		
>97450	81	22.8
48751-97450	80	22.5
36551-48750	51	14.4
24351-36550	49	13.8
14551-24350	55	15.5
4851-14550	35	9.9
<4850	4	1.1
BMI		
Under weight	128	36
Normal	193	54
Overweight	34	10

Majority of students (63.9%) had attended their menarche at the age between 11-13 years

and had regular menstruation cycle. Also, 18.9% had Oligomenorrhoea and 17.2% had Polymenorrhoea. More than 80% students had regular days of blood flow whereas 11.3% had menorrhagia and 4.5% students had Hypomenorrhoea, which mean bleeding is scanty or lasts for less than 2 days. Also, 10.1% student had missing period in recent three month of duration. Nearly 30% students use more than three pads in a day. Almost 95% student used sanitary pad Large number of students (87.6%) were having dysmenorrhoea and 37.7% girls were absent from classes during period in last three months. More than 75% student were experienced abdomen pain. Likewise 45.9% students experienced pre menstruation symptoms. Also, 40% students have family history of pain that was either mother or sister (p>0.05) (Table 2).

Table 2. Pattern of menstruation among students (n=355).

Menstruation related	Frequency	Percent
Age of menarche (years)		
<11	97	27.3
11-13	227	63.9
>13	31	8.7
Menstrual cycle (days)		
<21	61	17.2
21-35	227	63.9
>35	67	18.9
Days of blood flow (days)		
<2	16	4.5
3-7	299	84.2
>7	40	11.3
Miss period		
Yes	36	10.1
No	319	89.9
Number of pad		
1 pad only	28	7.9
2-3 pad	222	62.5
>3 pad	105	29.6
Materials used during menstruation		
Washed and clean clothes	12	3.4
Any clothes	1	0.3
Sanitary pad	337	94.9
Other	5	1.4
Bleeding occur between period		
No	292	82.3
Sometime	56	15.8
Usually	7	2
Pain during period		
No pain	44	12.4
Pain present but do not interfere to regular work	160	45.1
Pain present and can work after rest and home remedies	108	30.4
Pain present and need to take medicine	43	12.1
Absent from class because of pain during period		
Yes	134	37.7
No	221	62.3
Site of pain (Multiple response)		
Abdominal pain	272	76.6
Back pain	63	17.7
Both abdominal and Back pain	117	33
Pain extends to other part	18	5.1
Others	2	0.6
Experience of Pre menstruation symptoms		
Yes	163	45.9
No	192	54.1
Family history of pain(menstruation Problem)		
Yes	142	40
No	213	60

The prevalence of irregular menstruation cycle was 63.9% among students (With 95% CI 58.9%

-68.9%) while for regular it was 36.1% (With 95 %CI 31.1%- 41.1%) (Table 3).

Table 3. Prevalence of menstruation (n=355).

Regularity	Frequency	Percent	95% CI	
			Lower	Upper
Irregular	227	63.9	58.9	68.9
Regular	128	36.1	31.1	41.1

The family history of pain was found to be statistically significant with period of menstruation (P-value=0.03) (Table 4).

Table 4. Association between prevalence of menstruation with socio demographic variables (n=355).

Variables	Regularity		Chi-square	p-value
	Irregular	Regular		
Age (years)				
<11	31(34.1)	60(65.9)	0.54	0.761
11-13	78(35.9)	139(64.1)		
>13	19(40.4)	28(59.6)		
Class				
VIII	38(35.8)	68(64.2)	2.44	0.48
Ix	34(34.3)	65(65.7)		
X	34(33.3)	68(66.7)		
XI	22(45.8)	26(54.2)		
Religion				
Hindu	97(37.2)	164(62.8)	1.117	0.88
Buddhist	24(32.4)	50(67.6)		
Christian	5(38.5)	8(61.5)		
Muslim	2(33.3)	4(66.7)		
Others		1(100)		
Caste				
Brahmin	23(35.9)	41(64.1)	11.45	0.075
Chhetri	23(34.3)	44(65.7)		
Newar	11(61.1)	7(38.9)		
Janajati	49(33.1)	99(66.9)		
Dalit	15(46.9)	17(53.1)		
Madhesi	1(8.3)	11(91.7)		
Others	6(42.9)	8(57.1)		
Occupation of the head				
Business	45(45.9)	53(54.1)	7.17	0.127
Service	53(32.9)	108(67.1)		
Farmer	16(30.8)	36(69.32)		
Labour/ daily wage	11(37.9)	18(62.1)		
Others	3(20)	12(80)		
Education of head of the family				
Illiterate	8(33.3)	16(66.7)	5.25	0.386
Literate	10(43.5)	13(56.5)		
Basic level	41(36)	73(64)		
Secondary level	52(37.4)	87(62.6)		
Undergraduate level	10(23.8)	32(76.2)		
Post graduate level	7(53.8)	6(46.2)		
Income of family (Rs.)				
>97450	28(34.6)	53(65.4)	11.09	0.085
48751-97450	32(40)	48(60)		
36551-48750	16(31.4)	35(68.6)		
24351-36550	4(13.8)	25(86.2)		
14551-24350	21(38.2)	34(61.8)		
4851-14550	14(40)	21(60)		
<4850	13(54.2)	11(45.8)		
BMI				
Under weight	50(39.1)	78(60.9)	1.04	0.593
Normal	65(33.7)	128(66.3)		
Overweight	13(38.2)	21(61.8)		
Family history				
Yes	42(29.6)	100(70.4)	4.309	0.038
No	86(40.4)	127(59.6)		

DISCUSSION

This study revealed that majority of the students were in age group of 14-16years with mean±SD of age 14.60 ±1.54 years, which is similar to the study.[8, 10] The proportion of students was almost equal from class 8, 9, and 10. Majority of the students were from Hindu while study conducted in Maharastra reported that 75% were Hindu students and reaming was Muslim.[11]Regarding ethnicity majority of the students were janajati. Study done in Malaysia showed that menstrual irregularities was found differ according to ethnic group, 16.2% Malaya female had suffered from problem in comparison to other ethnic group.[12] Finding of this research showed that the main occupation of the head of family was service followed by business, whereas in the study of Deshpande TN found as unskilled (57%) and 22% were semiskilled.[11]

Majority of the head of family had secondary level education 39.2%, followed by basic education while study done in Maharastra found that 44% was primary school education, 37% were secondary school.[11] Differences of education among head of family possibly due to differences on study site which was done in slum area. Also, 22.8% families had income more than 97000. Whereas 10% were overweight which differ with the study of Thapa B. et al.[3] Mean Body mass Index was 21.47kg/m^2 in our study, was not much differ with the study done on Portugal by Marques P. et all[13] was 22.0kg/m^2. Mean BMI was found high in the study done in Egypt 23.4kg/m^2, whereas it was found as19.65kg/m^2 in study done in Pakistan.[14] The onset of menarche is found higher between 11-13 years of age and mean±SD age of menarche was 12.14±1.062 SD, which is inconsistent with other study.[4, 10, 13, 15] A study done in Wardha, Central India found that mean±SD age of menarche was 13.67 ±0.8 years for urban area. While study of Maharastra mentioned that the mean±SD of menarche age was 13±1.4 in the slum community.[11] The menstruation cycle length shorter than 21 days (Polymenorrhea) was found in 17.2% of students whereas this finding is different with the study conducted by S Sharma[8], and also in other study.[3, 6, 12, 16] Karout N found that 37.5% suffered with Polymenorrhea, which is double as compared this study.[17] In 18.9% students had cycle longer than 35 days whereas it was found less in the study of Thapa B 4.3%,[12] Cakir M et al 5.3%,[4] Ahmed M 6.0% [16] and found more in the study of Dambhare DG et al was 22.1%.[18] Similarly in 63.9% students had menstrual cycle length 21-35 days whereas result Lee LK found that 62.8% [3, 12], 86.1% in the study of Ghana.[15] There are different causes of Oligomenorrhea which can be age related, related with stress and exercise, endocrine disorder and most common cause is mentioned is Polycystic Ovarian Syndrome (PCOS) which is associated with biochemical abnormalities. Through examination is required to rule out the problem and the Important thing is patient counselling and to correct biochemical abnormalities.[19] This research showed that in 4.5% students had hypomenorrhoea (bleeding less than 2 days) and 11.3% had menorrhagia (bleeding more than 7 days). In 84.2% students had Blood flow for normal days (3-7 days). Majority of respondent did not miss their period within three months which similar in other study.[3] Regarding the number of pad used, 29.6% student used more than 3 pads in a day whereas 7.9% students used only one pad in a day which is the indication of scanty bleeding. However in the study of Lakkawar N J reported that in 16% students had mild bleeding (pad ≤2 in a day).[20] Almost all students used sanitary pad which showed that they have good menstruation hygiene practice. A Study of Deshpande TN reported 60% of adolescents used sanitary pad, because they were from slum area and parents had low level of education.[11] Use of material other than sanitary pad results poor menstrual hygiene and increase the risk of infection.[15] Likewise, 17.8% students mention that they had bleeding between period among them 2% had usually bleeding, whereas 4.3% had bleeding between period while study of

Thapa B showed that 18.2% had bleeding.[3] This study revealed that 87.6% had Dysmenorrhoea whereas the study done in Turkey found in 89.5% had dysmenorrhoea[4], Dars S et al found that in 62% had dysmenorrhoea [14] whereas Dambhare DG had mentioned as 56.15%[6], also others study found that dysmenorrhoea was present in majority of students.[11,3, 4, 13]

Likewise, in 12.1% students had severe dysmenorrhoea (who need to take medicine), Marques P. et al found that in 49% of students had severe dysmenorrhoea, [13] 40% of medical students always use of analgesic.[20] Dhambhare DG mentioned 7.13% sued self-medication during dysmenorrhoea Dhambhare.[18] Likewise, 37.7% students remained absent from classes because of period of last three months. Pondicherry found that 31% students remained absentees from class because of period[16], 24.76% was found in the study of central India,[6] 10% absentees in the study of Turkey[4] and in Portugal it was observed as 8.7%.[13]

Nearly half of the students (45.9%) had experienced pre menstruation symptoms (PMS) other than headache but study conducted in India mention that in 26.74% had headache was main PMS problem.[6] A study of Lakkawar shows 69% of students had PMS which is high in comparison to this study.[20] A study done in Lebanese reported 54% were experienced PMS.[17] A study of Pakistan also had mention that 38% students had PMS.[14]

Many students are suffering from multiple PMS, maximum students had abdomen pain, back pain. Similarly, in the study of Ahmed N found more than one or more manifestation of PMS was experienced by 55.8% of students.[16] PMS are experienced due to change in blood level of oestrogen and progesterone.[20] On mid-cycle (the 13th - 15th day of the cycle), some female experience pain with blood spotting also. Treatment is not require, it is because of the release of the ovum into peritoneal cavity.[20]

Nearly half of the students (40%) mentioned that they had family history of menstruation pain to their mother or siblings, which was statistically significant 0.038 (p-value=0.05). Family history of menstrual abnormalities was found in other study 16% of students.[20] More than half of the students (63.9%) had irregular menstruation cycle, whereas in the study of Dambhare DG, et al found irregular menstruation on 30.48% of adolescent girls [6] and 37.2% observed in the study of Lee LK,[12] 24% was found in the study of Dars S et al.[14] Menorrhagia and various amount of bleeding may be due to anovulatory cycles, may present on initial cycles.[13] However the study of Karout N, et al reported irregular frequency of menstrual disorder is most common menstrual disorder found in 80.7% of students.[17] There is no statistically significant association of socio demographic variables and BMI with menstruation cycle. The study done in Egypt also showed that there was no statistically significant association between BMI and dysmenorrhea.[16] Marques P et al also mentioned that there was no significant association between BMI and menstrual cycles variables.[13]In the study of Chalise U, et all suggested there was no significant association between mean age of menarche and race.[10] Whereas the study done in Wardha, central India found that girls from high socioeconomic class had significantly lower mean menarche age compared to girls from lower socioeconomic class.[6] The study of Aryal TR showed that socioeconomic status have significant effect on menarche.[21] The study of Surbey MK mentioned that the level of stress on a families were associated with early menarche in human.[22] BMI was significantly associated with oligomenorrhoea but there was no association with dysmenorrhea and PMS.[20] Some of the other study also showed that increasing BMI is significantly common cause to PMS.[12] It is observed that dysmenorrhea varies in different populations which may be due to cultural differences in perception of pain and having various aetiologies.[17] The study of Kuwait observed there was a significant inverse

association between age at menarche and obesity and overweight.[23] In the study of Dars S. et al Concluded the statistically significant relation between BMI and menstrual Pattern[14] and also found in other study ($p<0.005$).[15] Irregular and missed period are diagnosable and treatable in early stage by Primary Health Care Centre and more than 90% of menstrual morbidities are preventable by early detection and treatment.[14]

CONCLUSIONS

Dysmenorrhea, Irregularities in menstruations cycle and Pre menstruation symptom was observed as major problem of adolescents. It seems that large number of adolescents were suffering from different menstrual problems so it would be benefitted to them if health education program run routinely to make them pschycologically prepared and to know when they should consult to doctors.

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