

# Prevalence of Menstrual Abnormalities and its Effect among Undergraduate Students

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## ABSTRACT

**Background:** Menstrual abnormalities are menstrual problems that women face during their reproductive years. Globally, they are the most prevalent disorders affecting quality of life in females. This study aimed to assess the prevalence of menstrual abnormalities, its effects and health seeking behaviour of the respondents.

**Methods:** A cross-sectional study of 30 days was conducted among the undergraduate female students of BP Koirala Institute of Health Science who were more than 18 years and had attained their menarche. Total number of responses recorded were 137. Data was collected online via google forms and descriptive analysis was done using SPSS 23.

**Results:** Out of 137 participants, 94.89% had menstrual abnormalities. Among which, 75.38% females sought treatment. Dysmenorrhea and Pre-menstrual syndrome were found to be the most prevalent abnormality. The quality of life was affected in most of the females in terms of lack of concentration in study (91.54%), missing the opportunity for socialization (95.39%), inability to perform physical exercises (82.31%), extra hours of confinement to bed (38.46%) and unable to attend lectures (30%).

**Conclusions:** The prevalence of menstrual abnormalities were high. Quality of life was affected in all the subjects with menstrual abnormality but only few of them were seeking treatment with a professional doctor.

**Keywords:** Menstrual abnormality effects; menstrual abnormality prevalence; menstrual abnormality medical students.

## INTRODUCTION

Menstruation is a normal physiological process, that starts with menarche and terminates with menopause.<sup>1,2</sup> Early age of menarche, which maybe hereditary, causes early maturity in females but, also indicates improved health care and nutritional status of a country.<sup>1,3,4</sup> The normal menstruation starts at the age of menarche which ranges between 9 and 15 years. The normal, regular, menstrual cycle is 28 to 32 days, with duration of 3-7 days, and the amount of blood flow being  $\leq 80$  ml, alterations in which compromise the efficacy of women.<sup>1,5</sup>

The menstrual abnormalities are dysmenorrhea, premenstrual syndrome, menorrhagia, amenorrhea, hypomenorrhea, polymenorrhea, oligomenorrhea, metrorrhagia and menometrorrhagia.<sup>1</sup> It affects academics in forms of inability to study, absenteeism, their practical performances like limitation in sports,

extra hours of sleep and socialization.<sup>1</sup> Hesitation to share these problems with parents and doctors aggravates harmful implications.<sup>6</sup>

This study aimed to assess the prevalence of menstrual abnormalities and the effects on quality of life in females. Additionally, the study also aimed to study the sociodemographic characteristics, menstrual cycle details, treatment seeking behavior and the type of treatment taken by the study subjects.

## METHODS

A hospital based cross sectional study was carried out in BPKIHS which is located in the eastern part of Nepal. BPKIHS has an undergraduate academic degree with 150 undergraduate students being enrolled in every academic year, among which 50% are females. As females from different parts of our country come to BPKIHS, hence, this study will represent the scenario of

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menstrual abnormalities of females in different parts of Nepal. Also, research has not been conducted regarding this topic in this institute before. So, BPKIHS was the relevant study site for the research on this topic. The protocol was approved by Department Research Unit (DRU) of BPKIHS further implementation and then ethical clearance was obtained from the Institutional Review Committee (IRC).

The baseline variables of the study were sociodemographic characteristics such as age, residence, education, family history of menstrual abnormalities, regularity of cycles, maximum number of sanitary napkins used in a day, age of menarche, flow duration and preferred mode of treatment. The outcome variables of the study were prevalence of menstrual abnormalities, effect of menstrual abnormalities on quality of life and health seeking behaviors of the participants.

The menstrual abnormalities included premenstrual syndrome (PMS), dysmenorrhea (painful menstruation), amenorrhea (absence of menstruation), hypomenorrhea (light menstruation), menorrhagia (heavy flow), metrorrhagia (intermenstrual bleeding), menometrorrhagia (prolonged excessive irregular and more frequent menstruation), polymenorrhea (frequent menstruation), oligomenorrhea (infrequent menstruation) and irregularity of cycles. Participants were asked if symptoms of pre-menstrual syndrome were present, which included psychological symptoms (irritability, depression, headache, aggressiveness), gastrointestinal symptoms (nausea, vomiting, bloating, constipation, diarrhea), physical symptoms (fatigue, breast heaviness, breast tenderness, skin changes, vaginal discharge and low back pain) and others (craving for food). The effect of menstrual abnormalities on quality of life was assessed as, inability to concentration in study, need to miss classes, extra hours of sleep-in day time, inability to perform physical exercise and inability to socialize. For variables like concentration in studies, inability to perform physical exercises and opportunity for socialization, the participants choose the best option for them from not at all, a little, moderate amount, very much and extremely. For variables like classes missed and extra hours of sleep-in day time, the participants choose the best option for them from yes, no and sometimes. The other variables of the study were, health seeking behaviour of the participants

(who was consulted and what type of medications were taken).

The undergraduate females of BPKIHS, who were more than 18 years and had already attained menarche were included in this study. Whereas, the females who didn't give consent for participation, who were pregnant and those who have not yet attained menarche were excluded from the study. For calculation of the sample size, we used the formula for infinite population,  $SS = Z^2 pq / l^2$  (where SS= sample size), at 95% confidence interval and taking prevalence of 88% (according to the study done by Ravi et.al.) and the sample size came out to be 169.<sup>7</sup> As our study population is finite (total female undergraduate students=493), we further adjusted our sample size using the formula for finite population [ $SS / 1 + (SS - 1 / \text{total population})$ ], and the sample size came out to be 126. Purposive sampling was done and all the samples that were collected within the time frame of data collection were included.

A self-made, questionnaire in English was designed for the study via Google Forms and it was first sent to the subject expert for testing the reliability and validity. Then, the form was circulated online to all the female undergraduate students of all the streams of BPKIHS. The questionnaire consisted of 3 parts. The first part contained the socio-demographic data of the participant. The second part contained the problems related to menstruation, treatment seeking behavior and treatment taken by the participants. The third part contained the effects on the quality of life of the respondents due to menstrual abnormalities. Informed consent was taken during filling the form. Data entry was done in Microsoft Excel (version 2016) and Statistical Package for the Social Sciences (version 23) was used for statistical analysis. As the study is descriptive, percentage and mean were calculated along with tabular presentations.

## RESULTS

A total of 137 responses were recorded and all the responses were analyzed. The respondents who participated in our study were of the age group 18-25 years with a mean age of 21.68 years. The socio-demographic details of the respondents have been shown in Table 1.

**Table 1. Socio-demographic Profile of the Respondents (n=137).**

Baseline Characteristics		Frequency	Percentage (%)
Stream	MBBS	68	49.64
	BDS	39	28.47
	Nursing	30	21.9
Academic Year	First	25	18.25
	Second	25	18.25
	Third	46	33.58
	Fourth	29	21.17
	Fifth	12	8.76
Residence	Hostel	91	66.42
	With Family	46	33.58

The menstrual cycle details of the respondents are shown in table 2.

**Table 2. Menstrual cycle details of the Respondents (n=137).**

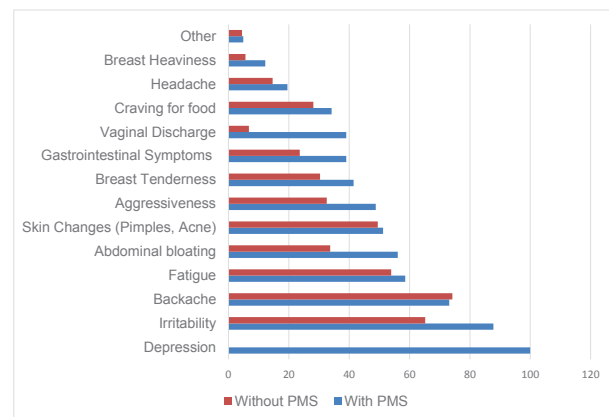
Baseline Characteristics		Frequency	Percentage (%)
Age of Menarche	<9 years	1	0.73
	9-11 years	23	16.79
	12-15 years	110	80.29
	>15 years	3	2.19
Regularity of Cycle	Irregular	38	27.74
	Regular	99	72.26
Usual Length of Cycle	<2 days	3	2.19
	2-7 days	129	94.16
	>7 days	5	3.65
Maximum no. of sanitary napkins used per day	<3	46	33.58
	3 to 5	85	62.04
	>5	6	4.38

Among the 137 respondents, 94.89% (130) study subjects were suffering from menstrual abnormality whereas 5.11% (7) did not have any menstrual abnormality. The prevalence of menstrual abnormalities among undergraduate females is shown in table 3. Most of the respondents had multiple abnormalities in which dysmenorrhoea (73.08%;95), was perceived as the most prevalent abnormality.

**Table 3. Prevalence of Menstrual abnormality (n=130).**

Type of Menstrual Abnormality Present	Frequency	Percentage (%)
Dysmenorrhoea	95	73.08
Pre-menstrual Syndrome	41	31.54
Menorrhagia	31	23.85
Hypomenorrhoea	18	13.85
Oligomenorrhoea	16	12.31
Amenorrhoea	14	10.77
Polymenorrhoea	4	3.08
Menometrorrhagia	2	1.54
Metrorrhagia	1	0.77
Other	3	2.31

As shown in Figure 1, blue represents 31.54% (41) of the females who accepted them to be suffering from PMS. Among the symptoms of PMS in these women, depression (100%) was the most prevalent symptom. Whereas, red represents the females who did not accept themselves to be suffering from PMS, but symptoms of PMS were reported in these women as well, in which the most common symptom was backache.



**Figure 1. Symptoms of Pre-menstrual syndrome.**

As shown in Table 4, quality of life was affected in all the respondents with menstrual abnormality in one or the other way. Among the females having menstrual abnormality, 91.54% (119) of the females could not concentrate well in studies, 35.38% (46) could never attend their lectures, 82.31% (107) of the females were not able to perform physical exercises, 38.46% (50) of the females always had to take an extra hour of sleep in a day and 95.39% (124) females reported to miss their opportunity for socialization during their menstruation due to menstrual abnormalities.

**Table 4. Effect of menstrual abnormalities on quality of Life (n = 130).**

Baseline Characteristics of quality of life		Frequency	Percentage (%)
Impact on concentration in studies	Not at all	11	8.46
	A little	40	30.77
	A moderate amount	70	53.85
	Very much	9	6.92
Impact on attending lectures	Yes	46	35.38
	No	45	34.62
	Sometimes	39	30.00
Impact on the ability to perform physical exercises	Not at all	23	17.69
	A little	46	35.38
	Moderately	44	33.85
	Mostly	11	8.46
	Completely	6	4.62
Extra hours of confinement to bed during menstruation	Always	50	38.46
	Never	7	5.38
	Sometimes	73	56.15
Impact on the opportunity for socialization	Not at all	6	4.62
	A little	39	30.00
	A moderate amount	66	50.77
	Very much	16	12.31
	An extreme amount	3	2.31

Among the respondents with menstrual abnormality, 75.38% (98) of them were seeking treatment whereas, 24.62% (32) were not seeking any treatment. Most of the respondents were taking multiple type of medications in which the mostly preferred was home remedies (77.55%; 76) followed by allopathic (37.76%; 37) and homeopathic (4.08%; 4). Among the respondents who used allopathic medications, most of the respondents took analgesia only once in a day (29.59%; 29).

Among the females with menstrual abnormality, 96.15% (125) of the females, preferred to share their problems whereas, 3.85% (5) did not share their problems with anyone. Most of the females consulted more than a single person for their problem, in which most of

them consulted their friends (80%;100) and only few (25.6%;32) consulted a professional doctor. The females also consulted their mother (76.80%;96), sister (44%;55) and counsellor (8%;10).

## DISCUSSION

Menstrual abnormalities are affecting women globally, but the concern still remains minimal. Especially, in a developing country like ours, studies have not been conducted in this field. Our study describes how large the problem is, how these issues are affecting the performance of females and how these problems are being dealt with in the life of females.

Most of the participants, we're staying in hostel which was consistent with other studies.<sup>5,8</sup> The stay in hostel during menstruation along with changes in lifestyle, homesickness, educational stress, causes psychological and physical discomfort that gets worsen with time.<sup>8</sup> One third of them, had a family history of menstrual disorders which is comparatively low to other studies.<sup>9,10</sup> This maybe because in developing countries, menstrual disorders are considered normal without seeking treatment and less cases come into light. Most of the respondents had menarcheal age of 12-15 years with a mean age of 13.5 years and was consistent with most of the studies.<sup>1,3,11,12</sup> Among the participants, 2.19% females had their menarcheal age as >15 years. A study done by Nwanko et. al. reported, late menarche has increased risk of polymenorrhea, which is associated with anovulation.<sup>13</sup> In anovulation, estrogen levels remains high but when, estrogen level falls, there is asynchronous bleeding suggesting that anovulatory cycles may be related to later age of menarche.<sup>13,14</sup> In a study by WHO, it is found, that the reproductive system requires 2 years to mature before adolescent girls have regular ovulatory cycles.<sup>15</sup> In our study, the subjects are beyond 2 years of menarche, but still 27.74% of the females had irregular cycles which was consistent with most of the studies.<sup>2,3,5,8,16,17</sup> It is seen that irregular menstruation increases rates of coronary heart disease and diabetes mellitus type 2 which indicates the importance to find the cause of irregular bleeding.<sup>18</sup>

In our study, 94.89% of females had some menstrual disorder which is high compared to other studies.<sup>1,7,13,18</sup> Among which, 73.08% of the females, were suffering from dysmenorrhea which is in harmony with most of the studies.<sup>2,3,5,6,10,11,16,19-21</sup> Whereas, it was low compared to a study done by Kamel et. al. and high compared to study done by Gujarathi et. al., by Laksham et. al. and Sharma et. al.<sup>5,8,12,17</sup> The different prevalence of

dysmenorrhea in similar populations maybe because of the difference in perception and threshold of pain. Low prevalence in the study conducted at Puducherry, India maybe due to involvement of most females who had already given birth and it is found that pain is cured following pregnancy.<sup>22</sup> In our study, 31.54% of the females were suffering from PMS which is low compared to other studies.<sup>3,5</sup> PMS is mostly seen in the age group of 30-45 years, which maybe the reason for low prevalence in our study.<sup>22</sup> Also, many of the respondents reported the symptoms of PMS but they did not accept they were suffering from PMS which points that the population did not have adequate knowledge about PMS. Among the symptoms of PMS, depression and irritability was the most distressing problem which is high in comparison to the study done by Adebimpe et. al.<sup>2</sup> This maybe due to the self-reported diagnosis of the study subjects. The third most distressing symptom was backache which is in accordance to the study done by Elnagar et. al. and high compared to study done by Sharma et. al. and Gujarathi et. al.<sup>8,5,11</sup> Fatigue was found in higher number of females compared to the study done by Sharma et. al.<sup>5</sup> Breast tenderness was reported in lower number of the females as compared to the study conducted by Adebimpe et. al. and Pitangui et. al.<sup>2,16</sup> Gastrointestinal symptoms was reported by a greater number of women compared to the study done by Pitangui et. al.<sup>16</sup> Headache was reported by 19.51% of the females which is in accordance to the study done by Pitangui et. al. and Laksham et. al. whereas, it is low in comparison to the study done by Elnagar et. al.<sup>11,12,16</sup>

Menorrhagia is reported by 23.85% of the females which is in accordance with other studies.<sup>6,16</sup> Whereas, it is low in comparison to the study done by Kocaoz et. al.<sup>23</sup> This maybe because, the respondents in the study of Kocaoz et. al. were 15-49 years with a mean age of 30.8 years.<sup>23</sup> The risk factors of menorrhagia are systemic and chronic illnesses, that increases with age, explaining the low prevalence compared to study done by Kocaoz et.al.<sup>24</sup> In our study, 13.85% of the females had hypomenorrhea which is high compared to the study done by Karout et. al.<sup>18</sup> In our study, 12.31% of the females had shown oligomenorrhea, which is in accordance to most of the studies.<sup>2,18,25</sup> Whereas, it is high compared to the study done by Sharma et. al.<sup>5</sup> In our study, 10.77% of the females reported amenorrhea which is relatively high in comparison to other studies.<sup>1,16</sup> In our study, 3.08% of the females had shown polymenorrhea which is in accordance with the study done by Agrawal et. al. whereas relatively low in comparison to the study done by Karout et. al. and Adebimpe et. al.<sup>2,18,25</sup> It can result in poor menstrual hygiene and increases the risk of

infection.<sup>1</sup>

Among the females with menstrual abnormality, concentration in studies was affected in 91.54% which is high in comparison to other studies.<sup>2,5,8,17,19</sup> This is due to the fact that, menstrual problems add to the stressful clinical postings which make them difficult to concentrate in studies. In 82.31% of the respondents with menstrual abnormality, the ability to perform exercises was compromised which is high in comparison to most of the studies.<sup>2,5,19</sup> This maybe because menstrual problems with other stressors decrease their usual capacity to perform physical exercises. Among the females with menstrual abnormality, 95.39% missed their social commitments, which is high compared to most of the studies.<sup>2,5,19</sup> Among the respondents with menstrual abnormality, 35.38% had to miss their lectures always during periods which is in harmony with the study conducted by Pitangui et. al. whereas, it is low compared to most studies.<sup>8,10,11,16</sup> Among the respondents with menstrual disorders, 38.46% had extra hours of confinement to bed always which is in accordance to most of the studies.<sup>2,5,19</sup>

Among the respondents using allopathic medications, most of them used to take medications only once in a day, and few of them used to take medications twice a day and more than twice a day which is low in comparison with most of the studies.<sup>3,5,16,17</sup> Among the 96.15% females, most of the participants consulted their friends and only few consulted a doctor for their problem. This contradicts other studies in which most of the respondents consulted their mother.<sup>2,5</sup> This maybe because most of the respondents in our study were hostellers and majority of their friends were medical students.

The study population included female from all over the nation so, it gave us a good idea about the abnormalities that may prevail in the nation. The study population included females from all the streams and the reproductive age group. The abnormalities were self-reported and not diagnosed clinically. A self-made questionnaire was used for the assessment. The females who were getting treatment from a doctor were not followed up, to see if seeking treatment from doctor prevents these abnormalities and if their quality of life has been improved.

## CONCLUSIONS

Around 95% of the females are suffering from menstrual abnormalities, in which the quality of life has been

affected in all the females, among which 75% are seeking treatment, among which only 25% women are consulting a professional doctor.

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