Original Research Article

Effect of Osteoporosis Prevention Programme on Knowledge among Elderly People

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Abstract: *Objectives*: Osteoporosis is an asymptomatic disease characterized by low bone mass and loss of the quality of bone, which increases the risk of a bone fracture. This is the most common reason for a broken bone among the geriatric population. Educational intervention is ideal for osteoporosis because many of its risk factors can be treated, such as poor dietary calcium intake and limited amounts of physical activity. This study aimed to determine the effect of the prevention program on knowledge regarding osteoporosis among geriatrics and to associate the level of knowledge with selected demographic variables. *Materials and Methods:* Pre-experimental design adopted. Totally 60 geriatric people aged >60 years visited the selected chronic outpatient clinic were selected by using a convenient sampling technique. The data collected through a structured questionnaire to measure knowledge regarding osteoporosis. The educational awareness program was conducted as a group for 30 minutes. The pre-test and post-test scores were analyzed, in terms of both descriptive and inferential statistics. *Results:* Out of 60 samples 15% & 55% had adequate knowledge, 61.7% & 40% people had average knowledge and 23.3% & 5% had inadequate knowledge in pre and post-test. The paired 't' test value 6.5147 is highly significant (P<0.01) which proved the effectiveness of osteoporosis prevention programme (OPP). There was a significant association found between the level of knowledge and education and BMI at *P*<.05 level. *Conclusion:* Prevention is the most effective method of decreasing the morbidity and mortality of osteoporosis. Nurses have a major impact on educating geriatrics about the risks for osteoporosis.

Keywords: Osteoporosis Prevention Programme; Effect; Knowledge; Elderly People.

INTRODUCTION

Ageing is a biological process of growing old during which structural and functional changes will occur. The age of 60-65 years is the beginning of old age and people get retirement from work [1]. The biological process of ageing associated with progressive degeneration of the tissues which impacts the accumulation of a wide variety of molecular and cellular damage. This leads to a gradual decrease in physical and mental capacity causing the risk of diseases and its complications, results in death for some people. However, these changes are loosely associated with a person's age in years and they are neither linear nor consistent [2].

Since the proportion of the world's population especially whose aged >60 years will double in the next four decades. This will be accompanied by an increased incidence of chronic age-related diseases such as chronic obstructive pulmonary disease (COPD), diabetes, hypertension, depression, and congestive heart failure that will place a huge burden on healthcare resources [3].

During the process of ageing, there is increased bone resorption and decreased bone formation. This is opposite to the normal turnover of bone occurring in a healthy young skeleton, in which the rate of bone resorption and matrix degradation is matched by bone formation and matrix mineralization [4]. Moreover, ageing affects the formation of the active form of vitamin D which affects the adequate absorption of calcium, which result in osteoporosis [5, 6].

Osteoporosis is a chronic skeletal disease, characterized by bone fragility due to deterioration of the bone microarchitecture and reduction of bone mass and, resulting in an increased risk of fracture [7]. Many of the risk factors for osteoporosis in the general population are features of COPD including advanced age, smoking, low physical activity levels, and low body weight. Thus, the prevalence of osteoporosis is highly associated in patients with COPD and low body mass index [8, 9].

Moreover, 34 million people were having osteoporosis, with low bone mass in the United States. In which, the elderly population aged at least 65 years, accounts for most of the burden, with 70% of all fractures [10, 11]. In Kingdom of Saudi Arabia, at a national level, the prevalence of osteoporosis and osteopenia (either spine or femur) and revealed a prevalence of 37.8% and 54.1%, respectively, in Jeddah; 37.4% and 33.9%, respectively, in Al Khobar, and 21.4% and 35.7%, respectively, in Riyadh [12, 13]. Particularly, vitamin D deficiency is extremely common among Saudis overall, more in females. This was attributed to the dressing customs and avoidance of sun exposure. This fact might have confounded by many studies on osteoporosis in Saudi Arabia [14]. Awareness and knowledge about any disease is the first step to prevent and treat it, so this study aimed to determine the effect of osteoporosis prevention program (OPP) on knowledge among geriatrics and to associate the level of knowledge with selected demographic variables.

MATERIALS AND METHODS

In a pre-experimental research design, one group pre-test post-test method was used to assess the effect of the prevention program on knowledge regarding osteoporosis among the geriatrics population. The research was carried out in chronic out-patient clinics of selected health centers. Totally 60 geriatric people aged >60 years were selected by using a convenient sampling technique. The data collected through a structured questionnaire to measure knowledge regarding osteoporosis. The tool consists of demographic variables which include age, gender, education, occupation, family type, family history of DM, duration of DM, and treatment methods adopted, and structured questionnaire on knowledge assessed by using 20 items based on multiple-choice questions which were developed from various available literature related to osteoporosis. According to the data plan, the data was collected from the sample after obtaining informed consent. After the pre-test, OPP as an educational awareness was conducted as a group consisting of 10 people for 30 minutes.

The scores were categorized as follows; they were below 50% indicates inadequate knowledge, 50–75% shows average knowledge and above 75% is considered as adequate knowledge. The collected data were analyzed by using descriptive and inferential statistics by using Statistical Package for Social Sciences (SPSS) package version 22, which includes number frequency, mean, standard deviation, and chi-square test for statistical analysis.

RESULTS

The study results showed that among 60 geriatrics people majority 28 (46.7%) were between the age of 60-65 years, 17 (28.3%) were between the age of 66-70 years, nine (15%) were in 71-75 years and six (10%) were in more than 75 years. The mean age of the people was 67.07±5.6 years. Regarding gender, 21 (35%) were men and 39 (65%) were women. About educational status, 12 (20%) studied up to primary level, 19 (31.7%) were studied up till high school, 18 (30%) educated up to higher secondary level and 11 (18.3%) were graduates. Twelve people (20%) were involved in the job. Considering the body mass index (BMI) of the people, six (10%) were underweight, 13 (21.7%) were normal BMI, 24 (40%) were overweight and 17 (28.3%) were obese. Eighteen (30%) were belonging to nuclear type and the remaining 42 (70%) were in joint family type. Among them, 39 (65%) were having a history of osteoporosis.

Most of the people 41 (68.3%) were non-smokers, three (5%) were past smokers and 16 (26.7%) were current smokers. Nine (15%) were having a history of cardiac problems, 18 (30%) having COPD, 14 (23.3%) hypertension, and 19 (31.7%) having diabetes mellitus. Regarding source of health information, 23 (38.4%) received from mass media, 20 (33.3%) from health care professionals, eight (13.3%) from family members, and nine (15%) from friends.

Table-1: Frequency distribution of Knowledge level of geriatric population regarding osteoporosis in pre and post-test (n=60)

Level of Knowledge	Score	Pre -test		Post test	
		N	%	N	%
Inadequate Knowledge	<50%	14	23.3	3	5
Moderate Knowledge	50-75%	37	61.7	24	40
Adequate Knowledge	>75%	9	15	33	55

N-number; %-Percentage

The study result showed that out of 60 samples nine of them (15%) had adequate knowledge, 37 (61.7%) people had average knowledge and 14 (23.3%) had inadequate knowledge in pre-test and 33 (55%) had adequate knowledge, 24 (40%) members had average knowledge and three (5%) had inadequate knowledge in post-test after conduction of OPP.

Table-2: Paired 't' test of osteoporosis prevention programme on knowledge in geriatric population (n=60)

Knowledge Level	Mean	Standard Deviation	Mean Difference	Degrees of freedom	Paired 't' test value	*p*-value
Pre-test	11.27	3.2	0.593	118	6.5147	p<.00001*
Post-test	15.13	3.29				

Significant

Table number 2 illustrates that the mean post-test knowledge score 15.13 is higher than the mean pre-test knowledge score 11.27. The mean difference between pre-test and post-test score of 3.86. The paired 't' test value 6.5147 is highly significant (P < 0.01). Hence the study findings revealed that OPP on knowledge was effective in increasing the knowledge of the geriatric population.

The chi-square test reveals that there was a significant association found between the level of knowledge and education and BMI at *P*<.05 level.

DISCUSSION

In the current study, most of the study participants were 28 (46.7%) were between the age of 60-65 years, and the mean age of the people was 67.07±5.6 years with 65% women. This was found in another study the mean age of the sample was 70.5±9.3 years with 91.6% women [15]. The mean score of BMI was 26.5±4.87 in this study which was different (24.2 ±2.1) in another study [16].

The effect of OPP on knowledge was evaluated among the geriatric population in this study. There were many studies conducted on the effectiveness of educational programs towards knowledge regarding osteoporosis [15, 16]. In Australia, the osteoporosis prevention and self-management course was developed and administered for four weeks. The finding evidenced that there was an increase in participant's knowledge after providing osteoporosis intervention to the participants [17].

The mean difference between pre-test and post-test score was 3.86 in the present study. The mean change in knowledge score of 1.1 observed in a similar study which shows that the increase in knowledge following the education [18]. According to a study conducted on osteoporosis education improves osteoporosis knowledge and dietary calcium: comparison of a 4 week and a one-session education course, the results evidenced that comparing four weeks and a one-session course, both helped to improve osteoporosis knowledge however four weeks course only helped to decline the use of osteoporosis medications [19].

The most effective intervention motivated individuals to change their related behaviours. Another research showed that the osteoporosis knowledge did not lead to changes in their behaviours [20]. In this present study, there was a significant association observed between the level of knowledge and education and BMI at *P*<.05 level. There was a significant relationship between the level of knowledge and education, still, the relationship between education level and osteoporosis-related life habits were not significant. The relationship of osteoporosis-related life habits and awareness of osteoporosis and its risk factors was significant but there was no significant relationship of osteoporosis-related life habits and preventive factors [21, 22]. Another study results showed that Iranian women with a higher education level have significantly better knowledge about osteoporosis than women with a lower educational level, like the Chinese women in Singapore and Salvadoran women in Brazil [23].

Study Limitations

There are some limitations to this study. The sample size was small, and the prevalence of osteoporosis was not obtained. Also, the study did not include the practice of people regarding the prevention of osteoporosis. The selected demographic factors didn't further analyses for the correlation of self-efficacy of people. The study can be conducted as an experimental study with the control group in future researches.

CONCLUSION

In conclusion, prevention is the most effective method of decreasing the morbidity and mortality of osteoporosis. Effective educational intervention is important in increasing osteoporosis knowledge among Saudi people. Nurses have a major impact on educating geriatrics about the risks for osteoporosis to reduce future complications. Awareness through educational intervention is important in the prevention or treatment of chronic diseases such as osteoporosis. Therefore, it will contribute to reducing the burden of diseases, and mortality rates. OPP must provide opportunities for osteoporosis education at the national level for all geriatric population.

Ethics

Ethics Committee Approval: This study has been evaluated and approved by the department scientific committee, King Faisal University.

Informed Consent: Informed consent form was not taken from all the study participants.

Peer-review: Internally peer-reviewed.

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