

Comparing menstruation disorders between A and B behavioral types of university female athletes and non-athletes

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Abstract: The aim of this study was to compare menstruation disorders between A and B behavioral types of university female athletes and non-athletes. 250 university girl students were selected randomly and divided into two athlete and non-athlete groups in terms of systematical exercise and history during two years ago. After providing exact and required information from questionnaires, the volunteers were randomly selected and 150 questionnaires were distributed between the two groups. 250 questionnaires (inventories) were statistically analyzed after collecting and monitoring the questionnaires. This study was performed by the technique of, correlation and analyzed by the use of descriptive and inferential statistical methods (K-square test). The results showed that: 1. The level of primary amenorrhea outbreak in athletes was meaningfully more than non-athletes ($p < 0.05$). 2. The level of primary amenorrhea outbreak in A type individuals was observed more than B type individuals, but the difference wasn't meaningful between the two types ($p > 0.05$). 3. The level of secondary amenorrhea outbreak in non-athletes was observed more than athletes but the difference wasn't meaningful between the two groups ($p > 0.05$). 4. The level of secondary amenorrhea outbreak in type A individuals was observed more than B type individuals but the difference wasn't meaningful between the two types ($p > 0.05$). 5. The level of amenorrhea outbreak in non-athletes was observed more than athletes but the difference wasn't meaningful between the two types ($p > 0.05$). 6. The level of amenorrhea outbreak in A type individuals was observed more than B type individuals but the difference wasn't meaningful ($p > 0.05$). 7. The level of loss of weight outbreak before menstruation in non-athletes was observed more than athletes but the difference wasn't meaningful between the two groups ($p > 0.05$). 8. The level of loss of weight outbreak before menstruation type B individuals was observed more than type A individuals, but the difference wasn't meaningful between the two types ($p > 0.05$).

[Lamia Mirheidari, Mir Hamid Salehian, Amir Ghiami Rad, Farzad Zehsaz. **Comparing menstruation disorders between A and B behavioral types of university female athletes and non-athletes.** *Life Sci J* 2012;9(4):4402-4406]. (ISSN: 1097-8135). <http://www.lifesciencesite.com>. 663

Key words: menstruation, A and B behavioral types, female

1. Introduction

Menstrual disorders such as amenorrhea/oligomenorrhea depend on many factors, including race, genetic make-up, BMI, and family history. However, the literature also shows that amenorrhea/oligomenorrhea is more prevalent among athletes than in the general population (Sherman & Thompson, 2006; Goodman & Warren, 2005). Despite discrepancies in the reported frequencies, which are attributable mainly to different definitions of amenorrhea/oligomenorrhea, unreported minor menstrual irregularities, and selection bias (Goodman & Warren, 2005), this is commonly accepted. To our knowledge, no study has evaluated amenorrhea/oligomenorrhea in Iranian female athletes, a group that is particularly interesting because the nature and practice of women's sports differ from those in the majority of other countries. This is due partly to the fact that women's professional sports – in the sense that sport is a woman's main profession – have almost no place in Iran. Women's participation in sports has increased

substantially over the past few years, and this growth, especially on a competitive level, has been accompanied by a number of health concerns including disordered eating and menstrual disorders. 1,2 Apart from the societal pressure on women to be beautiful and thin, many female athletes are also pressured by coaches or the type of sport they are competing in (i.e. lean-build sports) to maintain a low body weight for aesthetic and/or performance purposes. This often contributes towards the development of DE and pathogenic bodyweight-control behaviors (i.e. restrictive eating, fasting, use of diet pills, laxatives and diuretics, binge-eating followed by purging) that can result in clinical eating disorders (i.e. anorexia nervosa and bulimia nervosa) and alterations in menstrual patterns.1 Potential long-term health consequences of DE and menstrual disorders include chronic fatigue, anaemia, endocrine abnormalities, and osteoporosis, to name a few (Nattiv et al., 2007; Beals & Meyer, 2007). Female student athletes may be at an even higher risk for DE owing to the added pressure of maintaining an

attractive and culturally acceptable body shape, and adapting to the new social and academic environment of a tertiary educational institution (e.g. college or university). Reported prevalence of DE and menstrual disorders in female university athletes varies and depends on a number of factors, including type of sport, level of participation, and type of questionnaire used to screen for DE (Nattiv et al., 2007; Coelho et al., 2010). Although a number of studies have reported a higher prevalence of DE and menstrual disorders in female university athletes compared with non-athletes, particularly in elite female athletes competing in aesthetic, weight class and endurance sports where leanness is emphasized (Sundgot-Borgen, 2004; Sundgot-Borgen & Torstveit, 2004) other studies failed to demonstrate differences in the frequency of DE and menstrual disorders between athletes and non-athletes, especially in sports where leanness is considered less important (Beals & Meyer, 2007; Coelho et al., 2010). The primary aim of this study was therefore to determine the prevalence of DE behavior and menstrual disorders in a group of provincial-to national level student netball players.

The data show that stress and emotional disorders are related to menstrual disorders. Almost all women who have been exposed to hazards for a long time have experienced menstrual disorders. Sometimes, minor changes in living style such as changing the job, family conflicts and financial troubles result in menstrual disorders. There are variable individual differences in understanding these stresses and how to face them and the level of vulnerability against these stresses among women, which result in these disorders (Wells, 2000). Psychologically people are divided into two groups in terms of understanding the stress and anxiety. Type A people are pugnacious, vying, impatient and aggressive. They feel that they are being pushed and are under stress. In most cases, when they have appointment they come before the determined time, they eat fast, they walk fast, they twitter and they will lose their patience if others work slowly. They press themselves to do more work in less period and these stresses finally result in most of diseases including cardiac diseases (Conrad Mellam & Arild Espne, 2003). Unlike type A people, there are type B people who take the problems easy and emphasize on the quality of life, they are not ambitious and impatient instead they are cautious and tidy (Spencera, 2000). Type B people are quiet, they don't hasten, never suffer from the feel of urgency and never evaluate themselves with successes. It seems that sport, as a factor for decreasing psychological problems, correcting negative personality traits, creating jollity and happiness, can be an important factor in adjusting

negative behaviors especially type A behaviors. On the other side, it has been observed that sport and physical activities cause some menstrual disorders including delay, interruption and irregularity in menstruation and beside physical activities, the stresses of competitions in athletes increases these disorders. The relation between sport and type of personality has attracted the attention of some researchers in the field of psychology. This needs more study and research about women than men, as women are mentally and physically different from men. On the other side, it has been shown that excessive exercise and physical activity at menstruation period, increases menstrual pains and causes menstrual disorders like interruption and irregularity. It seems that a research in this regard, which can study menstrual disorders taking into account the personality and behavior of women and evaluate the effect of sport, was very important and made the researcher to compare the menstrual disorders between type A and type B among athlete and non-athlete female university students. Gharakhanlu (2000) made a research about the relation between menstruation period, intensity of exercises and damages resulting from exercise. In this research 284 elite female athletes from 26 cities of Iran in 13 athletic fields were studied. The results of the research show that: 55% of the subjects believe that the probable effects of the intensity of exercise on menstruation depend on physical and mental differences. On the other hand 20% and 8% of the subjects, respectively, experienced the negative and positive effects of intensive exercises on their menstruation. Bollbolin et al. (1994) made a research on 21 women between 14-18 years and divided them into types A and B. The subjects exercised on a treadmill for 20 minutes with 60% $\text{Vo}_{2\text{max}}$ and measurements included electromyography (EMG), blood pressure and psychometry data. It was observed that diastolic pressure in type B people was less than that in type A people during their activity. These data together with psychometry data suggested that physiologic and homodynamic exercise in women has high correspondence with the relation between the type of behavior and different physiological factors. Bolen et al. (2002) observed that 24 women out of 28 women who had irregular menstruation periods returned to their natural state after six months through decreasing their exercise.

2. Methods

2.1. Participants

The present study is correlative descriptive made through questionnaires. The statistical society of this research included 500 female athletes and 1500 non-athletes from university students.

Considering the high number of subjects in statistical society, 150 athletes and 150 non-athletes were selected randomly selection as samples of research.

2.2. Research Method

Considering the descriptive nature of the present research, questionnaire was used as a tool to perform this research. First a questionnaire was used to determine the individual qualifications and athletic records of subjects and Fredman Walmer standard questionnaire was used to determine the behavioral type of subjects and researcher-made questionnaire was used for menstruation. While one of the questionnaires was standard, the validity of each questionnaire was confirmed by experienced university professors. Chronbach alpha coefficient was used to measure the reliability of the other two questionnaires. The results of the research show that there is an internal correlation between two tools used in this research ($\alpha=662$ and $\alpha=794$). The researchers personally refereed to sport clubs of university (where the subjects were studying) to collect the data and randomly distributed the questionnaires between the subjects. The researcher also referred to the faculties of non-athlete subjects and randomly distributed the questionnaire between them and then collected the questionnaires and started to analyze the data of research.

2.3. Data Analysis

Inferential statistics and descriptive statistics were used to analyze the data of research such that statistical test of chi-square was used to analyze the hypotheses of research and relation between variables and descriptive statistics was used describe the findings.

3. Results

Table 1. Distribution of frequency percentage of behavioral types A and B

	Frequency	Percentage	Cumulative Percentage
Athlete Type A	94	37.6	37.6
Athlete Type B	31	12.4	50
Non-Athlete Type A	70	28	78
Non-Athlete Type B	55	22	100
Total	250	100	

In table 1, it is observed that among all the samples selected equally among athletes and non-athletes, 12% was type B and 38% was type A and it is concluded that the behavioral pattern of most of the athletes is type A and among 50% of non-athletes, 22% was type B and 28% was type A. As it is observed, behavioral pattern A is high among non-athletes but the difference is not significant.

Table 2. Data related to emergence of primary amenorrhea among athletes and non-Athletes

		Athlete (125 individuals)	Non-Athlete (125 individuals)	
Primary Amenorrhea	Yes (37)	Fo=25 Fe=18.5	Fo=12 Fe=18.5	$\chi^2=5.77$ $\alpha=0.016$
	No (223)	Fo=100 Fe=111.5	Fo=113 Fe=111.5	

As it is observed in Table 2, the chi-square (5.77) obtained through comparison between emergence rates of primary between athletes and non-athletes is significant and acceptable in statistical

level of 0.05 ($X^2=0.05$, $df=1=3.48$), so we can conclude that there is a significant relation between emergence of primary amenorrhea and the fact that the subject is athlete or non-athlete.

Table 3. Data related to emergence of primary amenorrhea among behavioral types A and B

		Type A (164 individuals)	Type B (86 individuals)	
Primary Amenorrhea	Yes (37)	Fo=28 Fe=24.27	Fo=9 Fe=12.73	$\chi^2=1.96$ $\alpha=0.162$
	No (223)	Fo=136 Fe=139.73	Fo=77 Fe=73.27	

As it is observed in Table 3, the chi-square (1.96) obtained through comparison between emergence rates of primary amenorrhea between behavioral types A and B is not significant and acceptable in statistical level of 0.05 ($X^2=0.05$, $df=1=3.48$), so we can conclude that there is not a

significant relation between emergence of primary amenorrhea and behavioral types A and B.

The following table is used for general testing of hypothesis No.1 based on investigation between emergence of primary amenorrhea, being athlete and non-athlete, behavioral types A and B:

Table 4. Data related to emergence of primary amenorrhea among behavioral types A and B among athletes and non-athletes

		Athletes (125 individuals)		Non-Athletes (125 individuals)		
		Type A (94 individuals)	Type B (31 individuals)	Type A (70 individuals)	Type B (55 individuals)	
Primary Amenorrhea	Yes (37)	Fo=25 Fe=18.5	Fo=25 Fe=18.5	Fo=12 Fe=18.5	Fo=25 Fe=18.5	$\chi^2=5.77$ $\alpha=0.016$
	No (223)	Fo=100 Fe=111.5	Fo=25 Fe=18.5	Fo=113 Fe=111.5	Fo=25 Fe=18.5	

As it is observed in Table 4, the chi-square (6.27) obtained through comparison between emergence rates of primary amenorrhea between behavioral types A and B among athletes and non-athletes is not significant and acceptable in statistical

level of 0.05 ($X^2=0.05$, $df=3=7.28$), so we can conclude that there is not a significant relation between emergence of primary amenorrhea and behavioral types A and B among athletes and non-athletes.

Table 5. Data related to emergence of secondary amenorrhea among athletes and non-athletes

		Athlete (125 individuals)	Non-Athlete (125 individuals)	
Secondary Amenorrhea	Yes (81)	Fo=38 Fe=40.5	Fo=43 Fe=40.5	
	No (169)	Fo=87 Fe=84.5	Fo=82 Fe=84.5	$\chi^2=0.457$ $\alpha=0.499$

As it is observed in Table 5, the chi-square (0.457) obtained through comparison between emergence rates of secondary amenorrhea between athletes and non-athletes is not significant and acceptable in statistical level of 0.05 ($X^2=0.05$,

$df=1=3.48$), so we can conclude that there is not a significant relation between emergence of secondary amenorrhea and the fact that the subject is athlete or non-athlete.

Table 6. Data related to emergence of secondary amenorrhea among behavioral types A and B

		Type A (164 individuals)	Type B (86 individuals)	
Primary Amenorrhea	Yes (81)	Fo=59 Fe=53.14	Fo=22 Fe=27.86	
	No (169)	Fo=125 Fe=110.86	Fo=64 Fe=58.14	$\chi^2=1.96$ $\alpha=0.162$

As it is observed in Table 6, the chi-square (2.78) obtained through comparison between emergence rates of secondary amenorrhea between behavioral types A and B is not significant and acceptable in statistical level of 0.05 ($X^2=0.05$, $df=1=3.48$), so we can conclude that there is not a

significant relation between emergence of secondary amenorrhea and behavioral types A and B.

The following table is used for general testing of hypothesis No.2 based on investigation between emergence of secondary amenorrhea, being athlete and non-athlete, behavioral types A and B:

Table 7. Data related to emergence of secondary amenorrhea among behavioral types A and B among athletes and non-athletes

		Athletes (125 individuals)		Non-Athletes (125 individuals)		
		Type A (94 individuals)	Type B (31 individuals)	Type A (70 individuals)	Type B (55 individuals)	
Secondary Amenorrhea	Yes (81)	Fo=31 Fe=30.46	Fo=7 Fe=10.04	Fo=28 Fe=22.68	Fo=15 Fe=17.82	$\chi^2=3.88$ $\alpha=0.274$
	No (169)	Fo=63 Fe=63.54	Fo=24 Fe=20.96	Fo=42 Fe=47.32	Fo=40 Fe=37.18	

As it is observed in Table 7, chi-square (3.88) obtained through comparison between emergence rates of secondary amenorrhea between behavioral types A and B among athletes and non-athletes is not

significant and acceptable in statistical level of 0.05 ($X^2=0.05$, $df=3=7.28$), so we can conclude that there is not a significant relation between emergence of

secondary amenorrhea and behavioral types A and B among athletes and non-athletes.

5. Discussion and Conclusion

After investigations, it was determined that the tendency of type A people for exercise is more than that in type B people, such that 76% of athletes are type A and 24% are type B. This finding is correspondent with the results of the researches performed by Karo, Ebi, Bachma and Yang based on high tendency of type A people for physical activity. It seems that people with behavioral pattern type A have more tendency for participation in athletic competitions because of their competitive and contest nature and understanding of high stress.

According to the investigations about menstrual disorders in behavioral patterns type A and B, considerable results are obtained. As it was observed about the rate of primary amenorrhea among behavioral types of athletes and non-athletes, the rate of primary amenorrhea in type A people is more than that in type B people. Although this difference was not statistically important, it showed that behavioral pattern type A is effective in delays of menstruation. It seems that during commencement of menstruation, behaviors type A can not have more effects on menstruation of girls because of inconstancy of personality, so it is suggested that a research should be done on 16-year-old athlete and non-athlete girls of behavioral types A and B with high confidence about constancy of personality of subjects.

When comparing the rate of primary amenorrhea between athletes and non-athletes, it was observed that there is a significant difference between these two groups: delay in commencement of the first menstruation among athletes is more than that among non-athletes. This finding is correspondent with the results of the researches carried out by Dil, Gerlash, Martin, Alexander, Malina, Harber, Avent and Campbell based on delay in commencement of menstruation among athlete girls. About the rate of menstrual interruption (secondary amenorrhea), no significant difference was observed between behavioral types A and B among athlete and non-athlete groups. This finding is not like most of the available researches including those of Dil, Blumberg, Spork and Martin, based on emergence of secondary amenorrhea among athletes. On the other hand, the results of this research showed that the rate of menstrual interruption among type A individuals is more than that among type B people. Although this difference is not statistically important, it shows that the stress and behavioral characteristics of type A can cause menstrual disorders among girls. This finding is correspondent with the results of the researches carried out by Kont Foreman and Doroty Harris that introduced the anxiety and psychological stresses as

important factor in menstrual disorders. But considering the nature of the present research and definition of the research offered for secondary amenorrhea, there is no significant relation between type A and B athlete and non-athlete girls. While the findings of research show that there is irregularity of menstruation among girls, especially among type A, so it is suggested that another research should be done about menstrual disorders among types A and B athlete and non-athlete girls including increase or decrease of menstrual period or medical examinations and control.

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12/4/2012