



Comparison of disorders menstrual frequency between female athlete and non-athlete university students

Laden Zud Fekr¹, Tohid Aziz Zadeh², Jafar Barghi Moghadam¹, Mir Hamid Salehian¹

¹*Department of Physical Education, Tabriz branch, Islamic Azad University, Tabriz, Iran*

²*Department of Physical Education, Tehran Central branch, Islamic Azad University, Tehran, Iran*

ABSTRACT

The overall goal effectiveness study is Comparison the frequency of menstrual disorders (amenorrhea, oligomenorrhea, dysmenorrhea, and PMS) between Tabriz athletes and non-athletes University female students. 360 university girls student (180 athletes [21.37±4.34 yrs] and 180 non-athletes [20.57±2.12 yrs] were selected purposefully and completed the menstrual history questionnaire, sport questionnaire and Dickerson questionnaire. Data were analyzed by descriptive statistics and inferential (Chi-Square test). Results did not support a statistically significant differences in frequency of menorrhoea athletes 10.55%, non-athletes 8.88%), oligomenorrhoea (18.33% in athletes and 15.55% in non-athletes) and PMS (55.88% in athletes and 66.11% in non-athletes). According to the results and differences, Although low incidence of PMS between two groups, it is necessary to have more attention to exercise in other university fields among female university students.

Key words: amenorrhea, oligomenorrhea, premenstrual syndrome, athletes, non-athletes

INTRODUCTION

Due to the increasingly development of sport the phenomenon of women sport and their participation in competitive and recreational activities has been recently attracted many scientific institutes; one of the most important issues related to the participation of women in sport activities is their menstrual cycle; this has been studied by many researchers [8]; however there are still intriguing questions about this subject in which it should be followed through many scientific amendments as well; one of the physiological issues related to women reproductive function is premenstrual syndrome [13]. PMS is defined as physical cognitive behavioral or moral cycle of changes that happens in luteal phase (before the beginning of menstruation) and it is enough related to the normal aspects of the life [8, 10]. The most common symptoms of PMS include: pain, limb edema, abdominal bloating, breast tenderness, anger, inappropriate crying, depression, fatigue and insomnia [1, 4, 15]. Approximately 20% of women do not have any signs of PMS but 40% have devoted to these symptoms but no need to medical treatment but in turn 40% should be cured by medicine [6]. According to a research carried on 4085 women in Latin America representing that the degree of PMS incidence has been increased than past time. Premenstrual syndrome causes to personal communication disorders the decrease of normal activities, nimblest, the lack of motivation and careless covering the one's lifestyle and comfort ability [1, 7]. Proposed theories about the causes of this syndrome are imbalance of estrogen and progesterone increased prostaglandins, increased prolactin deficiency of vitamin B6 and physiological factors and decreased serotonin [4]. Different studies such as the study of Smith and Aschf and Ghanbari have shown that the aerobic exercise like walking, jogging and swimming are mostly effective in decreasing the symptoms of mental disorders (such as depression) in compare to non-aerobic/powerful workout activities [14, 21]. Some researchers also consider competitive sports involved in the exacerbation of symptoms of

this syndrome [21]. Research conducted by Gomez (2002) in two groups of athletes and non-athletes showed that regular exercise can reduce some PMS symptoms such as headaches and irritability but does not affect the other symptoms of PMS [17]. Other menstrual disorders are amenorrhea and oligomenorrhea. Amenorrhea means the absence of menstrual bleeding [5] and the cycles longer than 35 days are called oligomenorrhea [18]. The prevalence of these disorders depends on several factors such as genetic, race, BMI and family history; patients with amenorrhea has a potential for developing bone fractures (osteoporosis) and heart diseases (cardiovascular) [11, 20, 24]; the prevalence of amenorrhea and oligomenorrhea among sport heroes is more than the general population and between 6-79% [12, 23] and the amount of weight is higher among endurance athletes and sport fields [10]. The research conducted by Raymond et al the incidence of amenorrhea and oligomenorrhea was 28.8% in female sport heroes and 9.4% in the control group, respectively [3]. Cobb et al claimed that the incidence of amenorrhea/oligomenorrhea is 36% among long-distance runners [8]. This study has been carried out by the aim of the comparison of frequency of menstrual disorders (amenorrhea-oligomenorrhea and PMS) among athletes and non-athletes of Tabriz universities.

MATERIALS AND METHODS

This study is based on comparative research in which it has been carried out on 360 female students (18-28 yrs) in medicine and non-medicine of Tabriz colleges in 2010; students with chronic diseases mental disorders, those ones taking oral contraceptive and married students were excluded from the study. In order to gather the necessary data, a questionnaire designed on the history of menstruation and subjects sport background has been used; also Dickerson questionnaire was used to analysis the related symptoms of PMS; these subjects should complete the questionnaire in the presence of each signs of their disorders in one week left to the beginning of their periodical cycle and one week bleeding for two months; each batch of signs for each month based on scores calculated as the average of two months was considered as PMS. The researcher has been collected these data from the vice-president of student services of Tabriz university; all these data were related to the number of female students of Tabriz university and Tabriz college; the study sample of 1800 people in this study about 20% of population (360 ones) were taken up selectively and targeted from 17 colleges of these universities; then the present sample was divided into two groups of athletes and non-athletes (180 persons per group). Non-athlete samples from female students who had no history of sport and they had just passed physical education units 1 and 2 in the university were selected. But athlete samples from female students had two sessions-practices regularly during two years. In order to compare the menstrual disorders between two groups, Chi- Square test with $p \leq 0.05$ was considered as significance.

RESULTS

Table 1. Results of Chi-Square test to compare the number of athlete and non-athlete who have premenstrual syndrome

	Group	Number of syndrome people of premenstrual	Number of non-syndrome people of premenstrual	group
Athlete	74 (41.11%)	106 (55.88%)	1	0.157
Non-athlete	61 (33.88%)	119 (77.11%)		

Table 2. Results of Chi-Square test to compare the subjects with a history of amenorrhea in athlete and non-athlete

Index	observed frequency		Expected frequency		Df	Sig.
	Normal	Amenorrhea	Normal	Groups		
Athletes	161 (89.44%)	19 (10.55%)	162.5	17.5	1	0.594
Non-athletes	164 (91.11%)	16 (8.88%)				

Table 3. Results of Chi-Square test to compare the subjects with a history of oligomenorrhea in athletes/non-athletes

Index	Observed frequency			Expected frequency			Df	Sig.
	3<	2-4 times	10-12 times	3>	2-4 times	10-12 times		
Athlete	6	33 (18.33%)	141	4	30.5	140.5	2	0.261
Non-athlete	2	28 (15.55%)	150					

Table 4. Results of Chi-Square test to compare the menstruation regulation in athlete/non-athlete subjects

Index	Observed frequency				Df	Sig.
	Regular	Irregular	Regular	Irregular		
Athlete	128 (71.11%)	52 (28.88%)	137	43	1	0.026
Non-athlete	146 (81.11%)	34 (18.88%)				

Mean age, BMI and age at menarche in athletes, respectively 21.37 ± 4.34 year, 3.04 ± 20.04 kg m and 1.42 ± 13.91 years and in non-athletes 2.12 ± 20.75 years, 3.09 ± 21.59 kg m and 1.34 ± 13.04 years, respectively. The severity of premenstrual syndrome in athletes and untrained groups was 55.88% and 66.11%; this difference was not statistically significant (table 1); the incidence of amenorrhea among athletes 10.55% and non-athletes 8.88% respectively; this difference was not statistically significant (table 2). The incidence of oligomenorrhea in the athlete group 18.33% and in untrained group was 15.55% respectively; this difference was not statistically significant (table 3). Also in terms of regulation in menstrual cycles(that is, one cycle to another one takes 28 ± 7 days) has a significant difference among athlete and non-athlete groups and this irregularity was most tangible in athlete group (table 4).

DISCUSSION AND CONCLUSION

The results of the study showed that the incidence of PMS in non-athlete group is higher than athlete group (66.11% vs. 55.88%) but this difference is not significant statistically; about the influence of sport on PMS there are controversial results; in research by Kariminik (2002), Ghanbari (2008), Emami (2000), Fotokian (2006), Jackolin et al (2007), Patrik (2003) the positive influence of sport especially aerobic exercises such as swimming, jogging and cycling have been supported on the recovery term of PMS as well; from these researchers point of view achieving aerobic exercises for at least 2 months causes to the recovery of PMS symptoms; in other hand the results of researchers like Rasheed et al (2003) and Deuster et al (1999) have been paradoxical with other researchers. Deuster et al in a research about sport and PMS have concluded that athletes suffer from PMS rather than non-athletes. Also Kirby (1999) and Kroll (2010) claimed that sport does not have any effects on PMS [16]. The governed statistics from different sources and articles in other countries show that a piece of these conflicts come from cultural differences [2] and others relate to the age of samples; because in ages lower than 17 in absence of ovulation cycle the probable existence of this syndrome is different; also individual lifestyles can cause to these differences. In the recent study according to the samples reports of their daily exercise it is possible that this amount can be reported high/low than its real degree, too. Also the intensity of sport and the type of sport is different with other conflicting researches in this study. In this evaluation the number of participated in aerobic sport are more less than other sport fields (12.5%) and most reports from the influence of sport on PMS have stated that aerobic sports are their emphasis and this can be the reason for the lack of significant difference between athletes and non-athletes group in this present study, this negligible difference in this research shows the positive affect of sport on PMS. Also the results of the study show that in terms of incidence of amenorrhea/oligomenorrhea no any differences found between athlete and non-athlete students that this is controversial with the results of Dushk (2001), Borgen (2004) Dadghostar (2009) and Kolentro (2002); one of the reasons of the conflicting results can be the level of sample sport. All carried out researches about the study of amenorrhea/oligomenorrhea have been related to heroes and sport nobles and no any other studies done on smart athletes; the high level of the sport competitions internationally and the stress from these contests can influence or destroy the hypothalamus functions and kpa/hpa coordination causing to menorrhea/oligomenorrhea; but as it earlier mentioned all athletes of this study did not compete at global level that it can be a destroying factor of hypothalamus coordination and menstrual disorders; in the other hand all achieved researches stated about the high amount of amenorrhea/oligomenorrhea in field sport like ballet, gymnastics and running; in this recent study the participated number of these sports is about 5.5%; this restriction can be the controversy reason. Borgen (2004) also did not observe any significant differences in terms of amenorrhea/oligomenorrhea among elite athlete population and general population of Norway but he stated that these disorders among sport fields are more tangible [22]; however the intensity of sport cannot cause to the incidence of amenorrhea/oligomenorrhea, nut this amount of exercise may be bring the regular cycles of menstruation; of course this can be controlled by decreasing or cutting the intensity of the practices. The results of the study showed that in presence of negligible amount of amenorrhea/oligomenorrhea among athlete/non-athlete students, exercise can cause to decrease/cut the menstruation level; therefore it is necessary for all coaches and physical activity teachers to warn their students about the correct nutritional conditions especially at their high-intensity exercise periods; in other hand, this research showed that the sport can cause to the remedy of PMS; therefore it is crucial for all students to follow many recommendations and this can bring the joy ness of their physical activities along with sport benefits.

REFERENCES

- [1] Alabama B, *Fertil Steril*, **2008**, 90, 3.
- [2] Alavi A, Salahi Moggadam A, Alimalayeri N, Ramazanpour A, *Med J*, **2006**, 10, IV.
- [3] Barker PR, Petroczi A, and Qusteded E, *J Occupat Med Toxicol*, **2007**, 2:10 1186/1745- 6673-2-10.
- [4] Birch K, Female athlete triad. *BMJ*, **2005**, 329-330.
- [5] Burke J, Novak's diseases of women, **2008**.

- [6] Carlos A, Petta MJ, Duarte O, de Pádua KS, Bahamondes L, Makuch MY, *Inter J Gynecol Obstet*, **2010**, 108 40-43
- [7] Carlson JL, Curtis M and Felsher BH, **2007**, *J Adoles Heal*, **2010**, 40; 362-365.
- [8] Chen HM and Chen H, **2005**, *J Med Sci*, 21:121-7
- [9] Dadgostar H, Razi M, Aleyasin A, Alenabi T and Dahaghin S, *Sport Med Arthros Rehabil Thera Technol*, **2009**, 1:16
- [10] Daley A, *Bri J Gener Prac*, **2009**, DOI: 10.3399/bjgp09X420301.
- [11] Desouza MJ and William NI, *Hum Reproduc Update*, **2004**, 10, 5, 433-448
- [12] Dušek T, *Croat Med J*, **2001**, 42 (1):79-82
- [13] Genazzani AD, *J Ster Biochem Molec Biol*, **2001**, 78, 247-252
- [14] Ghanbari Z, Dehghan Manshavi F, Gafarabadi M, **2008**, 2, 4.
- [15] Harel Z, *J Pediatr Adolesc Gynecol*, **2006**, 19, 363-371
- [16] Kroll A, MA thesis, **2010**.
- [17] Miragaya AM and Gomese F, *Am coll sport med*, **2002**.
- [18] Nazarpour S, *Textbook of women infertility and diseases*, Tohfe publication, **2007**, 224-235.
- [19] Nichols JF, Rauh MJ, Lawson MJ, Ming J, Barkai H, *Arch Pediatr Adolesc Med*, **2006**, 160,137-142
- [20] Ruth A, *J Sci Med Sport*, **2009**, 12, 3, 366-370
- [21] Scully D, Kremer J, Meade MM, Graham R, Dudgeon K, *Br J Sports Med*, **1998**, 32:111-120
- [22] Torstveit MK, Sundgot-Borgen J, *Br J Sports Med*, **2005**, 39:141-147.
- [23] Warren MP and Perloth NE, *J Endocrin*, **2001**, 170, 3-11.
- [24] Zegeye DT, Megabiaw B and Mulu A, *BMC Women's Health*, **2009**, 9:29 doi: 10.1186/1472-6874-9-29.