

Effect of Educational Intervention About Osteoporosis Knowledge among Egyptian Women

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ABSTRACT

Background: Osteoporosis is generally known as a silent disease. Osteoporotic fractures lead to decrease the patient quality of life and major burden on the individual and community. Educational intervention is suitable for osteoporosis as many of its risk factors are modifiable.

Methods: An intervention study was carried out on 130 Egyptian women attending Belbeis Family Health Center using a sociodemographic questionnaire and LOKS-19 scale to assess osteoporosis knowledge. This work passed through three phases (preintervention- intervention- postintervention).

Results: 130 participants; mean of age was 50.4 ± 5.6 . About 55.4% were from low social class and 60% of the sample were menopausal. 58.5 % had positive family history, 86.2% of the sample were drinking caffeinated beverages. There was a statistically significant improvement in the total knowledge after intervention (from 1.3% to 82.3%). There was direct correlation between total adequate knowledge and education and social class. On the other hand, there was indirect correlation between total adequate knowledge and age.

Conclusion: Simple educational programs are successful in raising osteoporosis awareness among Egyptian patients.

Keywords: Egyptian, Educational intervention, Knowledge, Osteoporosis.

INTRODUCTION

Osteoporosis affects both sexes, however it affects women more than men ⁽¹⁾. It is a skeletal disease causes porous bones result in bone mass reduction and bone structure deterioration. The bone becomes more fragile, and the risk of fracture increases ⁽²⁾.

Osteoporosis accounts for 1.5 million fractures every day, cause pain, increases cost of rehabilitation, disability, quality of life becomes poor, and premature death due to decrease level of estradiol, decrease in osteoblastic activity and a rise in osteoclastic resorption activity ⁽³⁾.

Although risk of osteoporotic fracture of women over the age of 50 is 50%, equivalent to the combined risk of developing breast, uterine, and ovarian cancers; less developed nations are still ill-prepared to face the burden of the disease. Poor outcomes are caused by illiteracy, and a lack of knowledge about the risk factors and symptoms ⁽⁴⁾.

There are several known osteoporosis risk factors. Sex, advanced age, a low body mass index, menopause before age 45, and a family history of osteoporosis or fragility fractures, nulliparity, lactation for long time, prolonged amenorrhea unrelated to menopause, inadequate intake of calcium and vitamin D, decreased intestinal absorption of calcium, lactose intolerance, excessive intake of caffeine or alcohol; smoking, sedentary life style, and prolonged treatment with thyroid hormones, anticonvulsants, glucocorticoids, use of anticoagulants and aluminum antacids ⁽⁵⁾.

In Egypt, there were 21.9 percent of men and 28.4 percent of women who had osteoporosis, as well as 53.9 percent of women and 26 percent of men who had

osteopenia. The frequency of osteoporosis in women after menopause was greater and reached 47.8% in Upper Egypt's rural districts. Such a high incidence highlights the severity of the issue and the significance of having current recommendations for osteoporosis care in Egypt ⁽⁶⁾.

The study aimed to improve the knowledge regarding osteoporosis among Egyptian women.

Research Question

Does the educational intervention improve knowledge regarding osteoporosis?

METHODS

An intervention study was carried out on 130 Egyptian women assuming that the mean level of knowledge about preventive measures of osteoporosis is $(1.74 \pm 0.74 - 1.97 \pm 0.49)$ pre- and post-intervention respectively ⁽⁷⁾ using open epi online program at 95% confidence interval and adding 10% non-response rate.

The study applied on Egyptian women attending the family medicine clinic at Belbeis Family Health Center asking for any medical service. Belbeis is the second largest district in Sharkia Governorate, Egypt regarding population density. Sample unites were

collected by systematic random technique according to the inclusion criteria.

Inclusion criteria:

- Women aged ≥ 40 years.
- Menopausal or not.

Study tool:

- 1- Sociodemographic questionnaire ⁽⁸⁾ to assess their social characteristics including (education and occupation, sewage disposal, income,). Moreover, questions about physical activity, smoking, cortisone, alcohol, menopause, family history of osteoporosis or prior fracture.
- 2- Lebanese Osteoporosis Knowledge Scale (LOKS-19) released in 2019 ⁽⁹⁾. Their questions were gathered from the four most popular questionnaires used to assess knowledge about osteoporosis (The Osteoporosis Questionnaire (OPQ) - The Osteoporosis Knowledge Assessment Tool (OKAT) – The Facts on Osteoporosis Quiz (FOOQ) - The Osteoporosis Knowledge Test (OKT)). The scale was divided into three sections (definition of osteoporosis – risk factors – preventive measures). The right answer took “one mark”, and “zero” for wrong or don’t know answer, with total score 24 (good knowledge scored ≥ 13). Expert committees from the Departments of Family and Community Medicine approved the questionnaire after translated to Arabic language.

Data collection:

The study was conducted from February to June 2022. The scale took about 10 minutes to be fulfilled. Initial assessment phase was done (pre-test) by personal interviewing. The second phase (the intervention educational phase) was done through interactive Zoom and personal small groups meetings in the health center.

The third phase (post-test) was done three months after the second phase to evaluate the effect of the educational phase by personal meeting or telephone call. There was no dropout from the sample.

Administrative Approval:

The study approved by Sharkia Health Directorate and approval letter was sent to the selected health center.

Ethical approval:

Written consent was taken from the participants after explaining the objectives and methodology of the study.

Each participant expressed as a code to ensure confidentiality. The Institutional Review Board (IRB) gave its formal consent (ZU-IRB # 5730). This work has been carried out in accordance with the code of ethics of the world medical association (Declaration of Helsinki) for studies involving humans.

Statistical analysis

All data were collected, tabulated, and statistically analyzed using Statistical Package for the Social Sciences (SPSS) version 20.0 for Windows (SPSS Inc., Chicago, IL, USA). Qualitative data were described using their absolute frequencies. McNamar test was used to detect improvement in knowledge before and after intervention. Pearson correlation was used to identify relation between demographic factors of studied group and their knowledge. The level of statistical significance was set at 5% ($P < 0.05$) and at ($P \leq 0.001$) if the difference was highly significant.

RESULTS

Table 1: Mean of age of the participants was 50.4, 52.3% of the sample had secondary education, 62.3% had no work. In addition, about 55.4% were from low social class and 60% of the sample were menopausal. 58.5 % had positive family history of osteoporosis or osteopenia and 86.2% of the sample were drinking caffeinated beverages.

Table (1): Socio-medical characteristic of the studied group (N=130)

Characteristics	Number (130)	%
Age Mean ±SD (50.4±5.64)		
(40-≤50 y)	63	48.5
(50-≤60 y)	67	51.5
Education		
Read and write	2	1.5
Primary education	20	15.4
Secondary education	68	52.3
University	38	29.2
Postgraduate	2	1.5
Occupation		
No work	81	62.3
Working	49	37.7
Residence		
Rural	94	72.3
Urban	36	27.7
Social class		
Low	72	55.4
Moderate	40	30.8
High	18	13.8
Menopause		
No Menopause	49	37.7
Premature**	3	2.3
Menopause	78	60.0
Risk factors of osteoporosis		
Positive Family history#	76	58.5
Caffeinated beverages*	96	86.2
Smoking	6	4.6
Physical activity	46	35.4
Sun exposure	74	56.9
Daily milk consumption	84	64.6

*Caffeinated beverages as (tea drinking-soft drinking- coffee drinking)

**menstrual periods stop before age 40

#Positive family history of osteoporosis or osteopenia

Figure 1: After intervention, there was statistically significant improvement in adequate knowledge from 1.3% to 82.3%.

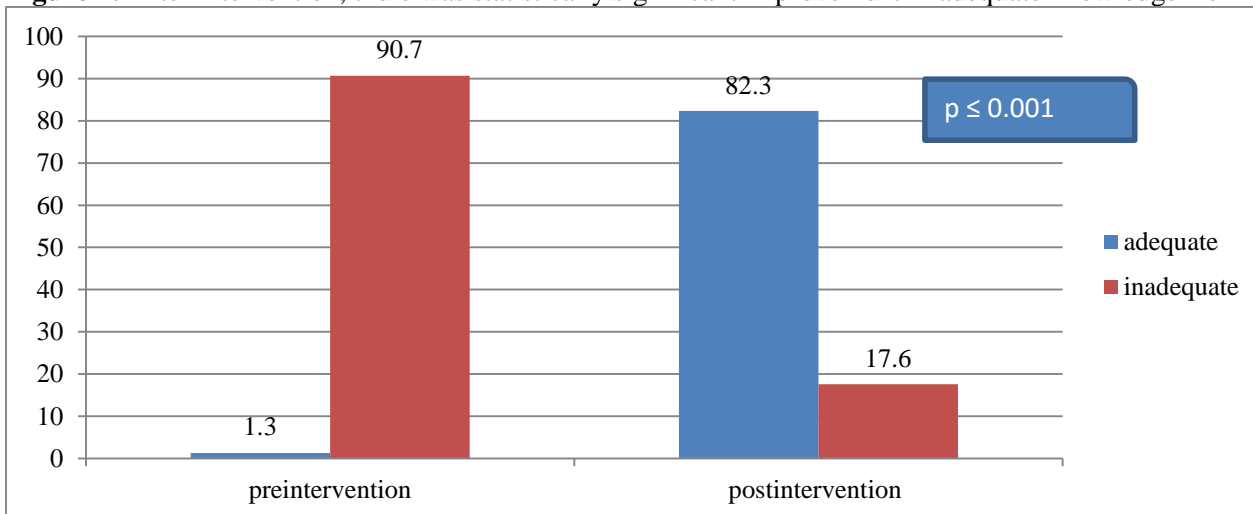


Fig. (1): This figure shows statistically significant improvement in adequate knowledge in post-intervention versus pre-intervention

Table 2: There was indirect significant correlation between age and total knowledge. On the other hand there was direct significant relation between educational level, social class, and total knowledge.

Table (2): Correlation between knowledge about osteoporosis and (age, educational level and social class)

	Knowledge	
	r	P value
• Age	-0.54	0.006*
• Educational level	0.61	<0.001*
• Social class	0.56	0.003*

DISCUSSION

By 2025, it is anticipated that there would have been more than 3 million osteoporosis-related fractures. There is evidence supporting the idea that understanding osteoporosis has a significant role in osteoporosis preventative behaviour. Unfortunately, only a minority of the research on population-based samples that reported levels of awareness of osteoporosis did so using validated tools to assess such knowledge. So, there is a need to improve knowledge about osteoporosis⁽¹⁰⁾.

According to the current study there were many risk factors that may contribute to osteoporosis. 58.5% of the sample had a positive family history of osteoporosis or osteopenia. A case control study was carried out in the Clinical Center of Republic Srpska University during 2015-2016 revealed the importance of family history of osteoporosis and fractures as a major risk factor as hereditary variables influence the achievement of bone density maximum up to 25 years of age⁽¹¹⁾.

This study revealed that 86.2% of the sample consumed caffeinated beverages, 4.6% were smoking, only 35.4% practiced physical activity, and 56.9% only were exposed to sun. Several studies confirm a relation between these factors as contributors to osteoporosis. A study done in 2017 in Jordan revealed a high prevalence of osteoporosis among postmenopausal Jordanian women, with many preventable risk factors could be modified as physical activity, sun exposure, lifetime daily caffeine intake, daily calcium intake smoking, and vitamin D3 level⁽¹²⁾. Another study showed a statistical significance between premenopausal consumption of caffeine and smoking as factors that lowering the bone density making osteoporosis and fractures occurred more⁽¹³⁾.

Preintervention total adequate knowledge was considered very low with statistically significant improvement in adequate knowledge from 1.3% to 82.3% after educational intervention. A study done in Beni-suef, Egypt⁽¹⁴⁾ revealed the importance of patient and health education in improving the awareness of the public and

gaining healthy lifestyle practices act as a primary prevention that decrease the disease incidence. A concomitant study was carried out in Korea⁽¹⁵⁾ assured a great improvement in the public general knowledge about osteoporosis after implementing of a simple educational intervention so great prospective decreasing in morbidity and complications.

There was a statistical significance positive correlation between adequate knowledge and education level and social class. The higher the education and the social class the more adequate knowledge. This may be explained as education provides a higher awareness because of provision of information. The higher the social class the easier to ask for a professional help.

A negative correlation was found between age and adequate knowledge. The adequate knowledge was more prevalent among younger ages. This may be explained as the younger ages deal easier with information and internet. A study done in Iran in 2013⁽¹⁶⁾ showed better knowledge among higher education level and social class and recommends more intervention programs targeting lower educational level and social class. This is concomitant with a study done in Saudi Arabia⁽¹⁷⁾ whereas university students had broad good understanding about osteoporosis than others.

In contrast a study done in 2022 in Ha'il city Saudi Arabia⁽¹⁸⁾ targeting general population revealed no significant association between the total awareness score and age, education, and employment and this appeared as ignorance to many domains about osteoporosis knowledge.

Another study done in Alexandria, Egypt⁽¹⁹⁾ revealed a statistical relation between total knowledge and education and employment with no significant relation to age.

CONCLUSION

Educational intervention is still having an effective role in improving awareness among general population. Many risk factors contributing to osteoporosis are modifiable and controllable.

RECOMMENDATIONS

Great interest should be paid for low socio-standard population. More educational programs regarding osteoporosis should be provided in the primary care level.

Study limitations: lack of cooperation from some women but the researchers were able to convince them to take part in the study after explaining its significance, aims, and methods.

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