

Osteoporosis Awareness in a Sample of Teenage Girls in Jordan[#]

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Abstract

Objectives: To assess the knowledge in a group of teenage girls about risk factors and lifestyle affecting osteoporosis.

Methods: Convenience sampling method using a self-administered questionnaire. It was distributed among girls attending the 8-10th grade. Participation was optional. We have included a school from east and another school from west of Amman, the capital city in Jordan.

Results: A total of 320 girls participated in this survey. The age range was 13-17 years. (275 girls) 86% have heard of osteoporosis. Main sources of information were the television followed by family and then school. The girls demonstrated good but not detailed knowledge about the subject. Their lifestyle habits were not representing the health choices leading to osteoporosis prevention in their adulthood.

Conclusions: The results of this study demonstrate that there is a good level of knowledge about risk factors affecting osteoporosis among teenage girls in full-time education in Jordan but their lifestyle choices are not ideal to help them in preventing osteoporosis later on. Targeted education programs are therefore needed and should be aimed at both improving knowledge and affecting health choices in a manner suitable and appealing to this age group.

Keywords: Osteoporosis, Girls, Teenagers, Risk Factors, Knowledge.

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Introduction

The World Health Organization (WHO) ¹ has defined osteoporosis as a disease characterized by a reduction of bone tissue leading to increased susceptibility to fractures. The loss of bone occurs "silently" and progressively. Often there are no symptoms until the first fracture occurs. ² Females are affected in the majority of cases. The most common fractures are spinal, colles and least frequent femoral fractures. ³ Loud ⁴ stated that the adolescence period is most critical for

bone health because more than half of the peak bone mass is accumulated in during this time. Healthy adults generally reach their peak bone mass by age twenty. Even a slight increase of ten percent of peak bone mass reduces the risk of a pathological fracture during adult life by fifty percent. ⁵

The purpose of this study was to answer the following questions: Did the teenage girls in our sample hear of osteoporosis? What are their sources of knowledge? What do they know about

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nutrition and lifestyle risk factors related to osteoporosis? Do these teenagers have a healthy lifestyle helping them to prevent osteoporosis later in their lives?

Methods

We used a self-administered questionnaire. It was distributed among girls attending the 8-10th grades. Participation was optional. We have included a school from east and another school from west of Amman, the capital city in Jordan.

Results

Four hundred questionnaires were distributed. Only 320 were returned completely filled in. Mean age was 14.4+/-0.9 years; age range was 13-17 years. 270 girls heard of osteoporosis (84.3%). Fifty girls (15.6%) reported they had heard or read nothing about osteoporosis.

Primary sources of knowledge are shown in table (1):

Table (1): Primary sources of knowledge.

Source of knowledge	Number of cases (270)	%
Television and radio	125	46,2
Family	83	30,7
School	43	15,9
Reading about it	19	7

As evident from table (1), the media especially the television is a primary source of information among teenagers. Family (mothers and grandmothers) role was evident in 30 percent of the cases. The role of the schools is minimal in only about 16 percent of the cases. Reading is even a less popular option as a source of scientific information (only 7%).

Table (2) shows that young girls know the importance of dairy products as a main source of calcium, but they failed to recognize vegetables as an alternative source of calcium. They did not recognize the importance of the sun as a source of vitamin D which is essential for bone building. The association between weak bones and anorexia was also not clear to them.

The majority of the girls reported eating dairy products frequently. Less than 10 percent do not consume any dairy products. Around 22 percent do not eat any vegetables. The rest of them eat vegetables either daily or three times a week. The situation is not optimal concerning exercise. Around 68 percent do not participate in any regular exercise. Many of them avoid exposure to the sun. Smoking is prevalent in 17% of our sample either daily or occasionally.

Table (2): Frequency of Correct Responses to Nutritional and Lifestyle Statements.

<u>Statement</u>	<u>No of correct responses(out of 320)</u>	<u>%</u>
<i>Milk is one of the richest sources of calcium</i>	288	90
<i>Main sources for calcium are milk, yoghurt, cheese and eggs</i>	270	84.3
<i>Calcium is contained in levy vegetables</i>	138	43.1
<i>Teenagers need more calcium than children</i>	78	24.4
<i>Fizzy drinks in excess might cause osteoporosis</i>	224	70
<i>Exercise is beneficial for bone building</i>	208	65
<i>Smoking is bad for bone health</i>	256	80
<i>Sun exposure is beneficial for bone</i>	160	50
<i>Extreme low body weight might be associated to osteoporosis</i>	144	45

Table (3): Responses to Daily Habits.

<u>Statement</u>	<u>Responses</u>	<u>Cases (out of 320)</u>	<u>%</u>
Eating dairy products	Daily	201 cases	62.8
	3 times/week	89 cases	27.8
	None	30 cases	9.4
Eating vegetables	Daily	100 cases	31.2
	3 times/week	150 cases	46.9
	None	70 cases	21.9
Exercise	No exercise, walks to school	116 cases	36.3
	No exercise	100 cases	31.3
	3 times/week	84 cases	26.2
	Daily	20 cases	6.2
Sun exposure	I like to be in the sun	181 cases	56.6
	I avoid the sun	139 cases	43.4
Smoking	I do not smoke	266 cases	83.1
	I smoke occasionally	39 cases	12.2
	I smoke regularly	15 cases	4.7

Discussion

Many studies have investigated the knowledge of elderly women about osteoporosis especially when dealing with diagnosis and treatment. Some other studies concentrated on younger women and teenagers especially when concerned with prevention. Many authors have demonstrated non satisfactory results in eastern and western countries in regards to knowledge and lifestyle.^{6, 7, 8, 9} Our survey showed that 84.3% of the young girls have heard about osteoporosis. Their main source of knowledge was the television. This would indicate the importance of the media in educating teenagers about health issues.

Family role might be explained by the fact that many campaigns are directed to adult and postmenopausal women. Riaz⁶ confirmed that younger women had less information about osteoporosis when compared to older women to whom a lot of education material has been devoted. He also found out that the level of education and the socioeconomic status were associated with more knowledge about the subject. In our sample, 30% obtained information from their mothers and grandmothers. This might be explained that the capital city has a high number of educated and literate women who are getting information and conveying it to their daughters. It is important to notice that the

schools provided health information only in 16% of the cases. Education is obligatory up to the 6th grade in Jordan. Schools should be encouraged to participate in health education and health programs directed to achieve good nourishment, physical exercise and prevention of smoking.

One of the most important factors for bone health is the adequate availability of calcium; phosphate and vitamin D.¹⁰⁻¹² Teenagers need at least 1300mg of calcium per day.¹³ The girls showed relatively good knowledge about dairy products as the main source of calcium but they lacked knowledge about the alternative calcium sources such as green leafy vegetables which are important in the case of persons intolerant to dairy products or people who eat little milk products as they might be rich in cholesterol and calories. 63% of the girls reported eating dairy products and 31% eating vegetables daily; another 28% and 47% reported eating dairy products and vegetables at least three times per week which is good but it remains unsure if the girls are getting the daily requirements needed by their bodies in this period of growth. Inadequate calcium intake was reported by Anderson⁷ in 58% and Turner⁸ in 46% in his sample of UK teenagers. The majority (75.6 %) did not know the fact that the years during puberty are the most important for acquiring strong bones and it is where teenagers require more calcium than children. Carbonated drinks are possessed with

phosphoric acid which can affect calcium metabolism negatively and thus leads to more fractures.¹

Sun exposure is important to synthesize vitamin D. Moyad¹⁵ stated that during adolescence, a daily dietary consumption of 5 micrograms (200 U) of vitamin D is considered adequate to optimize intestinal calcium absorption and to increase kidney calcium reabsorption. In addition to dietary intake, most adolescents are able to synthesize sufficient vitamin D by brief exposure to sunlight. The girls did not recognize the importance of the sun for their bone health and 43.3% of them avoided the sun as much as they could. Many girls and women in our area are not getting enough vitamin D from exposure to the sun due to their dress style.¹⁶

Sixty five percent answered correctly that exercise is good for bone strength but it was not clear if they were aware of the fact that weight bearing exercise such as ball sports, walking, running and jumping rope are beneficial, whereas other sport types such as swimming and horse riding are good for fitness and health but not for bone health. 68% percent do not participate in regular exercise. Less than half of them walk to school. Walking represents the simplest and cheapest form of exercise. Gurney¹⁷ in a UK National survey indicated that 64 % of teenage girls in his sample participated in less physical activity sessions than required for bone health per week. Another study by Anderson⁷ reported that nearly half of the girls studied reflected less than the desirable levels of physical activity. The positive effects of exercise on body mass density were stressed by Chan¹⁸ and Lloyd.¹⁹ Turner⁸ indicated that nearly 40% in his sample had poor levels of fitness and only 21% achieved the ideal fitness level. He also indicated that female teenagers were less fit in comparison to their male peers.

A special situation that needs attention is the body image of teenage girls where they would like to be very thin to look like movie stars and models in the fashion show.²⁰ The relationship between body weight and osteoporosis was described by Lebrun²¹ as the 'female athlete

triad' with three separate, but interrelated medical entities, eating disorders, amenorrhea and early osteoporosis. In our sample, only less than half of the girls believed that extremely low body weight might be harmful to bone strength. Nichols²² demonstrated low prevalence of the full female athlete triad with all three components; on the other hand he demonstrated that nearly 20% were having at least one component of the triad making them possible candidates for long-term health consequences.

Anderson⁷ stated that over the last ten years, tobacco consumption among adolescents has increased substantially in several countries, particularly among female teenagers. Smoking may affect the attainment of peak bone mass, particularly when it is associated with other health risk behavior such as inadequate nutrition and low physical activity. In a study of teenagers in Canada by Anderson, 25% were smokers. Another study in the UK by Gurney¹⁷ showed that 33% are smokers. In our sample, 17% admitted smoking either regularly or occasionally. In our society, smoking among women is still widely unaccepted, whereas it is associated with being a mature male. All our effort should be directed to explain the negative effects of smoking on health in general and on bone health in particular.

For many years, those interested in osteoporosis faced the problem that the levels of awareness of the condition were low amongst the public, family doctors and policy-makers.²³ Effective measures to prevent osteoporosis can be done in different ways.

Capper²⁴ advised for national programs among teens to help in the prevention of osteoporosis. Schulman²⁵ and Debar²⁶ stated that distributing handouts in schools, clubs and clinics is an easy and inexpensive way to provide the youth with information.

Queen Rania Al-Abdullah of Jordan as a patron of the International Osteoporosis Foundation (IOF) has supported an international campaign against osteoporosis. Her main goal was to increase public awareness especially among girls

as this is the best method to help the prevention of osteoporosis. Osteoporosis awareness campaign included press conferences, newspaper articles, radio shows and TV appearances. It also included lectures in schools.²⁷ No studies were published to assess the effect of this campaign.

Limitations

The present study has a number of potential limitations. Besides the small sized sample, the data cannot reflect the knowledge status among teenage girls in the whole country from north to south as there are many variations in socioeconomic status, level of education, availability of sports facilities among different schools and different parts of the country. This sample included only girls in fulltime education and no illiterate teenagers who would probably have far less knowledge about health topics.

Conclusion

This study provides some insight about the presence of osteoporosis risk factors and its awareness in the studied population. However, these important risk factors can be modified by targeted health education. National programs specific and suitable for our society should be implemented to encourage a healthier lifestyle to help prevent osteoporosis in later years.

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الوعي في أوساط الفتيات المراهقات في الأردن حول ترقق العظام

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الملخص

الأهداف: تقييم معرفة مجموعة من الفتيات في سن المراهقة حول عوامل الخطر التي لها علاقة بالتغذية ونمط الحياة والتي قد تؤدي إلى ترقق العظام.

الأساليب: تم توزيع استبانة على طالبات الصفوف من الثامن إلى العاشر في إحدى المدارس الخاصة في عمان. كانت المشاركة اختيارية وتمت تعبئة الاستبانة ذاتياً.

النتائج: شارك ما مجموعه 110 من الفتيات في هذه الدراسة. وتراوحت أعمارهن بين 13 إلى 17 سنة. 86% سمعن عن مرض ترقق العظام. وكانت المصادر الرئيسية للمعلومات هي التلفزيون ثم الأسرة ثم المدرسة. أظهرت الفتيات معرفة جيدة لكنها ليست معرفة تفصيلية حول هذا الموضوع. وقد تبين أن عادات الفتيات الحياتية والغذائية لا تمثل الخيارات الصحية التي تؤدي إلى الوقاية من مرض هشاشة العظام في مرحلة البلوغ فيما بعد.

الاستنتاجات: إن خيارات المراهقات بالنسبة للتغذية وممارسة الرياضة والتدخين ليست مثالية لمساعدتهن في منع هشاشة العظام في وقت لاحق. لا بد من عمل برامج تثقيفية تهدف إلى تحسين المعرفة والسلوك الصحي بطريقة مناسبة وجذابة لهذه الفئة العمرية.

الكلمات الدالة: هشاشة العظام، المراهقات، التغذية.