



The Prevalence of Menstrual Disorder and Its Association with BMI: A Cross Sectional Study

Zafari Mandana^{1*}

¹*Department of Nursing and Midwifery, Islamic Azad University Sari Branch, Sari, Iran.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Introduction: Menstrual disorder is very frequent complain in adolescence age and it can end too many problems .Our purpose of this study was appointed, prevalence the menstrual disorder and relation between it and BMI.

Methods: This cross sectional study was done on 1200 girl's school that lived in north of Iran (Mazandaran province). We selected our samples randomly. We collected data by questionnaire. Analysis of data was done by spss-19 software and we used descriptive statistics, chi square. Test and in depended T test. Significant level of this study was $p < 0.05$.

Results: The prevalence of menstrual disturbance was 13.2% (in urban girls) and 8.6% (in rural girls). According to chi- square test, the relation between BMI and hypomenorhea ($p = 0.055$), polymenorhea ($p = 0.384$), oligomenorhea ($p = 0.757$), amenorrhea ($p = 0.247$), metrorrhagia ($p = 0.781$) and menorrhagia ($p = 0.171$) was not significant.

Conclusion: Menstrual disorder is common in adolescence age and BMI is not effective on menstrual disturbance.

Keywords: *Adolescence; menstrual disorder; BMI.*

*Corresponding author: E-mail: mandanazafari@iausari.ac.ir;

1. INTRODUCTION

Adolescence is the one of the critical period, during life. For physical & physiological alteration in this period, nutritional situation and BMI will be considerate. Malnutrition during pediatric can delay the puberty but cannot prevent of it [1]. Actually there is direct relation between menarche age and BMI [2]. On the other hand irregular menstruation is common complaint in adolescence. The major cause of this disorder is functional immaturity of the reproductive system [3]. Enormous studies show a large population of women (2 years at the start of menarche and before menopause) experience menstrual disorder [4].

Adolescence in 2 years after menarche is talented of dysfunctional uterine bleeding. According recent studies heavy menstrual bleeding is common complaint in this period [5]. This heavy bleeding can be end to sever iron deficiency anemia that appear to feel fatigue. Also women with anovulatory cycle are high risk to suffer endometrial and breast cancer. Menstrual disorder in almost situation doesn't need treatment but in special case menorrhagia happened along blood discrasia. Researcher demonstrates the relation between sport, anxiety and nutrition situation and menstrual disorder. For example heavy sport, anorexia can be ended to secondary amenorrhea [6].

Many studies was done about prevalence of menstrual disorder during 2 years of menarche and relation between it and menarche age , but any of them didn't appoint the prevalence of it at vast area, after 2 years of menarche and the relation between BMI and menstrual disorder. Therefore our purpose of this study is to appoint the prevalence of menstrual disorder in north of Iran after 2 years of menarche and the relation between it and BMI.

2. METHODS

One thousand and two hundred girl's students participated in our cross sectional study. They were 14-17 years old and lived in north of Iran (rural & urban) (Mazandaran province). We selected them via multi stage randomize cluster sampling method. We selected 8 urban and rural randomly & selected high schools and students in each school randomly. We collected our samples from April to June 2011.

According to our purpose we constructed a questionnaire. It contains demographic information (name, age, menarche age, weight, BMI,...), menstrual information (menstrual flow, length of menstrual cycle, volume of bleeding (by question about number of pad that used in menstruation, change number of pad during the night, number of pad that change in 24 hours,...) and inclusion & exclusion criteria. The BMI of students calculated and they were cited in 4 groups. Group (1): BMI < 19.8, group (2): BMI: 19.8 -26, group (3): 26.1 -29 and group (4): BMI > 29(7).

The content validity of this questionnaire appointed with delphi method (approved by experts of education & nurture research center in north of Iran) and the reliability of it appointed with test- re test ($r=0.6$).

The inclusion criteria of this study were; 1- single girls, 2-age between 14-17 and 3- girls two years after menarche. The exclusion criteria were; 1: the girls who had systematic or chorionic disease such as; diabetes, thyroid, kidney, heart, lung and liver disease, congenital reproductive organ malformation (congenital adrenal hyperplasia, poly cystic ovary), 2: use of hormonal and non-hormonal drugs.

In this paper a regular menses was defined as "bleeding accurse between 21 to 35 days with no more than a five day variation between cycles". The interval between bleeding episodes was assessed and classified as metrorragia (irregular bleeding), menorrhagia (excessive bleeding at regular intervals), polymenorrhea (menstrual cycle interval less than 21 days), oligomenorrhoea (menstrual cycle interval longer than 6 weeks) [8] amenorrhea no menses for more than 6 months, hypo menorrhea (menstrual cycle more than 35 days) [9].

Ethical consideration in this study was fully met. All samples were studied with complete satisfaction also confidential information was recorded.

SPSS version (version 17) software (manufacture: prentice, Chicago united states America) was used to data entry and analysis. Chi- square test was used to determine the difference between qualitative variables and T – test for quantitative variables. Also significant level of this study was $p < 0.05$.

3. RESULTS

Mean of Menarche age in urban and rural girls are show in Table 1.

The lowest age of menarche in urban &rural girls was 9 years old and the highest age of menarche age in rural girl was 15 & urban was 16 years old.

Table 2. The menstruation criteria in urban & rural girls.

The length of menstrual cycle in almost of rural & urban girls was 21-35 days. Duration of bleeding in urban and rural girls was 6.15±1.39 and 6.12±1.41 days respectively. A menstrual flow in almost of rural and urban girls was normal.

The prevalence of menstrual disorder was 13.2% (in urban girl) and in rural girls were 8.6%. According to chi-squared test, we can say there is significant relation between menstrual disorder and place of residency (p=0.02).

Table 3. Shows the prevalence of menstrual disorder in girls.

According to Table 2; the highest rates of menstrual disorders were: menorrhagia,

oligomenorrhea, polymenorrhea, metrorrhagia and amenorrhea. The lowest prevalence was hypo menorrhea. Also chi – squared test showed that the relation between menstrual disorder and place of residency were not significant.

Almost of girls had 2 type of menstrual disorder. Chi –squared test showed there were not any relation between the number of menstrual disorder and place of residency (p=0.70).

BMI of urban girls who had menstrual disorder, were 21.39± 4.01, and in rural girls were 21.50 ± 4.35.The lowest of BMI in urban girls were 14.88 and in rural girls were 11.38. The highest of BMI in urban girls were 40.57, rural girls were 34.67. Also chi – squared test showed that there was no significant relation between BMI and place of residency in girls who had menstrual disorder (p=0.89).

On the other hand, BMI of urban girls who hadn't menstrual disorder were 21.50±4.35, and in rural girls were 22.70 ± 4.53. The lowest of BMI in urban girls were 15.22 and in rural girls were 11.38. The highest of BMI in urban girls were 34.67, rural girls were 42. Also chi-squared test has shown that, there was significant relation between BMI and place of residency in girls who had not menstrual disorder (p=0.000).

Table 1. Demographic characters of girls in this study

	Urban	Rural	P value
Menarche age	12.29±1.29	12.32±1.28	0.68*
Mean age	15.83±1.01	15.73±0.95	0.09*
BMI < 19.7	255(37%)	110 (29.7%)	-
BMI 19.7- 26	338(49%)	172 (46.5%)	-
BMI 26.1- 29	49(7.1%)	59 (15.9%)	-
BMI > 29	34(4.9%)	28 (7.6%)	-

Table 2. Comparison the menstruation criteria in urban & rural girls

Criteria of menstruation	P value
Length of menstrual cycle in urban & rural girls	0.71*
Duration of bleeding cycle in urban & rural girls	0.78**
Menstrual flow cycle in urban & rural girls	0.18*

Table 3. Number and percent all kind of menstrual disorder in rural & urban girls

Kind of menstrual disorder	No (%) in rural girl	No (%) in urban girl	P value
Hypo menorrhea	1(2.9%)	8(7.6%)	0.32
Polymenorrhea	11(31.4%)	39(37.1%)	0.54
Oligomenorrhea	16(45.7%)	53(50.5%)	0.62
Amenorrhea	5(14.3%)	21(20%)	0.45
Metroragia	8(22.9%)	33(31.4%)	0.33
Menorrhagia	30(85.7%)	91(86.7%)	0.88

According chi- squared test relation between dysmenorrheal and place of residency was not significant in girls who had menstrual disorder ($p=0.35$) or had not this disorder ($p= 0.61$).

Chi-squared test showed that, relation between level of educational and place of residency was significant in girls who had or had not menstrual disorder ($p=0.000$) ($p=0.000$) respectively.

According to the result of this study, the relation between BMI and hypomenorhea ($p= 0.055$), polymenorrhea ($p= 0.384$), oligomenorrhea ($p= 0.757$), amenorrhea ($p= 0.247$), metrorrhagia ($p= 0.781$) and menorrhagia ($p= 0.171$) was not significant.

4. DISCUSSION

Enormous physical & psychological alteration can occur in Adolescence. This alteration are not accommodate with serious gynecological pathology, menstrual disturbances are common in adolescence. The major cause of this problem is menstrual cycle with on ovulation cycle [2]. Many researchers showed that there is significant relation between cycles without ovulation and endometrial & breast cancer. Probably the causes of these risks are exposure to high level of estrogen also some kinds of menstrual disorder almost end to infertility [1].

In this study the prevalence of menstrual disorder in urban girls (13.2%) was higher than rural girls (8.6%), also menorrhagia was the common kind of menstrual disorder and the lowest prevalence of this disorder was hypomenorrhea in urban & rural.

The prevalence of menstrual disturbance in Iran in early menarche (during 2 years after menarche) was 45.9% & the common kind of this disorder was oligomenorrhea and menometrorrhagia [6]. Shahgheibi claimed 43.25% of 17-18 years old girls had menstrual disturbance [10]. Sanyal said more than 50% of girls in early, middle and late adolescence experience this disorder and the irregularity bleeding will decrease with increase of age [11].

A similar study was done in Turkey (2000); showed 26.7% of girls had irregular bleeding after 2 years of menarche and 62.2% of them had at least one menstrual disorder in their lives [12]. According to James s study, the most common bleeding disorder was heavy menstrual bleeding [13]. Bleeding problem in these years is

usually without any organic and gynecological pathology but in some cases, the common causes were coagulation factors deficiencies including von will brand disease and quality-quantity abnormalities of platelets [14-16].

According to this study relation between BMI and hypomenorrhea, polymenorrhea, oligomenorrhea, amenorrhea, metrorrhagia and menorrhagia was not significant. In accordance of our findings, Shahbazian confirmed this relation, similar to our results [2]. Butin samara s study that was done in Paris, they demonstrate significant relation between menstrual disorder and obesity in teenage girls who had diabetes type 1 and hirsutism [17]. Of course we can say hyperandrogenism was the main cause of menstrual disorder in these girls.

In opposite of our finding Fathizadeh s study has shown significant relationship between menstrual disorder and BMI, the cause of this opposite result to our study. This difference between the results was that the age of their samples was during 2 years after menarche [6].

This study had some limitations for example, we find the girls who suffer menstrual disorder after 3 years of menarche, it was better, we invited them in gynecologic clinic and diagnose the major cause that end to menstrual disorder.

5. CONCLUSION

The prevalence of menstrual disorder in north of Iran is lower than another area in our country (such as: west, east, and south of Iran), based on the results of this study, there is no relation between BMI and any kind of menstrual disorder.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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