Relationship between Body mass index and Menstrual irregularities among female students studying at Desh Bhagat University, Mandi Gobindgarh, and Fathegarh Sahib

Ms Karandeep Kaur
Department of Obstetrics and Gynecological Nursing, School of Nursing, Desh Bhagat University, Mandi Gobindgarh

ABSTRACT

Aim: A study to assess the relationship between Body mass index and menstrual irregularities among female students studying at Desh Bhagat University, Mandi Gobindgarh, and Fathegarh Sahib. **Method:** The descriptive co relational study was conducted in Desh Bhagat University, Mandi Gobindgarh. Data was collected from 287 female students studying at Desh Bhagat University, Mandi Gobindgarh. Out of them, 200 female students had menstrual irregularities. Self structured checklist was used to assess the menstrual irregularities and to check BMI weighing machine and measuring tape was used. **Result:** The occurrence of menstrual irregularities was (69%) among female students. Most of the female students had mild degree of menstrual irregularities (81%) and had normal BMI (71%) Coefficient of correlation showed that BMI had moderate degree of positive correlation with Menometorrhagia and BMI had high degree of negative correlation with Hypomenorrhea. Chi square showed that there is association between menstrual irregularities with selected demographic variables (Age Educational level, marital status, Family income and Age at menarche) and is there is association between BMI With selected demographic variables (Age Educational level, Marital Status, Duration of bleeding during menstrual cycle in days). **Conclusion**: Obesity is one of the important causes of irregular menstrual cycles. Hence there is a role for lifestyle modifications.

Key Words: BMI, Menstrual irregularities and Female students

INTRODUCTION

"Women are strong pillars in our society who have proved time and again that they can do anything they put their mind into"

Virginia Satire

Females suffer from many problems which disturbs their daily life. Menstrual irregularities are the one of them. Menstrual irregularities frequently affect the quality of life of females especially those who suffer dysmenorrhoea and heavy menstruation. Menstrual cycle irregularities have been found to occur with increased frequency in women who deviate considerably from normal weight. A number of studies have shown that higher obesity grades

were associated with higher probabilities of irregular pattern of menstrual cycles.

The World Health Organization Published study on prevalence and pattern of menstrual disorders among Lebanese nursing students conducted by **Karout, Hawai and Altuwaijri (2012).** Data was collected from 352 students by completing a written questionnaire. The study revealed that the most common menstrual disorders were irregular frequency of menstruation (80.7%), premenstrual syndrome (54.0%), irregular duration of menstruation (43.8%), dysmenorrhoea (38.1%), polymenorrhea (37.5%) and oligomenorrhea (19.3%).The conclusion of the study was that dysmenorrhoea and premenstrual symptoms were serious enough to affect daily activities or academic attendance in many cases and this is a concern for policy-makers.

Menstrual problems are generally perceived as only minor health concern and thus irrelevant to the public health agenda particularly for women in developing countries who may face life threatening condition. Some variety of menstrual dysfunction occurs in females which may affect normal life of adolescent and young adult women. Physical, Mental, Social, Psychological, Reproductive problems are often associated with menstrual irregularities and menstrual problems. Due to change in life style, habits, diet, the prevalence of obesity has increased in developed world which results in decreased age at menarche.

A study conducted by **Dars, Sayed and Yousufza (2014)** on 401 girls by trained medical undergraduate and postgraduates by interviewing adolescent school girls using a pre-designed pre-tested questionnaire to assess the relationship between menstrual irregularities to BMI and nutritional status in adolescent girl. Study revealed that there is a statistically significant relationship was found between BMI and social class, BMI and menstrual pattern. The study concluded that Majority of the girls (84%) had a normal menstrual pattern, normal BMI and attained menarche before the age of 16. Overweight girls had infrequent periods.

Studies have described medical and lifestyle factors associated with various menstrual cycle characteristics. Some variety of menstrual dysfunction occurs in adolescent girls that may affect normal life of adolescents and young adult women. The prevention of menstrual irregularity is therefore of considerable importance to all females and particularly for whom Body mass index are considered major factor.

OBJECTIVES

To determine the occurrence of menstrual irregularities among female students.

To identify the Body mass index of female students by using standardized weighing machine and measuring tape.

To find out the relationship between Body mass index and menstrual irregularities among female students.

To find out the association of menstrual irregularities with selected demographic variables.

To find out the association of Body mass index with selected demographic variables.

MATERIAL AND METHODS

The current study was descriptive corelational to find out the relationship between Body mass index and Menstrual irregularities among female students studying at Desh Bhagat University, Mandi Gobindgarh, and Fathegarh Sahib. The study was conducted at Desh Bhagat University where 200 female students selected from 287 female students after giving screening tool by using multistage sampling technique. Convince sampling technique (287 female students) was used to determine the occurrence of menstrual irregularities among female students and Purposive sampling technique (200 female students) was used to find out the relationship between Body mass index and menstrual irregularities among female students. The data was collected by using Demographic data profile sheet, Self- Structured Checklist, Clinical Performa for BMI assessment, Inch tape and weighing machine. The study was delimited to female students who were willing to participate and who were available at the time of data collection. Analysis of data was done by using descriptive and inferential statistics.

RESULTS

Table 1
Frequency and Percentage Distribution of Socio-Demographic Characteristics of Female Students

N=200

Demographic variables	Frequency (f)	Percentage (% age)
1.Age in years		
a. 17-20	107	53.5
b. 21-24	56	28.0
c. 25-28	36	18.0
d. 29-32	01	0.50
2. Educational level		
a. Diploma	47	23.5
b. Graduate	105	52.5
c. Post graduate	48	24.0
3. Marital status		
a. Married	14	07.0
b. Unmarried	186	93.0
4.Place of residence		
a. Urban	84	42
b. Rural	116	58
5.Family income (per month in rupees)		
a. Less than and equal to 5000	20	10

Demographic variables	Frequency (f)	Percentage (% age)
b. 5,001-10,000	44	22
c. 10,001-15,000	61	30.5
d. More than and equal to 15,001	75	37.5
6.Age at menarche (in years)		
a. 10-11	2	1
b. 12-13	38	19
c. 14-15	127	63.5
d. 16-17	33	16.5
7.Duration of menstrual cycle (in days)		
a. 17-20	12	6
b. 21-24	24	12
c. 29-32	130	65
d. 29-32	26	13
e. More than 32	8	4
8.Duration of bleeding during menstrual cycle (in days)		
a. 1-3	65	32.5
b. 4-6	131	65.5
c. 7-9	4	2
9.Life Style		
a. Sedentary	14	7
b. Active working	186	93
10.Dietary Pattern		
a. Vegetarian	163	81.5
b. Non vegetarian	37	18.5
11.Exercise/Activity/Sports involvement		
a. Daily	27	13.5
b. Twice a week	30	15
c. Thrice a week	28	14
d. No any specific pattern followed	115	57.5
12.Source of information regarding menstruation		
a. Book	45	22.5
b. Newspaper	10	5
c. Television	34	17
d. Mother	111	55.5

Table 2
Frequency and Percentage Distribution of Occurrence Menstrual Irregularities among Female Student

N = 287

Occurrence of menstrual irregularities	Frequency	%age
Presence of menstrual irregularities	200	69
Absence of menstrual irregularities	87	31

Table 3
Frequency and Percentage Distribution of Occurrence Menstrual Irregularities among Female Students

N=200

Level of menstrual irregularities	Frequency (f)	Percentage (%age)
Severe (7-8)	0	0
Moderate (4-6)	37	18.5%
Mild (1-3)	163	81.5%

Maximum score -8; Minimum score – 0

Table 4
Frequency and Percentage Distribution for BMI Score of Female Students

N=200

Category Score	Frequency (f)	Percentage(%age)
(Obese)> 30	02	1%
(Overweight)26-30	09	4.5%
(Normal)18.5-25	142	71%
(Underweight)< 18.5	47	23.5%

Table 5
Relationship between BMI and Menstrual Irregularities

N=200

Categories	Frequency	Mean	Relationship (r)
Dysmenorrhea	196	0.98	+0.09
Menorrhagia	80	0.40	-0.01
Metorrhagia	111	0.55	+0.166
Menometorrhagia	50	0.25	+0.28
Polymenorrhea	29	0.145	-0.09
Oligomenorrhea	23	0.115	-0.18
Hypomenorrhea	11	0.05	-0.816
Intermenstrual bleeding	22	0.11	-0.02

Range (r)
Low degree of correlation 0±0.25
Moderate degree of correlation 0.25±0.75
High degree of correlation 0.75±1

Table 5 depicts that there was low degree of positive correlation between dysmenorrhea and BMI(+0.09), low degree of negative correlation between Menorrhagia and BMI (-0.01),low degree of positive relation between metorrhagia and BMI(+0.166),moderate degree of positive relation between menometorrhgia (+0.28),low degree of negative relation between polymenorrhea and BMI(-0.09),low degree negative relation between oligomenorrhea and BMI(-0.18),high degree of negative relation between hypomenorrhgea and BMI(-0.816), low degree of negative relation between intermenstrual bleeding and BMI(-0.02).

Table 6
Association of Menstrual Irregularities with Selected Demographic Variables

N=200

Demographic variables	Frequency (f)	(χ^2)	Df
1.Age in years			
a. 17-20	107	13.96*	3
b. 21-24	56		
c. 25-28	36		
d. 29-32	1		
2. Educational level			

Demographic variables	Frequency (f)	(χ^2)	Df
a. Diploma	47	17.86*	2
b. Graduate	105		
c. Post graduate	48		
3. Marital status			
a. Married	14	14.91*	2
b. Unmarried	186		
4.Place of residence			
a. Urban	84	1.62	1
b. Rural	116		
5.Family income (per month in rupees)			
a. Less than and equal to 5000	20	9.05*	3
b 5,001-10,000	44		
c. 10,001-15,000	61		
d. More than and equal to 15,001	75		
6.Age at menarche (in years)			
a. 10-11	2	7.95	3
b. 12-13	38		
c. 14-15	127		
d. 16-17	33		
7.Duration of menstrual cycle (in days)			
a. 17-20	12	2.71	4
b. 21-24	24		
c. 29-32	130		
d. 29-32	26		
e. More than 32	8		
8.Duration of bleeding during menstrual cycle (in days)			
a. 1-3	65	3.08	2
b. 4-6	131		
c. 7-9	4		
9.Life Style			
a. Sedentary	14	0.75	1
b. Active working	186		
10.Dietary Pattern			
a. Vegetarian	163	2.68	1
b. Non vegetarian	37		
11.Exercise/Activity/Sports involvement			
a. Daily	27	2.28	3
b. Twice a week	30		
c. Thrice a week	28		

Demographic variables	Frequency (f)	(χ^2)	Df
d. No any specific pattern followed	115		
12.Source of information regarding menstruation			
a. Book	45	2.17	3
b. Newspaper	10		
c. Television	34		
d. Mother	111		

* Significant p□ 0.05

Table 6 depicts that there was significant association of following demographic variables Age, Educational level, Marital status, Family income and Age at menarche with menstrual irregularities among female students studying at Desh Bhagat University, Mandi Gobindgarh where as there was no significant association with Place of residence, Duration of menstrual cycle in days, Duration of bleeding during menstrual cycle in days, Life style, Dietary pattern, Exercise/Activity sports involvement and Source of information regarding menstruation with menstrual irregularities among female students studying at Desh Bhagat University, Mandi Gobindgarh.

Table 7
Association of BMI with Selected Demographic Variables

N=200

Demographic variables	Frequency (f)	(χ^2)	df
1.Age in years			
A .17-20	107	36.72	9
b. 21-24	56	*	
c. 25-28	36		
d. 29-32	1		
2. Educational level			
a. Diploma	47	27.94	6
b. Graduate	105	*	
c. Post graduate	48		
3. Marital status			
a. Married	14	8.45*	3
b Unmarried	186		
4.Place of residence			
a. Urban	84	3.56	3
b Rural	116		
5.Family income (per month in rupees)			
a. Less than and equal to 5000	20	9.39	9
b. 5,001-10,000	44		
c. 10,001-15,000	61		
d. More than and equal to 15,001	75		

Demographic variables	Frequency (f)	(χ^2)	df
6.Age at menarche (in years)			
a. 10-11	2	6.901	9
b. 12-13	38		
c. 14-15	127		
d. 16-17	33		
7.Duration of menstrual cycle (in days)			
a. 17-20	12	11.19	12
b. 21-24	24		
c. 29-32	130		
d. 29-32	26		
e. More than 32	8		
8.Duration of bleeding during menstrual cycle (in days)			
a. 1-3	65	41.31	9
b . 4-6	131	*	
b. 7-9	4		
9.Life Style			
a. Sedentary	14	0.97	9
b. Active working	186		
10.Dietary Pattern			
a. Vegetarian	163	6.23	3
b. Non vegetarian	37		
11.Exercise/Activity/Sports involvement			
a. Daily	27	6.46	9
b. Twice a week	30		
c. Thrice a week	28		
d. No any specific pattern followed	115		
12.Source of information regarding menstruation			
a. Book	45	7.08	9
b. Newspaper	10		
c. Television	34		
d. Mother	111		

*Significant p $\square$ 0.05

Table 7 depicts that there was significant association of following demographic variables Age Educational level, Marital Status, Duration of bleeding during menstrual cycle in days Whereas there was no significant association with Place of residence, Family income, Age at menarche, Duration of menstrual cycle in day, Life style, Dietary pattern Exercise/Activity sports involvement and Source of information regarding menstruation.

DISCUSSION

This study finding indicated that majority of female students 163 (81.5%) had mild level of menstrual irregularities followed by moderate 37 (18.5%) and no one had severe level of menstrual irregularities. These findings were consistent with the findings of **Barcelos, Zanini and Santos (2013)** who conducted a study on Menstrual disorders among women 15 to 54 years of age in Pelotas, Rio Grande do Sul State, Brazil: a population-based study. The findings indicated that overall prevalence of menstrual disorders was 46.4% (43.3-49.4) and it falls in mild category.

The present study findings indicated that majority of female students (71%) had normal BMI followed by underweight (23.5%), overweight (4.5%) and obese (1%). The study findings indicated that the relationship between menstrual irregularities and BMI among female students. Coefficient of correlation had shown that BMI had moderate degree of positive correlation with Menometorrhagia and BMI had high degree of negative correlation with Hypomenorrhea. These findings were consistent with the findings of **Deshpande, Burute and Dahiya (2013)** of study on relationship of body mass index and body fat percentage with menstrual cycle pattern in adolescents. The findings of the study were that there is a statistically significant correlation between irregular cycles and high BMI. There is also statistically significant correlation between very high and very low body fat percentages and menstrual irregularities.

The present study findings indicated that there was significant association (p<0.05 level) of menstrual irregularities with following demographic variables Age, Educational level, Marital status, Family income and Age at menarche with menstrual irregularities among female students studying at Desh Bhagat University, Mandi Gobindgarh.

The present study findings indicated that there was significant association (p<0.05 level) of BMI with association of following demographic variables Age Educational level, Marital Status Duration of bleeding during menstrual cycle in days Whereas there was no significant association with Place of residence, Family income, Age at menarche, Duration of menstrual cycle in day, Life style, Dietary pattern, Exercise/Activity sports involvement and Source of information regarding menstruation

CONCLUSION

Menstrual irregularities are more common in obese women. Although other factors may be involved, obesity is one of the important causes of irregular menstrual cycles. Hence there is a role for lifestyle modifications i.e. exercise and diet in maintaining the normal body weight and ideal BMI in order to prevent menstrual irregularities.

RECOMMENDATION

On the basis of the findings of the study, the following recommendations had been made for the further study

- Replication of the same study on large samples may help to draw conclusions that are more definite and generalize to a larger population.
- A study could be conducted to find out the any other factors that affect the menstruation.
- A study could be conducted to find out the knowledge of females regarding the effect of BMI on menstruation.

REFERENCES

- Amu EO& Bamidele JO (2014). Prevalence of menstrual disorders among adolescent girls in Osogbo, South Western Nigeria. Int J Adolesc Med Health. 2014;26 (1):101-6. doi: 10.1515/ijamh-2013-0500.
- Dars S,Sayed K &Yousufzai Z (2014). Relationship of menstrual irregularities to BMI and nutritional status in adolescent girls. Pak J Med Sci. 2014 Jan;30(1):141-4. doi: 10.12669/pjms.301.3949.
- Jain Sheela , Ghike Sunita , Somalwar Savita &Joshi Sulbha (2014) Association of body mass index with menstrual cycle irregularities in women between 16 – 40 year age. PJMS- Volume 4 Number 1: Jan - June 2014
- Radivojevic UD,Lazovic GB, Kravic-Stevovic TK, Puzigaca ZD, Canovic FM, Nikolic RR,& Milicevic SM (2014) Differences in anthropometric and ultrasonographic parameters between adolescent girls with regular and irregular menstrual cycles: a case-study of 835 cases. . J Pediatr Adolesc Gynecol. 2014 Aug;27(4):227-31. doi: 10.1016/j.jpag.2013.11.007. Epub 2014 Mar 19
- Sonia Izoduwa Osayande1, Janet Ogochukwu Ozoene&Emmanuel Amabebe(2014) Body mass index influences the age at menarche and duration of menstrual cycle. American Journal of Health Research. Vol. 2, No. 5, 2014, pp. 310-315. doi: 10.11648/j.ajhr.20140205.24
- Vale B, Brito S, Paulos L & Moleiro P (2014) Menstruation disorders in adolescents with eating disorders-target body mass index percentiles for their resolution Einstein (Sao Paulo). 2014 Apr;12(2):175-80
- Zafari Mandana1, Aghamohammady Azar1, Aliasgharian Aily2 &Annual (2014) Menstrual Disorder: Prevalence and Relation with Sport; A Cross Sectional Study Research & Review in Biology 4(12): 1941-1947,2014
- Barcelos RS, Zanini Rde V& Santos Ida S (2013). Menstrual disorders among women 15 to 54 years of age in Pelotas, Rio Grande do Sul State, Brazil: a population-based study, Cad Saude Publica. 2013 Nov;29(11):2333-46.
- Hemant Deshpande, Shankar B Burute & Priyanka Dahiya (2013). Relationship of body mass index and body fat percentage with menstrual cycle pattern in adolescents, Int J Pharm Biomed Sci 2013, 4(4), 114-117 ISSN No: 0976-5263
- Karout N, Hawai SM & Altuwaijri S (2012) Prevalence and pattern of menstrual disorders among Lebanese nursing students. . East Mediterr Health J. 2012 Apr;18(4):346-52