



ORIGINAL RESEARCH PAPER

Physiology

MENSTRUAL PATTERN AMONG FEMALE MEDICAL STUDENTS IN RELATION TO BMI IN FAAMCH, BARPETA, ASSAM.

KEY WORDS: BMI, menstrual pattern, PCOS

Dr. Dipti Bania

Associate professor Physiology, FAAMCH, Barpeta.

Dr. Rashmi Rekha Goswami*

Assistant professor Pathology, FAAMCH, Barpeta *Corresponding Author

ABSTRACT

Objective: To determine menstrual pattern and disorder associated with it among female medical students in relation to BMI.
Methods: Four hundred fifty medical college students from Fakhruddin Ali Ahmed Medical college, Barpeta district were selected. The data was collected by individual interviewing using a pre-designed pre-tested questionnaire. BMI (body mass index) was calculated using the formula: $BMI (kg/m^2) = Weight (kg) / Height^2 (m^2)$. The result was analyzed using the software SPSS11.0.
Result and observation : The mean age of the girls was 19.36 (ranging from 18 -22years). The age of menarche did not show any significant relationship with menstrual pattern. Three hundred and ninety (86.67%) of the girls had a regular menstrual cycle. Current study shows a statistically significant relationship between BMI and menstrual pattern ($P < 0.05$)
Conclusion : Majority of the girls had a normal menstrual pattern, normal BMI and attained menarche before the age of 16. Maintenance of optimum BMI is very important for improvement of menstrual health.

Introduction-

Body weight is an indication of overall health. Among all the biometric health markers body weight is one that can be regularly self monitored. Both weight loss and weight gain have been shown to influence menstrual cycle regularity. This is because change in weight may lead to changes in hormonal levels including oestrogen and progesterone.

Menstrual cycle is a determinant of a women's reproductive health. Disorders in cycles or its irregularities are a major gynecological problem among female adults especially adolescent and a major source of anxiety to them and their family. Being overweight or obese is also a risk factor for Polycystic ovarian syndrome(PCOS). Weight gain is a symptom as well as a risk factor for PCOS

Information on a women's menstrual pattern will aids in clinical evaluation of gynecological problems and will make womanhood easier for adolescent women and adults (Harlow and Campbell, 2004). Dysmenorrhea is the major cause of activity restriction and college absence in adolescent girls. However, this condition is often considered as physiological pain and ignored by adolescents; and only few adolescents need to consult a physician for menstrual pain (Begum et al., 2009). Delayed, irregular, painful, and heavy menstrual bleeding are leading reasons for physician office visits by adolescents (Arkutu, 1995).

The age of menarche is determined by general health, genetic, socio-economic and nutritional factors. The mean age of menarche is typically between 12 and 13 years.^{4,5} The initial cycles after menarche are often irregular with a particularly greater interval between first and second cycle. The early menstrual cycles are thought to be anovulatory, with frequency of ovulation being related to time since menarche and age at menarche.⁶

Most women bleed for 2 to 7 days during their first menses⁷. Most normal cycles range from 21 to 45 days, despite variability even in the first gynecologic year, although short cycles of fewer than 20 days and long cycles of more than 45 days may occur. By the third year after menarche, 60% to 80% of menstrual cycles are 21 to 34 days long, as is typical of adults.^{7,8} BMI as classified by WHO describes having $<16kg/m^2$ as severe underweight, $16.0 - 16.9kg/m^2$ as moderate underweight and $17.0 - 18.49kg/m^2$ as mild underweight. Normal BMI range is $18.5 - 24.99 kg/m^2$. Anything $> 25 kg/m^2$ is considered to be overweight, with $25 - 29.99 kg/m^2$ being classified as pre-obese and $>30 kg/m^2$ as obese. This cross-sectional study was conducted to determine: (i) the patterns of menstrual cycles associated with the age of menarche; (ii) the frequency of menstrual disorders; menstrual irregularity, dysmenorrhea and prolonged menstrual bleeding; and (iii) the

effect of BMI on menstrual pattern . Study had been conducted among female medical students of Fakhruddin Ali Ahmed Medical College.

Material and method- The current study was a cross sectional study carried out between June 2016 to January 2018. The study was conducted in Barpeta district, Assam, India, where a total of four hundred and fifty female medical college students from Fakhruddin Ali Ahmed Medical College and Hospital were selected. Questionnaires were distributed among the girls. The data was collected by individual interviewing using a pre-designed pre-tested questionnaire.

The questionnaire consisted of age, residential address, fathers occupation and income, age of menarche, details of menstrual cycle, including cycle length, number of days the period lasts, menstrual flow (i.e. scanty, normal or heavy), presence or absence of dysmenorrhea, premenstrual symptoms such as headache, giddiness, leg cramps and abdominal cramps, and any other symptoms such as diarrhea or vaginal discharge were noted. Clinical examination was conducted at the same time by the trained medical staff. All those who were married, had primary or secondary amenorrhea, and genital tract surgery, chemo or radiotherapy or was on oral contraceptive pills (OCP) were excluded. Height and weight was also measured. BMI (body mass index) was calculated using the formula: $BMI (kg/m^2) = Weight (kg) / Height^2 (m^2)$.

The result was analyzed using the software SPSS11.0.

Result and observation:

A total of four hundred and fifty girls participated in the study. The mean age of the girls was 19.36 (ranging from 18 -22years). The socioeconomic status was determined by their father's occupation and monthly income. 46% of the fathers worked in the public sector and 30% worked in the private sector, 14% did not mention about father's occupation

All the girls had experienced menarche by the age of 16 years. None of the girls had primary amenorrhea. The age menarche did not show any significant relationship with menstrual pattern.

Three hundred and ninety (86.67%) of the girls had a regular menstrual cycle of 3-7/ 26 – 31 days with normal flow . Among these girls with regular cycle 89(22.8%) complained of dysmenorrhea, 28 girls had heavy flow, 5 had scanty flow and others had normal flow. Sixty girls(13.33%) had irregular cycle of infrequent pattern (45-60 days cycle). 17 (28.33%) girls amongst them complained dysmenorrhea and none of them had heavy flow. But 4 girls complained of scanty flow, while other had normal flow.

Table I : Menstrual patterns amongst the subjects in relation to BMI.

Pattern of menstruation	BMI(14-24.9 Kg/m ²)	BMI (25-29.9 kg/m ²)	BMI > 30 kg/m ²
Regular (n=390)	340 (87.17%)	39(10%)	11(2.82%)
Irregular(n=60)	44(73.33%)	14(23.33%)	2(3.33%)

Table II : Relationships between mean age, mean age of menarche with BMI amongst the subjects, having both regular and irregular menstrual pattern.

Menstrual pattern	Mean Age	Mean age of menarche	Mean BMI
Regular	19.32 (max-22, min -18)	12.01(max 15, min 9)	21.69 (±3.42)
Irregular	19.48(max 21, min 18)	12.1(max 15, min 9)	23.50(±4.44)

Table III the relationship between the mean BMI and pattern of menstruation.

Menstrual pattern	Regular	Irregular	P value	Significance at P< 0.05
Total no-450	390	60		
Mean BMI	21.69 (± 3.42)	23.50(±4.44)	.000267	Significant

Discussion:

Current study concluded that there was a statistically significant relationship observed between BMI and menstrual pattern. More numbers of students with high BMI had irregular menstruation. In the present study, the mean age at menarche of young girls was found to be 12.05 years, which is similar to other studies.⁹⁻¹³ All the girls in the present study attained menarche before the age of 16, therefore none had primary amenorrhoea. The menstrual flow, was found to be normal in three hundred twelve girls, while it was scanty in nine and heavy in twenty eight of the girls, in contrast to a study by Begum J et al¹⁰ which showed a higher percentage of girls to have scanty flow and lower percentage of those with heavy flow. Dysmenorrhoea is one of the commonest problems amongst our subjects, as reported by other researchers.^{14,15} In our study the age of menarche did not show any significant relationship with menstrual pattern.

Conclusion: Based on the result of current study it is found that there is a statistically significant relationship between BMI and menstrual pattern. Problems related to menstruation are quite frequent and often result in the interruption in daily work. So lifestyle modification, promotion of healthy eating habits and maintenance of normal and optimal BMI is very important among the girls to improve their menstrual health. It is of utmost importance that institutional authority should recognize these problem and can plan necessary steps regarding exercise schedule and health education amongst the students. Further research may be done in this field to find out various reasons for this trend.

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