

# A Prospective Investigation Evaluating the Relationship between Body Mass index and Menstrual Irregularities in Women Aged 20-40 Years

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## Abstract

**Aim:** To study of association of body mass index and menstrual disturbances in women aged 20-40 years.

**Methods:** A prospective study was conducted in the Department of Obstetrics and gynaecology, AIIMS, Deoghar, Jharkhand, India for 10 months. Total 100 patients age ranging from 20-40 yrs presenting with history of menstrual irregularities were included.

**Results:** Majority of patients belong to the age group of 30-40yrs- 70 % and the rest belong to the age group 20-30yrs. In our study majority of our patients were multiparous patients 75% and 25% patients were nulliparous. Our study had no patients who were morbidly obese. Menstrual disturbances and pain abdomen was the two symptoms as presenting complaints. In menstrual disturbances, increased frequency of cycles was the highest with 9 patients. Next was heavy menstrual bleed with 7 patients. Decreased frequency with menorrhagia, intermenstrual bleed and continuous bleed had the same number of patient distribution of 4. Abdominal pain was observed by 32 patients with back ache also being the most common symptom. Other uncommon symptoms were nervousness, depression and anxiety. Majority of patients had menarche after 12yrs. 30 patients had recent history of onset of symptoms from 3mths. Out of 100 cases anaemia was present in 40 patients.

**Conclusion:** BMI plays a very important role in menstrual cycle regulation. Lifestyle modifications and nutritional counseling could decrease the incidence of menstrual irregularities. Healthy eating habits and maintaining optimal BMI improves menstrual health.

**Keywords:** BMI, Menstrual Irregularities, Menarche.

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## Introduction

Menstruation is a natural phenomenon involving the discharge of blood from the uterus through the vagina, occurring at more or less regular monthly intervals during the reproductive life of females[1] Normal menstruation first occurs in adolescents between 11 and 14 years of age,

with a period length of 7 days or less, and a normal cycle length of 21 to 45 days with average blood loss of 20-80ml[2] There are various types of menstrual disorders, including dysmenorrhea, premenstrual symptoms, menorrhagia, polymenorrhea, abnormal vaginal bleeding, amenorrhea, oligomenorrhea, and irregular

menstruation[3] Studies have shown that a large proportion of the female population of reproductive age suffers from menstruation-related health issues[4,6] Menstrual problems not only carry an economic burden but are also one of the most common causes of absenteeism and poor academic performance among young females[7,9]

Dysmenorrhea is one of the most prevalent menstrual problems during adolescence[5,7] and can even cause patients to become bed-ridden[10] A review by Devis et al[11] showed that, 20-90% of adolescent girls reported dysmenorrhea, and almost 15% of those experienced severe dysmenorrhea. Another menstrual problem that can affect Patients's daily activities is premenstrual syndrome (PMS). In a systematic review, the pooled prevalence of PMS was found to be 47.8%[12] Menstrual disorders such as menorrhagia, abnormal uterine bleeding, and polymenorrhea contribute to almost 12% of gynecology referrals, and are usually associated with a very high chance of surgical intervention[13] Coulter et al[14] reported that 60% of patients underwent a hysterectomy within 5-years of a referral for menorrhagia.

Menstrual patterns can be affected by a number of factors, including age, ethnicity, family history, smoking, physical activity, and dietary habits[15] Stress can be a major contributor to, or cause of menstrual irregularities, and an association has been

documented between stress and various menstrual irregularities including menorrhagia, oligomenorrhea, dysmenorrhea, and PMS[16,17] In addition, a high incidence of menstrual problems has been observed in students studying medicine and health sciences[6] The majority of health science students reported that they are under continuous and chronic academic stress related to their studies and exams, resulting in negative health outcomes, including menstrual problems in females[18]

### Materials and methods

A prospective study was conducted in the Department of Obstetrics and gynaecology, AIIMS, Deoghar, Jharkhand, India for 10 months.

### Inclusion criteria

- 100 patients were included in the study. Patients with age ranging from 20-40yrs, coming to gynaec OPD with presenting history of menstrual irregularities were included.

### Exclusion criteria

- Patients with normal cycles, pregnancy were excluded.

Data regarding age, marital status, parity, symptoms, menstrual history, obstetric history, examination, co morbidities, investigation findings, associated pathology and treatment modality were noted.

## Results

**Table 1: Age Distribution**

Age in years	No.	%
20-30yrs	30	30
30-40yrs	70	70

Majority of patients belong to the age group of 30-40yrs- 70 % and the rest belong to the age group 20-30yrs. In our study majority of our patients were multiparous patients

75% and 25% patients were nulliparous. Lower socio-economic status had 70% in the group. 20% in middle and 10% in upper socio-economic status.

**Table 2: Body Mass Index**

Body Mass Index	No.	%
18.5 (underweight)	10	10
18.5-24.9 (normal weight)	20	20
25- 29.9 (overweight)	66	66
30-39.9 (obesity)	4	4
>40 (morbid obesity)	-	

Overweight category had the maximum patients of 66, with 20 normal weight patients. 10 patients were under weight.

Our study had no patients who were morbidly obese.

**Table 3: Menstrual Disturbances**

Menstrual Disturbances	No.	%
Heavy menstrual bleeding	7	7
Increased frequency of cycles	9	9
Intermenstrual bleeding	4	4
Continuous bleeding PV	5	5
Decreased frequency with menorrhagia	4	4
Post-menopausal bleeding	1	1
Amenorrhoea f/b menorrhagia	1	1
Post coital bleeding	1	1
Spotting PV	1	1

**Table 4: Pain**

Pain	No.	%
Congestive dysmenorrhea	4	4
Spasmodic dysmenorrhea	4	4
Continuous pain	6	6
Dyspareunia	5	5

Menstrual disturbances and pain abdomen were the two symptoms as presenting complaints. In menstrual disturbances, increased frequency of cycles was the highest with 9 patients. Next was heavy menstrual bleed with 7 patients. Decreased

frequency with menorrhagia, intermenstrual bleed and continuous bleed had the same number of patient distribution of 4. Less common symptom was spotting pv, amenorrhoea followed by bleeding, post coital bleed and post-menopausal bleed.

**Table 5: Pre Menstrual-Syndrome**

Pre-Menstrual syndrome	No.	%
Back ache	25	25
Abdominal pain	32	32
Anxiety	4	4
Nervousness	5	5
Depression	3	3

In pain abdomen, continuous pain was the most common with dyspareunia and dysmenorrhea

Abdominal pain was observed by 32 patients with back ache also being the most common symptom. Other uncommon symptoms were nervousness, depression and anxiety

Majority of patients had menarche after 12yrs. 30 patients had recent history of

onset of symptoms from 3mths. Maximum patients had symptoms from one year. Very few of them had from 2 yrs

Out of 100 cases anaemia was present in 40 patients. 12 patients having severe anaemia who had blood transfused. Mild and moderate anaemia were treated with multiple doses of iron sucrose injection. D & C, Done for 57 patients out of 100 patients.

**Table 6: Endometrium report**

Endometrium	No.	%
Secretory	32	32
proliferative	22	22
Hyperplastic	3	3

Normal cervix was found in most of the patients. Cervical fibroid, polyp was seen in few patients.

60 patients had normal uterus whereas 40 patients had fibroid or adenomyosis as the USG finding. Patients with high BMI had high rate of menstrual disturbances. Whereas 30 patients with normal BMI also had menstrual complaints.

### Discussion

Majority of patients belong to the age group of 30-40yrs- 70 % and the rest belong to the age group 20-30yrs. Similar association was seen in G. Warrilow et al. study.[19] Alpana et al. study stated that incidence of menstrual disturbances increases with parity as seen even in the present study showing 75% parous patients having menstrual disturbances[20] As found in our study, menstrual disturbances are commoner among upper class due to obesity and lower class due to malnutrition. This correlation was found in Hawai et al. study[21]

Increase in BMI is a risk factor for menstrual disturbances due to the excess production of estrogen. Overweight category had the maximum patients of 66, with 20 normal weight patients. 10 patients were under weight. Our study had no

patients who were morbidly obese. Similar correlation was observed in Hamdy et al. study[22]

Commonest presenting complaint was polymenorrhagia in our study. This result was also found in Moghal et al. study[23] There was a positive correlation noted between PMS and High BMI as also seen in Lu Z et al. study[24] 60 patients had normal uterus whereas 40 patients had fibroid or adenomyosis as the USG finding. Vercillin et al., study also had the same pathology as commonest[25] D&C is done for patients having acyclical bleeding / if medical therapy fails, hence only 57% had the procedure done. Similar management was observed in Kate D C et al study[26].

### Conclusion

BMI plays a very important role in menstrual cycle regulation. Lifestyle modifications and nutritional counselling could decrease the incidence of menstrual irregularities. Healthy eating habits and maintaining optimal BMI improves menstrual health.

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