Correlation Between the Pre and Post Menstrual Symptoms and Body Mass Index Among Females Aged Between 18-25 Years

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ABSTRACT

BACKGROUD AND OBJECTIVE: Menstruation is the cyclical and periodic loss of progestational endometrium and blood. Menorrhagia, Amenorrhea, dysmenorrhea, vomiting, mood changes etc., are common forms of pre and post menstrual diseases. The aim of the study was to assess the relationship between pre and post menstrual symptoms and BMI in females aged between 18-25 years.

METHODOLOGY: A total of 100 females aged 18 to 25 years volunteered to participate as subject in this study according to the inclusion and exclusion criteria. The descriptive data like age, weight, height, hip waist ratio and abdominal circumference were collected from each subject after initial brief explanation of the study and written informed consent. The subjects were selected for the study by using a pre designed questionnaire which evaluate the pre and post menstrual symptoms and other factors. Data were analysed by SPSS 21.0 and all the quantitative descriptive data were expressed in mean and standard deviation, and quantitative data expressed in percentage.

RESULTS: Among 100 individuals considered for the study, mean age of menarche was 13.22 ± 1.14 years, waist hip ratio 0.74 ± 0.05, abdominal circumference 31.25 ± 3.44 and pain 7.05 ± 1.63. In the study respondents were experiencing abdominal cramps, mood swings, leg cramps, breast tenderness, vaginal discharge, headache, vomiting, giddiness and diarrhea as premenstrual symptoms. And respondents were experiencing dysmenorrhea, menorrhagia, oligomenorrhea, amenorrhea as post menstrual symptoms.

CONCLUSION: The present study concluded that there was no statistically significant correlation between the pre and post menstrual symptoms with BMI.

KEYWORDS: BMI, Menstruation, Dysmenorrhea, Menorrhagia, Oligomenorrhea, Waist- hip ratio, Amenorrhea, Height, Weight, Menstrual cycle

INTRODUCTION

Adolescence is a stage of physical and psychological transformation that typically takes place between puberty and the age of legal maturity.[1] It is the moment when their bodies experience a dramatic transformation, and the transition brings problems with it. The most difficult issues girls experience has to do with menstruation.[2]

Menstruation is the cyclical and periodic loss of progestational endometrium and blood.[3] In 70-80% of cases, a menstrual flow lasts 2-7 days on average, and changing 3-5 pads per day indicates a typical flow.[4]

A woman's menstrual cycle is an important indicator of both her endocrine and reproductive health.[5] Menstrual cycle disorders or abnormalities are a common

gynaecological issue for adult females, particularly adolescent women. They are a major source of anxiety for both the patient and their family.[6]

According to Nath A and Garg S (2008), 64% of females have at least one menstrual-related issue.[7] In India, there are an estimated 87% of women who have menstrual disorders.[8] Due to their close relationship to the processes involved in a women's pubertal development, menstrual problems are common in adolescent girls.[9] Menstrual irregularity, menorrhagia, polymenorrhea, oligomenorrhea, dysmenorrhea, etc., are common forms of menstrual diseases. It has been shown that the majority of females struggle with one or more individualised issues. The most prevalent menstrual disorder in women is dysmenorrhea, which affects 60% to 93% of them.[10]

Changes in female sex hormones, heredity, major medical disorders, body mass index (BMI), lifestyle, and stress are a few of the many variables that frequently affect a woman's menstrual cycle's regularity and blood loss.[11] In most of the cases, young patients frequently seek medical attention for irregular menstrual periods.[12]

The prevalence of obesity has increased in the developed world as a result of dietary, lifestyle, and behavioral changes, which has lowered menarcheal age.[13]

Obesity is one of the major causes of mortality and morbidity in many illnesses and is developing as a major public health concern. Moreover, gynecological conditions such as infertility and irregular menstruation are more likely to occur in those who are obese.[14] Menstrual cycle duration, menstrual cycle irregularity, menstrual blood loss, and other irregularities are all part of these gynecological illnesses.[15,16] Despite the fact that various sex hormones also play a significant role in many diseases.[7] Obese women were said to have lengthier and more abnormal menstrual cycles.[15,16]

Menstrual disorders and associated symptoms are common issues that can significantly affect a woman's quality of life. Healthcare practitioners must know whether a link exists between BMI and these symptoms in order to give these patients with more specialized and individualized therapy. The study's findings offer insightful information that can improve healthcare procedures and assist physicians in providing greater assistance for young women managing their menstrual health and general wellbeing.

The aim of the study was to find out the prevalence of pre and post menstrual symptoms and to assess the relationship between pre and post menstrual symptoms and body mass index among females aged between 18-25 years.

LITERATURE REVIEW

Author(s)	Findings
Yunhui T, Yan C, Hua F, Chen Z, Mancy T, Qi C (2020)[11]	No variations in menstrual cycles and menses among women in various body mass index (BMI) categories.
Binu T, Tripti S (2015)[5]	Association between the BMI and irregular menstrual cycle, oligomenorrhea, polymenorrhea and hypomenorrhea
Begum J, Hossain A M, Nazneen S A (2009)[28]	Prevalence of dysmenorrhea and menstrual irregularity was high, and most adolescents have inappropriate and insufficient information about menstrual problems.
Mahboobeh K A, Zahra M D, Leila S, Mohammad A J, Zahra K T, Mohammad A (2019)[29]	Weight and measurements of the waist, hips, and arms were significantly correlated with the length of the menstrual cycle.
Rajsinh V Mohite, Vaishali R Mohite (2013)[30]	Menstruation disorders, menstrual cycle patterns, and mean age at menarche are frequently connected with poor nutritional status, anaemia, and low socioeconomic position
Saira D, Khashia S, Zara Y (2014)[12]	Overweight females had irregular periods.
Monika S, Om Prakash R, Raghavendra A H (2019)[31]	Menstrual cycle regularity is highly correlated with BMI.
Mostafa R, Marzieh T S, Zahra M D (2018)[32]	Some anthropometric indices associated with menstrual disorders in female high school students.
Rinasyah G, Lola I, Ryadi F (2015)[33]	BMI seems to be moderately associated with menstrual cycle, especially with

	menstrual period.
Seung E L, Joo Y Y, Ji H L, Han W K, Hae S K, Hye J L, et.al (2013)[34]	Menarcheal age have positive relationship with height and inverse relationship with BMI and waist circumference in late adolescent girls in Seoul.
Naeimeh T Zahra Y, Shahrzad Y, Saeedeh P, Marzieh A (2017)[35]	No significant associations were found with bleeding duration, amenorrhea, dysmenorrhea, or menstrual regularity.
Xinyu Zhou, Xin Yang (2020)[36]	Chinese women of childbearing age showed that obesity was associated with irregular menstrual cycle and oligomenorrhea
Mool Raj K, NaziyaNagori N, Deepa P, Tulika J, Anjali P (2015)[37]	Dysmenorrhea is found to be highly prevalent among college going girls.
Anupriya Agarwal, Annapoorna Venkat (2009)[38]	Adolescent menstrual problems are common and a significant source of morbidity in this population.
Mostafa R, MarziehT S, Zahra M D (2018)[39]	Association connection between PMS and various anthropometric measurements such as BMI, hip circumferences and the factors like food intake, lifestyle
Malgorzata M, Grazyna J B, Ewa J, Witold K (2019)[40]	PMS is more frequent in patients with BMI < 25, and less frequent in patients with higher fat mass (kg and %).
Saba W M, Tilahun A, Jeannette S P (2005)[41]	BMI is strongly correlated with PMS.

METHODOLOGY

A total of 100 females aged 18 to 25 years volunteered to participate as subject in this observational study according to the inclusion and exclusion criteria. The descriptive data like name, age, weight, height, hip waist ratio and abdominal circumference were collected from each subject after initial brief explanation of the study and written informed consent. Informed consent was secured from the subjects before the initiation of data collection. The subjects were selected for the study by using a questionnaire. The height of the subject was measured by standing in anatomical position in front of the wall, below the stature meter. Stature meter is placed on the wall then it extended till the subject head, then reading was taken from the stature meter display. The weight was measured by using a weighing machine and the BMI of the subjects were calculated Female who experienced symptoms in pre and post phases of menstruation, Age between 18-25 years, Unmarried girls were included. Females who were undergoing medication for menstrual disorders, underwent genital tract surgery, chemo or radiotherapy, who were on oral contraceptive pills (PCOS treatment) and with endocrinological disorders were excluded from the study.

Outcome Measures:
A) **Numeric Pain Rating Scale:** A unidimensional measure of pain intensity in adults is the Numeric Pain Rating Scale (NPRS), which is considered an outcome measure.[17,18,19] The NPRS is a segmented numerical version of the VAS in which the respondent selects a whole number (0–10 integers) that best expresses the degree of their pain.[19] A horizontal bar or line is the common format. The 11-item NPRS is the most often utilised.[20] The 11-point numeric scale goes from "0" for "no pain" (indicating the least amount of pain conceivable) to "10" for the "worst pain" (representing the severe of pain).[18,19] Ratings can range from zero to 10, with higher values denoting more severe pain.[20] No pain (0), mild (1-3), moderate (4-6), severe (7-10).

B) **Body mass index:** The participants' weight was recorded using a weighing scale while wearing just light clothes, and they were barefoot, the subjects' height was determined using a stature meter with their heels, hips, shoulders, and head in a neutral posture. BMI was determined by dividing body weight in kilograms by body height in square meters (kg/m^2). WHO categorize BMI as underweight (<18.5), normal weight (18.5-24.9), overweight (25.0-29.9), and obese (>30).[21]

C) **Waist hip ratio:** By dividing the waist circumference by the hip circumference, the waist hip ratio was obtained. With the respondent standing, the waist circumferences were measured using a flexible tape. In women, the narrowest

part of the body between the chest and the hips was measured as the waist circumference. The maximal circumference around the buttocks posteriorly at the level of the greater trochanters (hip bones) was measured in centimeters to determine the participant's hip circumference.[22] For women, the WHO recommends cut-off points for waist circumference of 80 cm and WHR cut-off values of 0.80, where a greater ratio denotes an elevated risk of numerous health issues.[23]

D) **Abdominal circumference:** Abdominal circumferences assessment will be executed by the subject should stand on a flat surface with feet no more than shoulder width apart. The measurement will be taken on bare skin, by placing the bottom of the tape at the top of the iliac crest. Tape should be place horizontally around the abdomen. Measurement will be taken at the end of the subject's normal exhalation.[24]

E) **Pre and post menstrual symptoms evaluation questionnaire:** Pre and post menstrual symptoms evaluation questionnaire is a pre designed questionnaire for this study which including 25 questions regarding demographic data and pre and post menstrual symptoms. The questionnaire consisted of age, residential address, age of menarche, use of contraceptives and menstrual product , presence of symptoms like menstrual pain, genital rashes, vaginal irritation, genital redness and unusual vaginal discharge, date of last menstrual period, details of menstrual cycle, including cycle length and number of days the period lasts, presence or absence of dysmenorrhea, oligomenorrhea, amenorrhea, menorrhagia, premenstrual symptoms such as headache, giddiness, leg cramps, vomiting, diarrhoea, vaginal discharge, breast tenderness, mood changes and abdominal cramps, were noted.

STATISTICAL ANALYSIS
Data were analyzed using SPSS version 23.0(IBM Corporation, Armonk, NY, USA). Descriptive statistics (frequency, percentage, mean and standard deviation) were used to describe the quantitative and categorical variables. Association between pre and post menstrual symptoms and body mass index was assessed using Chi square test. A p- value <0.05 was considered statistically significant.

RESULTS
Among a cohort of 100 students, all were married. In this group, 42% were under the age of 20, while 58% were 20 years old or older. The average age of the respondents was 20.08 ± 1.77 years, with a mean age of menarche at 13.22 ± 1.14 years. The mean waist-to-hip ratio was 0.74 ± 0.49, abdominal circumference (AC) was 31.25 ± 3.42 inches, and the Numerical Pain Rating Scale (NPRS) was 7.05 ± 1.63 (Table 1).

According to the results of the present study, 80% had regular periods, 70% had a menstrual cycle length of 25 to 30 days, 90% had 4 to 7 days of menstrual flow. All participants experienced menstrual pain, with 60% reporting always experiencing pain and 40% sometimes. Concerning menstrual leave, 4% of the participants reported not attending class and 50% reported taking leave sometimes.

The menstrual hygiene products commonly used were 84% using a single pad, 10% using a menstrual cup and a single pad, 4% using a menstrual cup, and 2% using tampons, pads, and more than one underwear. Regarding the number of pads used, the majority (52%) used three to five pads per day.

Concerning pre-post menstrual symptoms, 90% of the participants did not undergo any treatment, 2% opted for allopathic treatment, and 8% chose homeopathic remedies. Additionally, 10% were under hormonal treatment. For managing pre-menstrual symptoms, 22% reported taking painkillers, while 8% used a combination of painkillers and natural remedies. In terms of

other health conditions, 6% of the participants had PCOD, 2% were hypotensive, and 4% were anemic. Ninety-six percent did not seek treatment for other diseases they had (Table 2).

The report indicates that among pre-menstrual symptoms, 66% experienced abdominal cramps, followed by 60% with mood swings, 46% with leg cramps, 32% with breast tenderness, 24% with vaginal discharge, 18% with headaches, 14% with vomiting, 10% with dizziness, 4% with diarrhea, and 10% had other problems. In post-menstrual symptoms, 96% reported dysmenorrhea, 24% experienced menorrhagia, 20% had oligomenorrhea, and 4% had amenorrhea (Table 3). And also found there was no significant association between BMI and pre-post menstrual symptoms with p>0.05 (Table 4)

Table 1: General characteristics of the participants

Demography	Categories	Frequency (%)/ Mean ± SD
Age	<20 years	42%
(Present)	>=20 years	58%
Marital status	Single	100%
Age	At menarche	13.22±1.14
Waist hip ratio	Ratio	0.74±0.49
AC	Inches	31.25±3.42
NPRS	Grade	7.05±1.63

Table 2: Menstrual pattern, disorder and medication of the participants

1.Menstrual hygiene product	%	6. pre-post menstrual Treatment for symptoms	%
Single use pad	84	No	90
Menstrual cup	4	Allopathic	2
Single use pad and menstrual cup	10	Homeopathy	8
tampons, pads and more than 1 under wear	2	**7.Currently hormonal treatment**	**%**
2.Number of pads/days	**%**	Yes	10
nil	2	No	90
one to two	40	**8.Other disease**	**%**
three to five	52	PCOD	6
more than 5	6	Hypotensive	2
3.Regularity of periods	**%**	Anemia	4
Yes	80	No	88
No	6	**9.Treatment for other disease**	**%**
Irregular for a few months	14	No	96
4.Menstrual cycle Length	**%**	Iron tablet	2
<25 days	2	Medication	2
25 to 30 days	78	**10.Medication for premenstrual symptoms**	**%**
More than 30 days	20	Pain killer	22
5.Duration of menstrual flow	**%**	Nothing	70
<4 days	2	Pain killer and natural remedy	8
4 to 7 days	90		
>7 days	8		

Table 3: Pre-post menstrual symptoms

Pre-Symptoms	Frequency (%)	Post symptoms	Frequency (%)
Head ache	18	Oligomenorrhea	20
Giddiness	10	Amenorrhea	4
Leg cramps	46	Menorrhagia	24
Abdominal cramps	66	Dysmenorrhea	96
Vomiting	14		
Diarrhea	4		
Vaginal discharge	24		
Breast tenderness	32		
Mood swing	60		
Others	10		

Table 4: Association between BMI and pre-post menstrual symptoms

	Symptoms	Categories	BMI								Chi square	p value
			Under weight (22)		Normal (64)		Over weight (8)		Obese (6)			
			f	%	f	%	f	%	f	%		
Pre	Leg cramps	Absent	12	22.2	38	70.4	2	3.7	2	3.7	4.487	0.213
		Present	10	21.7	26	56.5	6	13	4	8.7		
	Abdominal	Absent	6	17.6	22	64.7	4	11.8	2	5.9	1.326	0.715

cramps	Present	16	24.2	42	63.6	4	6.1	4	6.1		
Vaginal discharge	Absent	14	18.4	52	68.4	4	5.3	6	7.9	7.67	0.053
	Present	8	33.3	12	50	4	16.7	0	0		
Breast tenderness	Absent	14	20.6	42	61.8	6	8.8	6	8.8	3.362	0.339
	Present	8	25	22	68.8	2	6.3	0	0		
Mood swing	Absent	12	30	26	65	0	0	2	5	7.394	0.060
	Present	10	16.7	38	63.3	8	13.3	4	6.7		
Head ache	Absent	20	25	52	65	4	5	4	5	6.866	0.076
	Present	2	10	12	60	4	20	2	10		
Leg cramps	Absent	16	21.1	50	65.8	4	5.3	6	7.9	5.147	0.161
	Present	6	25	14	58.3	4	16.7	0	0		
Abdominal cramps	Absent	2	50	2	50	0	0	0	0	2.196	0.533
	Present	20	20.8	62	64.6	8	8.3	6	6.3		
Post Oligomenorrhea	Absent	20	25	52	65	4	5	4	5	6.668	0.079
	Present	2	10	12	60	4	20	2	10		
Menorrhagia	Absent	16	21.1	50	65.8	4	5.3	6	7.9	5.147	0.161
	Present	6	25	14	58.3	4	16.7	0	0		
Dysmenorrhea	Absent	2	50	2	50	0	0	0	0	2.196	0.553
	Present	20	20.8	62	64.6	8	8.3	6	6.3		

DISCUSSION

One of the most significant changes that occurs during adolescence is menstruation. It continues to be a typical physiological event from menarche to menopause and happens once a month as a regular rhythmic cycle. Adolescent girls need to understand the menstrual cycle and the variables that may contribute to menstrual problems or changes, such as age, activities, and BMI, since they are thought to be indicators of women's health. It is essential to improve their knowledge of menstruation, how to handle it properly, and how to address their ignorance of menstrual health concerns.[25]

Menstrual cycle: The normal menstrual cycle is a complex, highly regulated physiological process. It begins with the release of Gonadotropin-releasing hormone (GnRH) from the hypothalamus, stimulating the anterior pituitary to produce luteinizing hormone (LH) and follicle-stimulating hormone (FSH). This process is influenced by various neurotransmitters like dopamine and endogenous opioids. During puberty, GnRH pulses increase in both amplitude and frequency, leading to the development of secondary sexual characteristics and the initiation of the menstrual cycle. The cycle operates under a "negative feedback loop" where elevated estrogen levels inhibit GnRH, preventing continuous hormone release. However, a "positive feedback loop" develops later in puberty, where critical levels of estrogen stimulate GnRH pulses, triggering the LH surge and ovulation. The follicular phase of the menstrual cycle is marked by FSH-driven follicular development and estrogen production. When estrogen reaches a threshold, it causes the LH surge, initiating ovulation. Post-ovulation, a corpus luteum forms, producing progesterone to prepare the uterine lining for potential implantation. If implantation doesn't occur, the corpus luteum regresses, progesterone drops, and the endometrium is shed, resulting in menstruation. This menstrual bleeding stops due to the constriction of spiral arterioles. The luteal phase typically lasts around 14 days. Variations in this cycle can lead to menstrual irregularities, influenced by factors such as stress or hormonal imbalances. Understanding this physiology is crucial for comprehending menstrual cycle variations during adolescence and adulthood.

Pre-menstrual symptoms pathophysiology:
Premenstrual syndrome's pathogenesis is complex, unclear and not much understood. It is hypothesized that progesterone's effects on neurotransmitters such as gamma-aminobutyric acid (GABA), opioids, serotonin, and catecholamine would have an impact on PMS. Another theory for the cause of this condition is a preexisting serotonin deficit with enhanced progesterone sensitivity.[26] PMS is caused by an increase in prolactin levels or a

sensitivity to the effects of prolactin, changes in glucose metabolism, aberrant hypothalamic-pituitary-adrenal (HPA) axis function, insulin resistance, certain dietary electrolyte shortages, and hereditary factors.[81]Stress increases sympathetic activity, which causes menstruation discomfort by sharply increasing the force of uterine contraction.[27]

Post-menstrual symptoms pathophysiology:

Oligomenorrhea, irregular or infrequent menstrual periods, results from hormonal imbalances and disruptions in the complex menstrual cycle regulation. Estrogen and progesterone orchestrate this cycle, and deviations can lead to irregular periods. Conditions like Polycystic Ovary Syndrome (PCOS) involve hormonal imbalances and insulin resistance, affecting ovarian function. Structural issues like uterine fibroids or polyps alter the uterine environment and disrupt menstrual flow. Chronic stress raises cortisol levels, impacting the hypothalamus-pituitary-ovarian axis, causing irregular periods. Lifestyle factors such as excessive exercise and weight loss affect body fat and hormonal production. Additionally, medications, contraceptives, and underlying medical conditions can contribute to oligomenorrhea.

Menorrhagia, excessive menstrual bleeding, arises from hormonal imbalances, notably elevated estrogen levels relative to progesterone, causing the uterine lining to thicken excessively. Structural issues like fibroids or polyps within the uterus disrupt normal menstruation. Blood clotting disorders or medications that affect clotting can lead to prolonged and heavy bleeding. Infections or inflammation in the reproductive organs may also hinder the regular shedding of the uterine lining. Lifestyle factors such as stress, rigorous physical activity, or certain medications can further exacerbate menorrhagia.

Amenorrhea, the absence of menstrual periods in women of reproductive age, results from diverse physiological factors. Hormonal imbalances, as seen in conditions like polycystic ovary syndrome (PCOS), disrupt the hormone signals crucial for menstruation. Chronic stress triggers cortisol production, affecting gonadotropin-releasing hormone (GnRH) release in the hypothalamus, leading to amenorrhea. Excessive exercise and extreme weight loss reduce estrogen production due to low body fat, causing menstrual irregularities. Structural issues in the reproductive system, medications, and medical conditions like thyroid disorders can also contribute to amenorrhea.

Dysmenorrhea, or painful menstruation, is primarily attributed to uterine muscle contractions. During menstruation, the uterine lining sheds, triggering the release of prostaglandins. Excessive prostaglandin production causes increased uterine muscle contractions, leading to ischemia (inadequate blood supply) in the uterine tissue. This lack of oxygen results in pain and cramping sensations. Additionally, prostaglandins can affect other organs, causing symptoms such as nausea and diarrhea. Hormonal imbalances and structural abnormalities in the uterus may also contribute to dysmenorrhea.

In this present study, out of the 100 adolescent girls 64% of the subjects belongs to normal weight distribution, 22% were under weight, 8% were overweight and 6% were obese. This is similar to study done by Binu Thapa, Tripti Shrestha. In Nepal (2015), where 253 teenage females were surveyed, and 61.3% of respondents were in the normal weight range, 22.9% were underweight, and 15.8% were overweight.[5]

In our study mean age of menarche is 13.22 years with standard deviation of 1.14 years. Which is almost similar to the study which is conducted to determine to evaluate the effect of Body Mass Index and nutritional status on the menstrual pattern in adolescent girls, in Pakistan (2014), which reported age of menarche was 16, with the mean age of 12.92 years and SD of 1.41 years.[12]

In response to the regularity of periods, our study revealed that out of 100 females, 80% had regular periods, while 14% experienced menstrual irregularities for a few months. Regarding the menstrual cycle length, among 100 respondents, 39% had a menstrual cycle length of 25 to 30 days, and only one had a cycle length of less than 25 days.

Regarding the duration of menstrual flow, 90% of the respondents reported an average duration of 4 to 7 days. The calculation of menstrual flow was based on the number of sanitary pads used per day, categorized as scanty, average, and heavy (1-2, 3-5, and >5 sanitary pads per day, respectively).[9] According to this classification, our study found that 52% had an average flow, 40% had a scanty flow, and 6% had a heavy flow.

In this study prevalence of pre-menstrual symptoms, such as abdominal cramps, mood swings, leg cramps, breast tenderness, vaginal discharge, headache, vomiting, giddiness, other symptoms and diarrhea was 66%, 60%, 46%, 32%, 24%, 18%, 14%, 10%, 10%, and 4% respectively. This shows majority of the adolescent facing abdominal cramps as their pre-menstrual symptoms.

In our study we evaluated post menstrual symptoms within the 100 sample, which shows majority of the participants (96%) experiencing dysmenorrhea, 24% have menorrhagia, 20% have oligomenorrhea, only 4% of respondents have amenorrhea, which is almost contrast to the study conducted by Binu Thapa, Tripti Shrestha in Nepal among 253 subjects (2015).[5] in our study most of the respondents (96%) disclosed that they had dysmenorrhea as the common post menstrual symptom with various degree of severity, in which most of them has moderate to severe range of pain according to the NPRS scale.

Limitations & Suggestions: In this study with smaller sample size, we found that pre and post menstrual symptoms are not significantly associated with the categories of BMI. This is similar to the study in Nepal (2015), by Binu Thapa and Tripti Shrestha where they found that there is no statistically association between the BMI and menorrhagia, secondary amenorrhea, metrorrhagia, dysmenorrhea and severity of dysmenorrhea.[5] It is possible to do a similar study with more participants in a different place Due to the lack of sufficient underweight, overweight, or obese participants, this study was unable to determine the occurrence of menstrual problems in adolescents. All menstrual related data were self-reported by using questionnaire, which may induce bias, in particular in recalling the number of pads used during menses, duration of the menstrual flow etc.

CONCLUSION

The study findings suggest that a significant proportion of adolescents experience pre and post-menstrual symptoms, with dysmenorrhea being a prevalent issue, But BMI did not show a statistically significant association with these symptoms. These insights underscore the importance of comprehensive menstrual health education and support for adolescents to address their unique needs and experiences.

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