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The Relationship Between Female Teenagers' Lifestyle and Osteoporosis Prevention

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Abstract: The lifestyle during adolescence has a significant preventive role to avoid osteoporosis in adulthood. The present investigation has studied the lifestyle of female adolescents in relation with preventing osteoporosis. In the present investigation, being a descriptive-analytical study, 7600 of female adolescents were selected in Tehran city and from high school and pre-university students. The method of selection was random cluster sampling. The data collection instrument was a questionnaire consists 2 parts. The first part includes the demographic characteristics and the second included some information on different aspects of their lifestyle related to osteoporosis prevention including nutrition, physical exercise, habit- such as smoking, dieting, taking weight loss food regimen and weight loss drugs. For analyzing and assessing the gathered data descriptive statistics (absolute and relative frequency tables) and for inferential statistical analyses chi-square (χ^2) was utilized. The finding in this study indicated that in terms of nutrition, physical activity and exercise, the highest percentage of cases (51.8 and 57.7%) had undesirable lifestyle. In addition, 50% of cases had undesirable lifestyle. About habits (smoking, using weight loss food regimen and using weight loss drug) the highest percent of cases (74.9%) had desirable lifestyle. In addition, there was a significant statistical relationship between life style and variables of education level ($p = 0.004$), economical status of family ($p = 0.043$), the birth number in family ($p = 0.001$) and educational level of mother ($p = 0.005$). Considering, the fact that 50% of the understudy adolescents did not have a desirable and proper lifestyle, the officials and decision-makers of the country should think of some innovative ways to settle the existing problems regarding the lifestyle among adolescents in order to prevent osteoporosis in the future.

Key words: Lifestyle, female adolescent, prevention, osteoporosis, physical activity, innovative ways

INTRODUCTION

Osteoporosis is a common and costly condition that can cause disability or death. Adequate calcium, vitamin D and weight-bearing exercise are important for everyone and are fundamental to any program for prevention of bone loss or treatment of osteoporosis (Watts, 2000). Osteoporosis is a very critical and treacherous health challenge in the health system in developing and developed countries. In people over 50, one of each 3 women and one of each 12 men are suffering from osteoporosis (Cohen and Roe, 2000). The results of the comprehensive study of osteoporosis throughout the country, conducted in 1379, were indicative of the fact that 50% of men and 70% of women over 50 are suffering from osteoporosis. In the European communities, every 30 min, one person fractures a bone in his/her body owing to osteoporosis. Among all of the fractures, pelvis fracture proves paramount due to its disastrous morbid and fatal consequences. What causes high hospital bills in many different regions of the world are osteoporotic fractures, considered as one of the most common causes of disability (Berarducci, 2004).

Osteoporosis usually starts after 30. During adolescence up to the age of 20, the process of bone construction outperforms the process of bone destruction. After the age of 30, due to some unknown reasons, this process reverses and the bone destruction outperforms bone construction. Up to the age of 30, the majority of people have gained the highest possible bone mass. After this age, bone loss/destruction gradually starts; in other words, the maximum quantities of bone mass forms during adolescence or the advent of the second decade of life (Atkinson and Ward, 2001). Accordingly, one of the best measures to be taken to prevent osteoporosis would be having strong during

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childhood as well as adolescence. According to different conducted investigations, increasing the bone mass up to 10% during childhood will decrease the risk of osteoporotic fractures up to 50% in adulthood. Therefore, one preventive measure against osteoporosis is to build stronger bones during childhood as much as possible.

Various factors have been recognized as osteoporosis risk factors including genetic factors, the lack or shortage of estrogen in menopausal women, the age of the first menstruation, menopausal age, the number of years passed after menopausal, not getting enough physicals, alcohol consumption, smoking, reduction in the absorption of Calcium and vitamin D, excessively low or high level of absorption of proteins, excessive absorption of Phosphor, Sodium and Caffeine.

Some people genetically enjoy a good skeleton structure, while other people do not. Up to the present era, the medical science has failed to change the human genetic features. In contrast, the lifestyle could be altered to gain the maximum bone mass. The bone mass in each person not only depends on the mentioned genetic features, but also it is related to the person's nutrition and exercising.

In different conducted studies, it has been proved that a range of 20-50% of the bone mass changes in people depends on their lifestyle and very particularly their nutrition. A study conducted by Nejad *et al.* (2003) indicates that nutrition and physical activities have a significant role in the mineral density of the bones.

Spencer *et al.* (1986) in their study found that there was an obvious reduction in the bone mass among young people, aging 31-45, who drank alcohol. Halioua and Anderson (1989), also indicated that in women who took more physical activity, their mineral bone mass was higher in some bones.

Lifestyle is the routine activities done daily by individuals. These individuals have recognized these activities as acceptable and consequently, these activities will affect individuals health conditions (Delaun and Ladner, 2002). People choose their lifestyle and through this, they can take measures to preserve and sustain their health and improve their health as well. Some of these activities include proper diets, sleeping and physical activities, exercising, avoiding alcohol and tobacco. The collection of all these activities forms the lifestyle of people (Phipps and Sands, 2003).

Enjoying a good, health requires considering an improvement in the health and hygienic lifestyle. The salient significance of lifestyle is mostly this fact that it affects the quality of life and preventing diseases (Potter and Perry, 2001). In order to improve health, the correction of lifestyles and improving them at the same time seems very crucial. Now that the health care systems have swerved towards improving health, controlling and preventing diseases, the role and responsibility of health care workers have proved to be more than ever in mitigating the health-related behaviors as the ultimate goal of this profession is helping people to gain the desirable level of health (Phipps and Sands, 2003). In the realm of selecting one's lifestyle, health care workers have the most important role in the society (Allender and Spradley, 2001). Here at this point, some facts need to be reconsidered.

First, the significance of the roles of health care workers in educating hygiene and health related issues, changing wrong behaviors and assisting people to achieve a desirable level of health and finally, improving the health of the society has been increasing. Second, the lifestyle during adolescence plays a very pivotal role in preventing osteoporosis in adulthood. Third, women are more vulnerable to osteoporosis due to some factors such as smaller and more delicate bones, lower bone density and the cessation of estrogen hormone after menopausal age that leads to the reduction of bone mass. Fourth, according to different research and various references, there has been little attention paid to the critical issue of osteoporosis in adolescent girls in relation to lifestyle.

According to the above-mentioned facts, the researchers decided to conduct a research in this field to present the strategies related to the lifestyle as the first step in the process of preventing osteoporosis. The specific purposes of the present investigation are determining the adolescent girl's lifestyles in relation to preventing osteoporosis in different fields including nutrition, habits-smoking, alcohol use, using weight loss regimen and taking weight loss drugs-as well as exercising and physical activities. In addition, some individual features and lifestyles of adolescent girls related to osteoporosis prevention have been determined.

MATERIALS AND METHODS

The present study is a descriptive-analytical study, which has been conducted aiming at assessing and analyzing the lifestyle of 7600 adolescent girls studying in Tehran and in relation to osteoporosis prevention in 2006. The participants of this study included 7600 adolescent girls studying in first, 2nd and 3rd grade of high schools and in pre-universities. The participants or subjects were not suffering from any kinds of physical or mental diseases; besides, the subjects did not have any kinds of movement or dietary limitations. They did not take any specific drug except for weight loss drugs taken

purposefully. The sample selection was done through random stratified cluster sampling as we had 140 high schools and 40 pre-university centers in Tehran. Accordingly, the number of samples from high school equaled 5600 and from the pre-university centers equaled 2000. Finally, 30 high schools and 10 pre-university centers were selected randomly. It should be mentioned that the present investigation was done observing the principle of consent and confidentiality. The data collection instrument was a questionnaire consisting 2 parts. The first part considered the demographic information and the second included some information on different aspects of their lifestyle related to osteoporosis prevention including nutrition, physical exercise, habits-such as smoking, dieting and taking weight loss food regimen and weight loss drugs. Lifestyle was categorized into three different levels of undesirable (below 50%), semi-desirable (between 50 and 84%) and desirable (between 85 and 100%). In order to determine the validity, content validity was considered. Kronbach α was used to determine the reliability of the study. For analyzing and assessing the gathered data descriptive statistics (absolute and relative frequency tables) and for inferential statistical analyses chi-square (χ^2) was utilized.

RESULTS AND DISCUSSION

The results indicated that 32.2% of the cases in the age group of 17, having 159.5 cm height and weight average of 54.36 kg (67.1%) had the average body mass of 21.58 kg m^{-2} (52.2%). In 31.5% of the adolescents were in the 3rd grade of high school and 48.2% of them studied humanities. In addition, 62% of these students described the financial status of their families as desirable. In 62.9% of the families, the number of people in the families was 3-5 people and the number of girls in 79.5% of the families was 1-3.

In terms of the rank of birth or the standing of the children in their families, 27.6% of the participants were the first child of the family. In 32.9% of the understudy cases, the father of their family had primary school education and mothers of 34.4% of the cases were primary school graduates. In addition, in 80.2% of the cases, the father was the guardian of the family.

The results of the study in terms of lifestyle demonstrated that 51.8% of the cases had undesirable lifestyle in relation to nutrition and lifestyle, 74.9% of the under-study cases had desirable lifestyle regarding the habits pertinent to osteoporosis such as smoking, drinking and taking weight loss regimen; in terms of physical activity and lifestyle related to osteoporosis prevention, 57.7% of the cases had undesirable lifestyle. In general, the lifestyle of 50% of the understudy cases was undesirable (Table 1). Furthermore, according to the results of the present investigation, there is a statistically significant relationship between lifestyle and educational level ($p = 0.004$), the family's financial status ($p = 0.043$), birth rank in the family ($p = 0.001$) and mothers level of education ($p = 0.005$) (Table 2).

However, no statistically significant difference was observed between lifestyle and body mass, field of study or education, number of family members, fathers level of education and the guardian of the family.

In the present investigation, the lifestyle was analyzed from three different aspects of nutrition, physical activity and habits that were related to osteoporosis prevention. The majority of the cases, which were studied had undesirable level of lifestyle in terms of nutrition in relation to osteoporosis prevention. Mackelvie and Khan (2001) showed that the absorption of Calcium among the Asian girls in both the first and second stages of breast sprout is lower in comparison with the white girls. In the point of view that the majority of the participants in this study described their financial status as desirable, the economic and financial factor has a slight role in determining the lifestyle, in contrast, lack of enough knowledge about proper nutrition and healthy lifestyle, which could help, prevents osteoporosis in improving osteoporosis. Accordingly, health training and eventually, increasing the awareness and drastic change in the health-related behaviors have a very fundamental role in improving the health level of the community. The majority of the under-study cases had a desirable level of lifestyle in relation to the habits pertinent to osteoporosis development such as smoking, drinking alcohol, taking weight loss regimen and consuming weight loss drugs.

Takakura *et al.* (2001) in their study indicated that 17.4% of the students were smokers and 38.4% were drinking alcohol. In addition, Grunbaum *et al.* (2002) in their investigation found out that 60% of pupils have tried smoking for one or two puffs and 78.2% of them have tried drinking alcoholic beverages once or more than once in their lives. The above findings are different from the present investigation findings. The reason of the difference lies in the fact that due to the dominant cultural norms of the community, smoking and drinking are considered anti-social behavior, because of this, the participants have avoided providing true answers. On the other hand, thanks to religious issues and considerations, the percentage of girls, who smoke and drink here is lower than those of the western communities.

The majority of the participants did not enjoy a desirable lifestyle regarding getting enough physical activities for osteoporosis prevention. The results of the

Table 1: The Frequency distribution of lifestyle in relation to osteoporosis prevention

	Nutrition		Habits		Physical activity		Total	
Lifestyle status	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Undesirable	3930	51.8	1370	25.1	4320	57.7	3800	50
Relatively desirable	2520	33.2	-	-	-	-	2660	35
Desirable	1140	15.0	4090	74.9	3170	42.3	114	15
Sum	7590	100.0	5460	100.0	7490	100.0	7600	100

Table 2: There is a statistically significant relationship between lifestyle and educational level (p = 0.004)

	Undesirable		Semi-desirable		Desirable		Total			
Demographic information	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Statistical value of χ^2	Level of significance
Educational status										
1st grade of high school	640	42.7	670	44.7	190	12.7	1500	100	18.947	0.004
2nd grade of high school	950	55.5	420	24.5	340	19.9	1710	100		
3rd grade of high school	1180	49.4	930	38.9	280	11.7	2390	100		
Pre-university	1030	51.5	640	32.0	330	16.5	2000	100		
Financial status										
Good	2200	47.0	1680	35.9	800	17.1	4680	100	13.026	0.043
Fair	1270	55.9	770	33.9	230	10.1	2270	100		
Poor	300	50.0	190	31.7	110	18.3	600	100		
Rank of birth in the family										
1st and 2nd children	1700	53.4	1080	34.0	400	12.6	3180	100	43.632	0.001
3rd-5th children	1340	45.4	1010	34.2	600	20.3	295	100		
6th and later children	610	50.0	490	40.2	120	9.8	1220	100		
Mothers education status										
Illiterate	680	54.0	400	31.7	180	14.3	1260	100	21.798	0.005
Primary school	1300	50.0	970	37.3	330	12.7	2600	100		
Under high-school graduate	1160	49.4	720	30.6	470	200.0	2350	100		
High-school graduate	610	48.0	540	42.5	120	9.5	1270	100		
University	20	28.6	10	14.3	40	57.1	70	100		

studies done by Takakura *et al.* (2001) were indicative of the fact that 52.1% of the girls did not receive any physical activity. Grunbaum *et al.* (2002) in their investigation found out that 57% of the girls receive intensive physical exercise, 22.8% of them had moderate physical activity and 37.9% did not receive any physical activity. In the present study, 50% of the participants had undesirable lifestyle.

Regarding the educational level and lifestyle, the results demonstrated that there is a statistically meaningful difference. Takakura *et al.* (2001) also concluded that the amount of drinking and not getting enough physical activity increases as the educational level of the student's increase. The above-mentioned results confirm the findings of the present investigation. Regarding the financial status and lifestyle, the results proved to be statistically significant. Regarding the relationship between the ranks or standing of birth in the family and lifestyle, the results showed a significant difference. In addition, the results demonstrated that there is a difference between mothers education level and lifestyle (p = 0.005). Takakura *et al.* (2001) in their study concluded that smoking and sedentary lifestyle have been more prevalent among students whose parents education level was below secondary level-high school. Simantagen also found out the prevalence of both smoking and drinking was more among students whose parents had not finished high school, or secondary education. These findings confirm and support the findings of the present investigation.

CONCLUSION

Osteoporosis is a latent and without symptom disease, which if not prevented through adolescence, will lead to reduced bone mass and consequently fractures during elderly periods of life. Therefore, recognizing the lifestyle of female adolescents could play an influential role in the prevention of osteoporosis during their elderly years. The results of the present study are indicative of the fact that the lifestyle of 50% of the female adolescent living in Tehran is undesirable. Hence, there is a dire need for more meticulous consideration to the lifestyle of these girls. The authorities and the decision makers also, should take more serious measures in the process of investigating and planning the lifestyle of these young generations. Community health workers, thanks to their attendance at different social environments, could play a more influential role in preventing osteoporosis through awareness raising and creating positive health decisions, as well as improving the lifestyle of community members.

Based on the results, it is suggested that correct and desirable health habits and behaviors are advocated and taught throughout schools and by community health

workers. Some of these correct and desirable healthy behaviors are proper nutrition to avoid osteoporosis, physical activity, avoiding harmful habits such as smoking and drinking, taking weight loss regimen and many others. It is essential that these cases be included in the schools curricula. In relation with physical activity, the exercise class should be included in the curriculum of pre-university students. In other grades, also, it should receive more attention. In this way, providing sufficient sporting space and facilities for the schools could be a very positive step toward increasing the physical activities taken by the adolescents. In addition, as the mass media and particularly TV is the most important channel through, which people receive health education, desirable and healthy lifestyle should be introduced and promoted via this means, in order for the members of the community especially women to receive sufficient training regarding osteoporosis prevention. Furthermore, a longitudinal study could be conducted to analyze adolescents lifestyles in relation to osteoporosis prevention and the occurrence of osteoporosis after menopausal age.

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