ATTITUDES OF BANGLADESHI PEOPLE TO OSTEOPOROSIS

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ABSTRACT

Osteoporosis is an established major public health issue in the west as well as it is recognized as a growing problem in Asia. Researches on osteoporosis are increasing quickly everywhere in the globe on its complications. More than 50% of all osteoporotic fractures occur in Asia by 2050 but unfortunately, the people of Bangladesh are not much aware of it yet. Osteoporosis prevention and awareness are mostly restricted to rural also as urban areas in Bangladesh. The present study gets important to analyze the attitude and knowledge about osteoporosis among Bangladeshi. This study was a case-control study where osteoporosis patients were considered as cases and osteoporosis-free persons considered as control. The study was conducted at three Government hospitals and one private hospital in Dhaka city. The data were collected by well-trained data collectors through a well-designed questionnaire and other measurement instruments through the direct interview method from November 2019 to March 2020 by systematic sampling. Logit model were used in the study. In this study, about 58 percent of the respondent are affected by osteoporosis and 42 percent are free from osteoporosis where 52 percent respondents below 50 years and 48 percent above 50 years. About 65 percent of the male are affected by osteoporosis above 50 years. Females were affected by osteoporosis due to older age by 1.30 times as compared to an earlier age. About 60 percent of women with compression fractures do not realize that they have had a fracture. The incidence in women is eight times higher than that in men. Men attitude is positive rather than women about osteoporosis.76 percent of rural people had no good idea about osteoporosis. There was no significant association between adequate knowledge about osteoporosis and some demographical factor like age, education, occupation, and residence location that are not conferred with existing literature. In the prevention process of osteoporosis, emphasis should be on the knowledge transmission as it was observed in the study that three treatments regarding knowledge (physical exercise, nutrition, and smoking) are significantly different. To take preventative measures, awareness through print, electronic and social media about nutrition and lifestyle changes should be build-up for Bangladeshi not only among older as well as Mid-aged people. The outcomes of the study help stakeholders to achieve Sustainable Development Goal (SDG) linked to health status in Bangladesh.

Key Words: Attitude, Fragile, Knowledge transmission, Osteoporosis, Osteoporotic fracture.

1. INTRODUCTION

Osteoporosis is an age-related disorder that causes the gradual loss of bone density and strength. When bones become more porous and fragile the risk of bone

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fracture is greatly increased. The loss of bone occurs silently but progressively. Often, there are no symptoms until the first fracture occurs. Osteoporosis affects over 200 million people worldwide at a high cost to healthcare systems (Monika et al. (2014)).Melton (1995) estimated that 30 percent of postmenopausal white women in the United States have osteoporosis. It is more likely in females than males. Osteoporosis is the most common type of metabolic disorder of bone that increases fracture fragility. It occurs when bones lose minerals, such as calcium decreases more quickly than the body can replace them which results in loss of bone thickness (bone mass or density). As a result, bones become thinner and less dense. Osteoporosis represents a major public health issue as the frequency of osteoporotic fracture is rising dramatically in both developed and developing countries. By 2050, the worldwide incidence of hip fracture in men is projected to be increased by 310 percent and 240 percent in women Mithal et al. (2009). Approximately one in three women and one in five men over the age of 50 will break a bone due to osteoporosis Melton et al. (1992). An osteoporotic fracture occurs every three seconds in Asia Elaine (2011). It takes a huge personal and economic toll. In Europe, the disability due to osteoporosis is greater than that caused by cancers (except lung cancer) and is greater than that lost to a variety of chronic non-communicable diseases such as rheumatoid arthritis, asthma, and high blood pressure-related heart diseases. Researches on osteoporosis are expanding rapidly all over the world. But unfortunately, the people of Bangladesh are not much aware of it yet. Bangladeshis are at greater risk of osteoporosis of Asian descent Islam (2017). Females were affected by osteoporosis due to older age by 1.30 times as compared to an earlier age but their knowledge about osteoporosis among women was low Dohney et al. (2007). Healthy and diagnosed women were poorly informed about osteoporosis (Werner (2005)).The increasing trend of life expectancy, high prevalence of nutritional deficiencies in low-income men and women, and increase in morbidity due to osteoporosis might force the health care system of Bangladesh into jeopardy soon. Socioeconomic status, age, level of education heavily influenced in gaining osteoporosis knowledge Gemalmaz and Oge (2008); Eslamian et al. (2007); Unson et al. (2003); Unson et al. (2005). Its prevention and awareness of the people are in a miserable condition in rural as well as in urban areas in Bangladesh. No data are available on bone health, the prevalence of osteoporosis, and fracture frequency in the population of Bangladesh. So, it is necessary to determine the prevalence of osteoporosis and in turn try to increase the awareness, the way out for prevention, and the treatment of osteoporosis urgently. In this regard, it is urgent to take necessary proactive actions in preventing osteoporosis in Bangladesh.

2. OBJECTIVES OF THE STUDY

Osteoporosis prevention and awareness of the people are in a miserable condition in rural as well as in urban areas in Bangladesh. The objectives are:

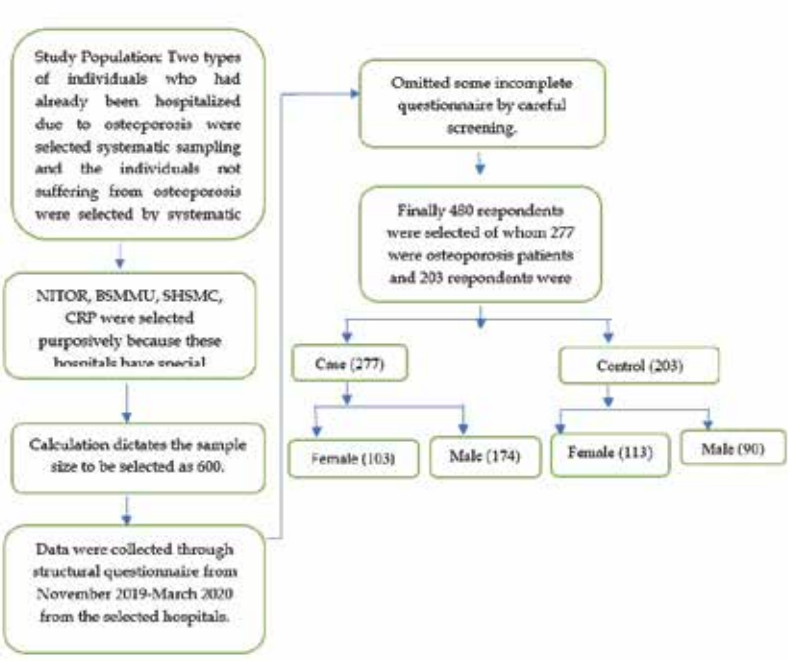
- To assess the knowledge and attitude of Bangladeshi people about osteoporosis.
- To develop a logit regression model with knowledge and some demographical variables(age, education, occupation, residential origin).
- To make some recommendations in order to ensure awareness in the society about osteoporosis.

3. METHODOLOGY

This study is a case-control study, considering the osteoporosis patients as cases and osteoporosis-free individuals as control. All the individuals chosen are residents of Bangladesh where the patients fall in the age interval (40, +65) year. However, this study considered the male of +45 years and the female of +40 years as the respondents considering the study of Meadows et al. (2012). It is also a cross-sectional study that inherits some drawbacks in comparison with a longitudinal study. The budget constraint, time factor, the lack of medical facilities dictate the need for a case-control study rather than a longitudinal study. This is based on primary sources of data that are collected from the selected government hospitals and one private hospital where the admitted patients having osteoporosis disease selected by systematic sampling and who are not affected by osteoporosis also selected by systematic sampling from outdoors through a well-defined interview schedule. A questionnaire is used as a tool to study the attitude and knowledge of the respondents about osteoporosis. Eight questions are included in the questionnaire for the respondents about their knowledge regarding physical activity, nutrition, and smoking. Each of which has closed answers like True", "False" and "don't know". The affirmative answer towards the knowledge of osteoporosis is assigned "3", followed by "2" with little knowledge, and "1" is assigned to the answer which is not affirmative to the knowledge. No one respondent answers "1".As a result The affirmative answer towards the knowledge of osteoporosis is assigned "2", followed by "1" with little knowledge. The maximum in the sum of the assigned value towards knowledge was 16 and the minimum was 8.These values are different for respondents. According to the sum of the values of the points in favor of knowledge, a minor difference was observed between the two groups in achievement. Then the respondent was classified into two categories, namely (i), not adequate knowledge [having sum of points <12] (ii) Adequate knowledge [having sum of points ≥ 12].The statistical analysis of the study had been performed by SPSS (version 22) and EVIEWS (verson5). Descriptive statistics were used to study the nature of respondents. Inferential statistics were applied to test the significant

difference among three treatments (treatment 1 (knowledge about physical exercises); treatment 2 (nutrition knowledge); and treatment 3 (knowledge about smoking). The association of adequate knowledge with some demographical variable (age, education, occupation, residential origin) were studied by logit regression model.

Figure 1: The flowcharts of the study are presented in Fig-1.



4. RESULT AND DISCUSSION

In this study, demographic and anthropometric factors like age, gender, education, occupation residence are considered. The attitude and knowledge about osteoporosis associated with physical exercises, nutrition, and smoking behavior are considered categorical variables. In this study, about 58 percent of respondents have and 42 percent do not have osteoporosis whereas 37 percent female and 63 percent male are affected by osteoporosis. About 35 percent of males and 44 percent of females affected by osteoporosis are below 50 years. It is realized that osteoporosis is not only present among older but also in middle-aged people (Table1). About 36 percent are out of any formal education while 64 percent are literate. About 39 percent of osteoporosis patients are illiterate. The prevalence of osteoporosis is higher in middle-aged people in rural areas in Bangladesh. 76percent of rural people had no good idea about osteoporosis. About 60 percent of women with compression

fractures do not realize that they have had a fracture. Females were affected by osteoporosis due to older age by 1.30 times as compared to an earlier age. The females are more affected than the males like developed nations.

Table 1: Distribution of respondent according to background variable

Background variable		Type of respondent	
		Case	Control
Gender	Male	174(63%)	90(44%)
	Female	103(37%)	113(56%)
Age	Below 50	128(46%)	125(62%)
	50+	149(54%)	78 (38.42%)
Education	No Formal education	108(39%)	63(31%)
	Literate	169(61%)	140(69%)
Residence	Rural	129 (47%)	82(40%)
	Urban	148 (53%)	121(52%)

In Bangladesh, females are not conscious about their food habit as well as their health. They are not even interested to go to the physician at the earlier stage of their physical problems, especially they are unaware of non-communicable diseases in rural areas. Case and control groups are significantly different in knowledge gaining about osteoporosis ($Z = -3.10$, p-value 0.047). There is no effect of gender in knowledge gaining about osteoporosis is found. It is observed in Table 2 that osteoporosis-affected people are more knowledgeable than the non-affected people in terms of physical exercises, nutrition, and smoking behavior. However, the non-affected people are more knowledgeable about the importance of physical exercise for calcium absorption in the human body. On the other side, drinking too much cola beverage, consumption of tea/coffee and smoking can lead to osteoporosis which is believed to be true by 45 percent of osteoporosis-affected people.

Table 2: Knowledge about Osteoporosis

Parameter	Knowledge			
	Case		Control	
	Adequate (%)	Moderate (%)	Adequate (%)	Moderate (%)
Knowledge about physical exercise (treatment 1)				
Bones are living tissues that need physical activity to be healthy and strong.	89.53	10.46	86.21	13.79
Regular physical activity helps the body to use calcium more efficiently.	64.25	35.74	73.89	26.11
Physical activity may help in losing muscle when dieting to lose weight.	61.37	38.63	62.56	37.43
Irregular or excessive exercise can increase the risk of osteoporosis.	59.56	40.43	69.95	30.04
Knowledge about nutrition (treatment 2)				
It is problematic to obtained calcium only from vegetables.	77.26	22.74	67.98	32.01
Drinking too much cola beverages or coffee can be harmful to the bones.	49.09	50.9	60.59	39.41
Knowledge about smoking (treatment 3)				
Cigarette smoking is harmful to health.	92.77	7.2	89.66	10.34
Cigarette smoking can lead to osteoporosis.	41.52	58.48	61.57	38.43

Source: Researcher's calculation

In preventing osteoporosis the researcher provide equal emphasis on physical exercise, nutrition, and smoking which are considered as treatment 1 (knowledge about physical exercises), treatment 2 (nutrition knowledge), and treatment 3 (knowledge about smoking). To check this claim the equality of three treatment effects are tested that results the significant difference among the three treatments which have great participation in the prevention of osteoporosis (F = 2608.240 and p-value = 0.000) from Table 3.

Table 3: Analysis of Variance for Treatments

Source of variation	Sum of Squares	DF	Mean Sum of Squares	F	*p-value*
Between Treatment	3857.378	2	1928.689	2608.240	0.000
Within Treatment	1062.604	1437	0.739		
Total	4919.983	1439			

This dictates the following hypothesis to be tested and the test results are given in Table 4.

H0: Treatment 1, and treatment 2 have the same effect.
H1: Treatment 1, and treatment 2 do not have the same effect.
H0: Treatment 1 and treatment 3 have the same effect.
H1: Treatment 1 and treatment 3 do not have the same effect.
H0: Treatment 2 and treatment 3 have the same effect.
H1: Treatment 2 and treatment 3 do not have the same effect

Table 4: Multiple comparison for Different Treatments

Dependent Variable: Knowledge

	Treatment (I)	Treatment (J)	Mean Difference (I-J)	Std. Error	Sig	95% CI	
						Lower Bound	Upper Bound
Dunnett t	1	3	3.406	0.056	0.000	3.28	3.53
	2	3	-.132	0.055	0.033	-0.25	0.00

• The mean difference is significant at the 0.05 level.

It is evident from Table 4 that there exists significant difference between treatment 1 and treatment 3 (mean difference = 3.41, p-value = 0.000) and also between treatment 2 and treatment 3 (mean difference = - 0.13, p-value = 0.033). It indicates that smoking is harmful to health.

In addition, a logit regression model is fitted to identify the demographic factors that have some effect on the adequate knowledge-gathering about osteoporosis, a dichotomous dependent variable, with 0 for being moderate knowledge and 1 for being adequate knowledge. That is,

$$Y_i = \begin{cases} 1, \text{if there is adequate knowledge about osteoporosis} \\ 0, \text{otherwise.} \end{cases}$$

Table 5: Logit Regression Model of Knowledge with Demographical Factors

Parameter	Coefficient	Standard Error	Z-Statistic	*p-value*
Constant	-0.15	0.64	-0.24	0.814
Age	0.02	0.01	1.29	0.197
Education	0.05	0.09	0.54	0.588
Occupation	-0.01	0.09	-0.07	0.946
Residence location	0.30	0.22	1.40	0.161

The fitted regression with age, education, occupation, and residence location as factors of knowledge gaining is found to be
logit $p\ (y_1) = X_i\ (\beta) = -\ 0.15 + 0.02$ Age + 0.05 Education- 0.01 Occupation + 0.30 Residence location.

It is observed that the demographical factors age, education, occupation, and residence location are not found to be significant in having adequate knowledge in gathering osteoporosis (Table 5). It also indicates that age, education, and residence location have a very poor positive effect in knowledge gaining about osteoporosis among respondents but the occupation hurts knowledge gaining about osteoporosis.

5. CONCLUSION

In this study, about 58 percent of respondents have and 42 percent do not have osteoporosis whereas 37 percent female and 63 percent male are affected by osteoporosis. About 35 percent of males and 44 percent of females affected by osteoporosis are below 50 years. It is realized that osteoporosis is not only present among older but also in middle-aged people. About 61 percent of osteoporosis-affected people come from rural. Men attitude is positive about osteoporosis rather than women. Females are not conscious about their food habituation as well as their health. They are not even interested to go to the physician at the earlier stage of their physical problems because they are unaware of non-communicable diseases in rural areas. Osteoporosis-affected people are more knowledgeable about osteoporosis than non-affected people. It is observed that there is an association between adequate knowledge about osteoporosis and some demographical factors like age, education, occupation, and residence location but not significant, unlike existing literature. The rural people do not have adequate knowledge about osteoporosis. The results of knowledge on osteoporosis are not alike in men and women. Awareness should be build-up for the prevention of osteoporosis by giving the importance of physical exercise, nutrition, and smoking that are considered as different treatments as demographical factors like age, education, residence location, and occupation have a little contribution in knowledge gaining.

6. RECOMMENDATIONS

- It may also help the policymakers to build awareness for the prevention of osteoporosis which is important in controlling this silent disease through educational intervention not only among older but also middle-aged people and adolescents with extra importance on rural people considering the risk factors physical exercise, nutrition, and smoking.

- This study results also invoke the necessity of community-based study to tackle the increasing health problem by early intervening with adequate calcium intake, vitamin D supplementation, and other lifestyle changes that linked to health status to achieve Sustainable Development Goal (SDG).

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