



Menstrual Disorder: Prevalence and Relation with Sport; A Cross Sectional Study

Zafari Mandana^{1*}, Aghamohammady Azar¹ and Aliasgharian Aily²

¹Faculty member of Islamic Adzad University, Sari Branch, Sari, Iran.

²Department of laboratory sciences, Thalassemia Research Center, Mazandaran University of Medical Science, Sari, Iran.

Authors' contributions

This work was carried out in collaboration between all authors. Author ZM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AA and AA managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: The menstrual disorder is very frequent complaint in adolescence age. Our aim of this study is to estimate the prevalence of menstrual disorders in teenage girls and associated with sport.

Method: This cross sectional study was conducted in 8 urban and rural areas in Mazandaran province in north of Iran. One thousands and two hundred teenage girls (14-17 years), 370 girls from rural areas and 690 girls from urban areas entered in our study. Data was collected with questionnaire. We used descriptive statistics, chi- test and in depended T test. Significant level of this study was $P < 0.05$.

Result: The prevalence of menstrual disturbance in urban girls was 13.2% and in rural girls were 8.6%. According to chi- test we can say there is significant relation between menstrual disorder and place of residency ($p=0.02$). Relation between sport and hypo menorrhoea ($p=0.191$), polymenorrhoea ($p=0.077$), metrorrhagia ($p=0.423$) were not significant; but the relation between oligomenorrhoea ($p=0.006$), amenorrhoea ($p=0.000$) and menorrhagia ($p=0.002$) were significant.

Conclusion: Menstrual disorder is common in adolescence and regular exercises can reduce some kind of menstrual disorder.

Keyword: Adolescence; menstrual disorder; sport.

1. INTRODUCTION

Menarche (first menstruation in puberty age) is an important phenomenon in puberty stages and it shows the reproductive ability. Menstrual disorder is common complicate during 2 years after menarche and almost of schoolgirls refer to endocrinology clinic for this problem [1]. Adolescence girls have enormous physical and psychological changes, menstrual disorder is common in this period but serious gynecological pathology is rare [2].

The kinds of abnormal uterine bleeding include problem with amount, duration and interval of menstruation cycle such as: menorrhagia, polymenorrhea, oligomenorrhea and metrorrhagia [3]. DUB is a frequent cause of urgent referral to gynecological clinic during adolescence. The major cause of this disorder is immaturity of the hypothalamic- pituitary – ovarian axis [4].

Indeed, 50-80% of menstrual bleeding during 2 years after menarche is an ovulation [5]. Young women, who have an ovulation cycle, are in risk to suffering endometrial and breast cancer, because they exposure to high level of estrogen. Some kind of menstrual disorder can end to infertility [6].

Prevalence of menstrual disorder are different in some studies: 38.3%, 40%, 45% and 55% [1]. The common kind of menstrual disorder in Iran was oligomenorrhea, polymenorrhea and menorrhagia [7].

For evaluation of menstrual disorder, we should know the pattern of menstrual cycle. There are many studies about prevalence of menstrual disorder during 2 years of menarche, but any of them didn't assay this prevalence in vast area and two years after menarche and relation between it and sport. Therefore; our purpose of this study is to estimate the prevalence of the menstrual disorder after 2 years of menarche in northern Iran, the types and the distribution between urban or rural area and associated with sport.

2. METHODS

The cross sectional study was conducted in 8 urban and rural areas (in Mazandaran province), republic of Iran. The period of this study was from April to June 2011.

The sample size included 1200 teenage girls (14-17 years), 370 girls from rural areas and 690 girls from urban areas. Data were collected by direct interview using questionnaire, and the sampling method was malty stage randomize cluster sampling method; we selected 8 urban and rural randomly and selected high schools and students in each area randomly. We collected data with questionnaire; it contains demographic information, menstrual cycle information, inclusion and exclusion criteria and times of sport in week. The content validity of this questionnaire appointed with deli method (approved by experts of education and nurture research center in north of Iran) and the reliability of it appointed with test- re test (the questionnaires were completed by 120 subjects at twice at an interval of 2 weeks).

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.

This study was approved by the ethic committee of education and nurture research center in north of Iran.

The questionnaire had five sections: Section 1: general information(name, age, menarche age, weight, BMI,...), section 2: history of systematic and chorionic disease,....., history use of drug (hormonal such as oral contraceptive pills, thyroid hormones and non hormonal such as diuretics and/or weight – reducing drug), section 3: menstrual history(duration of bleeding, interval of menstruation, 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,.....). section 4: question about number of hour of sport in a week. Section 5: questionnaire about anxiety disorder (zank questionnaire). We used BMI data and anxiety data in separate paper.

In this research 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 menorrhoea (menstrual cycle more than 35 days) [9]. The exercises in this study included: dance, swim, volleyball, basketball, gymnastics, aerobic and wushu, at least 6 months prior to this study and we considered the duration of it; 1 hour, 1-3 hours and more than 3 hours in a week.

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 girl and rural girls are show in Table 1.

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- 29	49(7.1%)	59 (15.9%)	-
BMI >29	34(4.9%)	28 (7.6%)	-

**In dependent T Test*

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

Table 2 show the menstruation criteria in urban and rural girls.

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

Criteria of menstruation	P value
Interval of bleeding	0.71*
Duration of bleeding	0.78**
A mount of bleeding	0.18*

*Chi- test, ** In depended T test

The interval of menses in almost of rural and 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 mount of bleeding in almost of rural and urban girls were 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.

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

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

According to Table 2; the highest rates of menstrual disorders were: menorrhagia, oligomenorrhoea, polymenorrhoea, metrorrhagia and amenorrhoea. The lowest prevalence was hypo menorrhoea. Also chi – squared test showed that the relation between menstrual disorder and place of life 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 life 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 showed that, there was significant relation between BMI and place of life in girls who had not menstrual disorder ($p=0.000$).

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.

Table 4 shows the relation between menstrual disorder and time of sport in a week.

Table 4. Time of sport in a week in rural and urban girls

Time of sport in a week	NO(%) in rural student	NO(%) in urban student
1-3 hours in a week	50(13.5%)	103(14.5%)
More than 3 hours in a week	38(10.3%)	94(13.6%)
1 hour in a week	206(55.7%)	376(54.5%)
Without sort in a week	76(20.5%)	117(17%)
Total	370(100%)	690(100%)

According to Table 3. The almost of urban and rural girls had exercise once a week, and chi – test showed there is no significant relation between times of exercise in a week and place of life in girls who had or had not menstrual disorder ($p=0.33$) ($p=0.23$) respectively.

According to this study relation between time of sport in a week and hypo menorrhea ($p=0.191$), polymenorrhea ($p=0.077$), metrorrhagia ($p=0.423$) were not significant. But the relation between oligomenorrhea ($p=0.006$), amenorrhea ($p=0.000$) and menorrhagia ($p=0.002$) were significant.

4. DISCUSSION

The result of our study show; the high rate of some kind of menstrual disorder such as; menorrhagia, oligomenorhea and polymenorhea in our area. Also relation between sport and hypo menorrhea, polymenorrhea, metrorrhagia were not positive; but with oligomenorhea, amenorrhea and menorrhagia were significant.

Girls in pubertal age have enormous physical & psychological changes. They don't have serious gynecological pathology but menstrual disorder is common. A major cause of this problem is immaturity of hypothalamic – pituitary –gondola axis [2,10]. Many studies showed girls who have an ovulatory cycle are at risk toward endometrial and breast cancer. The cause of this susceptibility, is exposure to high level of estrogen, also menstrual disorder may end to infertility [1].

The prevalence of menstrual disorder in urban girls (13.2%) was higher than rural girls (8.6%). In this study the common kind of menstrual disorder was menorrhagia, and hypo menorrhea was rare in urban and rural girls.

Some studies was done in our country reported that; the prevalence of menstrual problem, during 2 years after menarche was 45.9% and oligomenorrhea was the common kind of

disorder and menometrorrhagia was the rare type of this problem [6]. Shahgheibi Saied 43.25% of 17-18 years old girls had menstrual disturbance [7]. Sanyal claimed; more than 50% of girl's school in early, middle and late adolescence experience this disturbance and this problem will decrease along increase of age [11]. For example; a similar study was done in turkey; they reported 26.7% of girls school had irregular period after 2 years of menarche and 62.2% of them had at least one form of irregular bleeding in this time [12]. In James's study, the most common menstrual disturbance was heavy menstrual bleeding [13]. Menstrual disturbance in these years can accommodate without any organic and gynecological pathology but usually coagulation factors deficiencies such as vonwill brand disease and quality- quantity abnormalities of platelets are common etiology [14,15,16].

In this study; relation between sport and hypo menorrhoea, polymenorrhoea, metrorrhagia were not significant, but with oligomenorrhoea, amenorrhoea and menorrhagia were significant. According to similar studies that were done in Iran, there were positive relation between sport and menstrual disorder [6]. Also Feldman reports high prevalence of irregular menses among track athletes (16.7% with amenorrhoea, 16.7% with oligomenorrhoea) [17], almost studies didn't consider the relation between sport and kind of menstrual disorder. We think regular sport can balance the level of sexual hormone and arrange the function of hypothalamus- pituitary- gonadal axis.

When menstrual disturbance permanent after 3 years of menarche, we should start the diagnostic evaluation and treatment of dysfunctional uterine bleeding [18]. Our limitations was; we just find the girls who suffer menstrual disorder after 3 years of menarche, it was better, we invited them in gynecologic clinic for evaluate and treatment their menstrual disturbance. We suggest that, according the high prevalence of menstrual disorder after menarche, it is necessary that future studies fulfill this limitation.

5. CONCLUSION

The prevalence of menstrual disorder in north of Iran is lower that another area in our country (such as: west, east and south of Iran), also relation between sport and hypo menorrhoea, polymenorrhoea, metrorrhagia were not significant; but with oligomenorrhoea, amenorrhoea and menorrhagia were significant.

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COMPETING INTERESTS

The authors declare that they have no competing interests exist.

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