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A study to assess the relationship between body mass index (BMI) and menstrual irregularities among adolescent girls

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Abstract

Background: 75% of girls experience some problem associated with menstruation the prevalence of menstruation irregularities in obese women has been reported to range between 8% and 18%. A dysmenorrheal includes 33.5%, among adolescents in India (87.7%).

Aim: The aim of the study was to assess the relationship between body mass index (BMI) and menstrual irregularities among adolescent girls.

Objectives: 1.To assess the menstrual irregularities and BMI among adolescent girls. 2. To find the relationship between menstrual irregularities and BMI among adolescent girls. 3. To find out the association between menstrual irregularities and BMI with demographic variables of adolescent girls.

Methodology: 50 adolescent girls were selected from Narayana college of Nursing, Nellore by using non probability purposive sampling technique.

Results: The study concluded that there was a co-relation between BMI and menstrual irregularities (0.94).

Keywords: Body mass index, menstrual irregularities, adolescent girls

Introduction

Menstruation is the cyclical discharge of blood mucous and cellular debris from the uterine lining. The time of onset of the first period is termed on Menarche, it may lost about 28-30days normal menstrual period may range from 5-7 days this cyclical monthly process is by and large regular and predictable right from menarche until menopause [1].

Regulation of menstrual cycle is due to the normal integrated functioning of the hypothalamus pituitary ovarian axis. The hypothalamus and the pituitary are situated in the human brain and effect of the production of releasing hormones which induces the end organ ovaries to release the primary female hormones namely estrogen and progesterone, this is called positive feedback. When the levels of these hormones are reached and adequate level to perform their respective function, they suppress releasing function in brain. This is called negative feedback. The signs and symptoms of menarche are mood depression feeling of hopelessness, lethargy excessive fatigability and hypersomnia or insomnia [2].

Obesity is a major public health programme. It is associated with adverse physical health outcomes including diabetes mellitus, coronary heart disease, cancer, respiratory problems and psychosocial difficulties [3]. The prevalence of obesity is increasing in adults in US, UK, and worldwide. Early age of menarche, together with other indicators of early biological maturity has been shown to be associated with increased adult Body Mass Index (BMI). Age at menarche has been declining (16-20) at the sometime as result (BMI) has been increased, although the role, rate of the decline has slowed or stopped income countries in recent times, when early age at menarche is casually associated with increase adults [4].

A study was conducted to assess the relationship between the body mass index (BMI) and menstrual irregularities in adolescent girls in New York. The mean average of the girls was 14.96 ± 1.5 years, 305 (76%) of girls had abnormal menstrual cycle 28 (7%) had a frequent periods 52 (13%) had a infrequent periods, 16(4%) had a totally irregular cycles, 108 (27%) were under weight with BMI of 14-18.49kgm [2], 260 (69%) had a BMI between 18.5-24.9 kgm^2.Statistically significant relationship was found between BMI 25-29.9 kgm^2 (P<0.001). BMI menstrual pattern P<0.001 [5].

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Need For the Study

A worldwide recent review of menstrual disorders in developing in population based studies. By late adolescent, 75% of girls experience some problem associated with menstruation the prevalence of menstruation irregularities in obese women has been reported to range between 8% and 18%. A dysmenorrheal includes 33.5%, among adolescents in India (87.7%) [6].

Globally the prevalence of menstrual irregularity among adolescent girls has ranged from 15.8% to 89.5% stress related symptoms is the most common gynecological problem among female adolescents with a prevalence of 60% to 93% in the United States [7]. A study done in Sweden, showed that more than 50% of all menstruating girls experience some discomfort. It has also been reported by a senior obstetrician that probably 5-10% girls in their late teens suffer from severe stress during menstrual cycle, the prevalence was >2-4 [8].

A study conducted in Chennai showed that the prevalence of gynecological morbidity was very high among study group about 82% of girls [9] In Andhra Pradesh, a cross sectional study conducted among adolescent girls in Chittoor district, related that the prevalence rate of stress, related symptoms during menstrual cycle is 65%. [10].

Nationally, The girls complained of premenstrual symptoms as 150 (38%), 221 (60%) girls were clinically anemic, 277 (69%) had a BMI between 18.5-24.9 kgm^2, 108 (27%) were underweight with a BMI of 14-18.49 kgm^2 while (16.4%) were overweight with BMI 25-29.99 kgm^2. A statistically significant relationship was found between BMI and social class ($p< 0.001$) and BMI and menstrual pattern ($p<0.001$). [11].

Problem Statement

A study to assess the relationship between body mass index (BMI) and menstrual irregularities among adolescent girls.

Objectives

- To assess the menstrual irregularities and BMI among adolescent girls
- To find the relationship between menstrual irregularities and BMI among adolescent girls.
- To find out the association between menstrual irregularities and BMI with demographic variables of adolescent girls

Delimitations

The study is delimited to;
- Adolescent girls aged 13-19 years and studying in selected College, Nellore.
- The sample size is limited to 50.

Methodology

Research Approach
Research Approach: Quantitative Research Approach
Research Design: Descriptive design.

Setting-The study was conducted at Narayana College of Nursing, Nellore.

Population

Target population: All adolescent girls aged between 13-19 years.

Accessible population: The adolescent girls who having menstrual irregularities in Narayana College of Nursing, Nellore.

Sampling Technique: Non probability purposive sampling technique.

Sampling Size: The sample size was 50 Adolescent girls aged between 13-19 years of age.

Sample Criteria

Inclusion criteria
- Girls aged between 13-19 years.
- Girls who are suffering with menstrual irregularities.
- Girls studying in Narayana College of Nursing, Nellore.

Exclusion criteria
- The girls who are not attained menarche.
- The girls who are not interested to participate in the study.

Description of the Tool: Tools consists of 2 parts.
Part-I: It deals with demographic variables- age, education, occupation, family, income, type of family, type of diet and duration of menstrual pattern.
Part-II: A check list for assessment of menstrual irregularities among adolescent girls.

Score Interpretation

S. No	Symptoms of Menstrual Irregularities	Score
1.	Mild	1-10
2.	Moderate	11-20
3.	Severe	21-30

Part-III: Body Mass Index scale to assess the BMI

S. No	BMI Scale
1.	Under weight (18.5kg/m^2)
2.	Normal weight (18.5- 25 kg/m^2)
3.	Over weight (25-30 kg/m^2)
4.	Obese (>30 kg/m^2)

Data Analysis & Discussion

Table 1: Frequency and percentage distribution of menstrual irregularities among adolescent girls. (N=50)

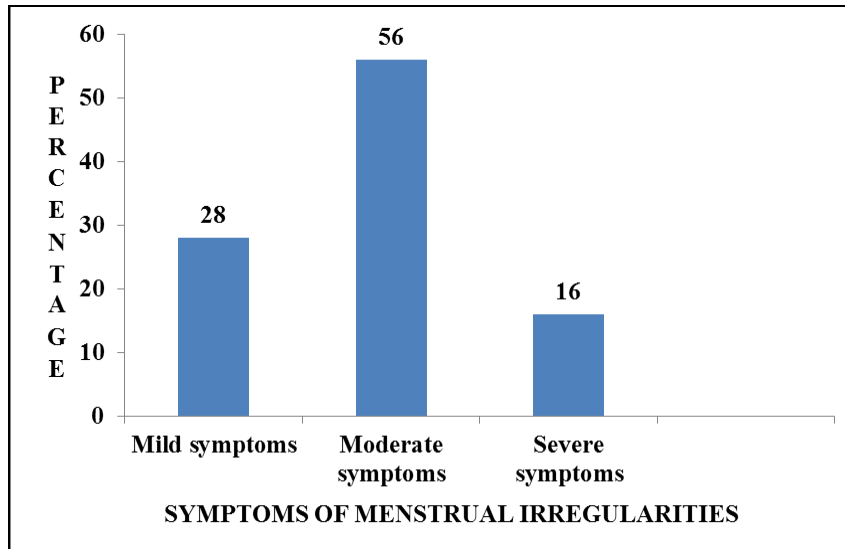| S. No	Symptoms of menstrual irregularities	Frequency (F)	Percentage (%)
1.	Mild symptoms	14	28
2.	Moderate symptoms	28	56
3.	Severe symptoms	8	16
	Total	50	100

Fig 1: Percentage distribution of symptoms of menstrual irregularities.

Table 2: Frequency and percentage distribution of body mass index among adolescent girls (N=50)

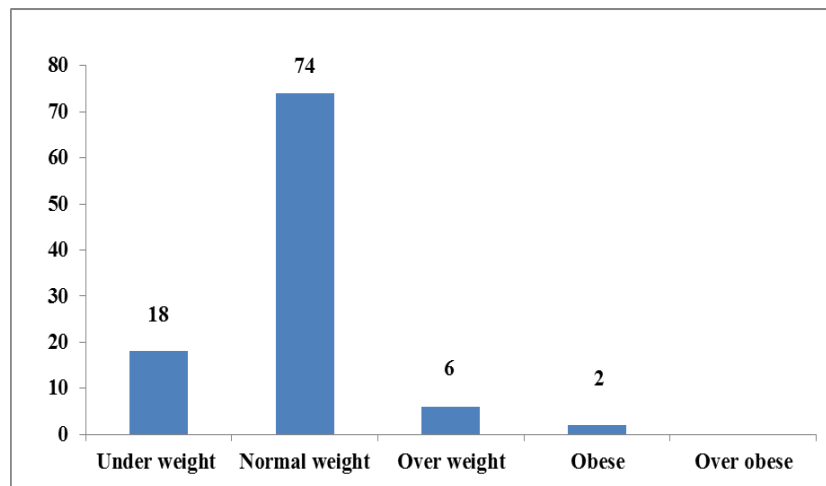| S. No	BMI category	Frequency (F)	Percentage (%)
1.	Under weight	9	18
2.	Normal weight	37	74
3.	Over weight	3	6
4.	Obese	1	2
	Total	50	100

Fig 2: Frequency and percentage distribution of body mass index among adolescent girls.

Table 3: Co-relation between BMI and menstrual irregularities among adolescent girls.

Menstrual Irregularities	BMI	Coefficient-Co Relation
274	1022.32	0.94

Table 4: Mean and standard deviation of scores among adolescent girls. (N=50)

Category	Mean	Standard Deviation
Symptoms of menstrual irregularities	5.36	4.033

Table 5: Association between menstrual irregularities and demographical variables among adolescent girls. (N=50)

S. No	Demographic Variables	Mild symptoms	Moderate symptoms	Severe symptoms	Chi Square
1.	**Family Income**				C=40.618
	a) Rs. 5001-7000/-	3	9	3	T= 18.47
	b) Rs. 7001-9000/-	1	6	2	Df= 6
	c) Rs.9001-11000/-	1	4	2	$P< 0.001$
	d) Rs. >11000/-	9	9	1	S***
2.	**Age at menarche**				C=27.804
	a) 12 years	3	5	4	T=22.46
	b) 13 years	1	9	3	Df=6
	c) 14 years	-	5	1	$P< 0.01$
	c) 15 years	10	9	-	S**

Major Findings of the Study
- Majority of the girls, 37(74%) had normal BMI, 9(18%) had under weight, 3(6%) had over weight, and 1(2%) had obese.
- The symptoms of menstrual irregularities, 14(28%) had mild symptoms, 28(56%) had moderate symptoms and 8(16%) had severe symptoms.
- The mean value of menstrual irregularities among adolescent girls was 5.36 and standard deviation was 4.033.
- Among all the demographic variables, only family income and age at menarche had significant association with level of pain at $P<0.001$ & $P<0.01$ respectively.

Conclusion
The study concluded that there was a co-relation between BMI and menstrual irregularities (0.94). Hence adolescent girls have to be educated regarding the risk of menstrual irregularities increases with high BMI level.

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