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Abstract

Purpose: Osteoporosis is a common health problem all over the world. Loss of bone mass with aging leads to osteoporosis. Different factors affect the bone mass loss and consequencltly osteoporosis prevalence. However, these factors are under-studied in the Pakistan.This study aims to identify the risk factors of osteoporosis among patients in Holy Family Hospital Rawalipindi.

Methodology: This descriptive cross-sectional study was carried out in among 120 diagnosed patients of osteoporosis for six months from April 2021 to September 2021 in a tertiary care hospital of Rawalpindi. Patients were recruited in the study via a set of inclusion and exclusion criteria and non-probability convenient sampling technique. A self-strcutured questionnaire was used to collect data. Before data collection information consent was acquired from all participants. Data analysis was performed on SPSS version 25. Descriptive statistics were applied.

Findings: Osteoporosis was more prevalent among the patients who had, age group with more than 45years (79.16%), female gender (72.50%), low education level (64.16%), lower socioeconomic status (68.33%), family history of osteoporosis (61.67%), sedentary lifestyle (57.50%), history of corticosteroids therapy (53.33%), no milk use (69.20%), no fresh vegetables and fruits use (80.00%), no inatke of calcium supplements (78.33%), no sunshine exposure (77.50%), and overweight (48.33%). In short, age group with age above 45years, female gender, low education level, lower socioeconomic status, family history of osteoporosis, sedentary lifestyle, overweight, history of use of corticosteroids, no milk use, no intake of fresh vegetables and fruits, no intake of calcium supplements, and no sunshine exposure, all raise the incidence of osteoporosis.

Recommendations: People should take milk, fresh fruits and vegetables, calcium supplements, and sun bath. Furthermore, people should spend active life with proper weight.

Keywords: *Risk factors, Osteoporosis, Tertiary, Care, Hospital, Rawalpindi*

INTRODUCTION

Osteoporosis is a common bone disease which is characterized by loss of bone masss. The prevalence of the osteoporosis is high all over the world and millions of people are affected bt this disease [1]. Almost 8 millions females and 2 millions males are affected by the osteoporosis in the United states of America. While Europe 5 million males and 22 million females has osteoporsis in 2010 [2]. In developed countries the prevalence of osteoporosis ranges from 2% to 8 % among among male gender, whereas, its prevalence in females ranges from 9 to 38% [3]. A study in Pakistan has shown the prevalence of the osteoporosis about 30.70% [4]. Furthermore, other countries are alo have high preavalence of the osteoporosis which means that osteoprorsis is a common health problem.

The World Health Organization (WHO) criteria define osteoporosis as low bone mineral density, with a T-score ≤ -2.5, found in the spine, the neck of the femur, or during a full hip examination [8]. Osteoporsois leads to movement restriction among the pateints of osteoporosis by causing the fracture of various bones. It is estimated that more than 8.9 million factures are caused by osteoporsis and its the most signficant complication of the osteoporosis. The restriction in the movenment of affected people by osteoporotic fracture cause social and economic burden on the patients [1]. Fracture incidence is higher among females than males. Moreever, hip fracture also leads to mortality and hospitalization of the pateints. Approximately, 10 to 20% hip fractures causes mortality and 25% people with kind of fracture face longer nursingg care. The anual cost of osteoporosis associated factures is 18 billion US dollars [5].

Multiple factors cause the development of osteoporsis in the patients. Socioeconomic factors such as age, gender, education level, and socioeconomic status play their role in the occurrence of osteoporosis [6],[7]. In literature, it has been noted that family history, inactive lifestyles, corticosteroids use, no milk use, no fruits and vegetables use, no intake of calcium supplements, no sunshine exposure, smoking, history of chronic diseases, and high body mass weight all are linked with increased incidence of osteoporosis [1],[8],[9],[10]. Although osteoporosis and its linked risk factors are well studied in many countries, however, in Pakistan, the risk factors of osteoporosis are under-studied and especially in the region where this research has been conducted. Therefore, in the presence of limited information about the risk factors of osteoporosis in the Pakistan, this study aimed to determine the risk factors of the osteoporosis among patients who came to outdoor deparment of the Holy Family Hospital, Rawalpindi, Pakistan. Identification of predisposing factors of osteoporosis could help people to avoid those factors and this incidence of osteoprosis and subsequently burden related to it would be reduced.

MATERIAL AND METHODS

This descriptive cross-sectional study was conducted among 120 diagnosed patients of the osteoporosis in Holy Family Hospital, Rawalpindi for almost six months from April 2021 to September 2021. Non-proability convenient sampling technique and a set of inclusion and exclusion criteria were used to recruit patients in the study. Only those patients who had diagnosis of osteoporosis and who had will to participate were included in the study whereas those patients who had no diagnosis of osteoporosis and had shown hesitation in participating in study were excluded from the study. Data was collected from a self-structured proforma which had two parts. One was related to demographic details of the patients such as age group (below 45 years or above 45 years), gender (male or female), educational status (illiterate, middle, and matric or above), and

socioeconomic status based on monthly income (lower class = less than 30K PKR, middle class=from 30k to 100k, and upper class= above 100k). Second part was about potential risk factors of osteoporosis such as family history of osteoporosis (yes or no), lifestyle (sedentary or active), use of corticosteroids (yes or No), milk use (yes or no), intake of fresh vegetables and fruits (yes or no), intake of calcium supplements (yes or no), sunshine exposure (yes or no), and weight status based on body mass index classfication of WHO (underweight, normal weight, overweight, obese),. Before the start of the data collection, informed consent was obatined from each participant. After data collection, data analysis was performed via SPSS version 25. Descriptive statistics were used. Frequencies and percentages of the categorical variables were calculated, while means were calculated of the numerical variables.

RESULTS

Out of 120 participants, 87 (72.50%) were females and 33 (27.50%) were males. The mean age for the study population was 49.76 with a standard deviation (SD) of ± 15.64. Table 1 indicates that osteoporosis incidence was more prevalent among patients who had, age above 45 years, female gender, lower educational level, and low socioeconomic class in contrast to patients who had, age group less than 45 years, male gender, higher educational level, and middle or upper socioeconomic status respectively.

Table 1: Socio-demographic characteristics of the study population.

Variable	Frequency	Percentage
Age Group in years		
Below 45	25	20.84%
Above 45	95	79.16%
Gender		
Male	33	27.50%
Female	87	72.50%
Educational Status		
Illiterate	77	64.16%
Middle	33	27.50%
Matric or above	10	8.34%
Socioeconomic Class		
Lower	82	68.33%
Middle	35	29.16%
Upper	03	2.51%

Table 2 elaborates that osteoporosis incidence was more common among patients who had, family history of osteoporosis, sedentary lifestyle, history of use of corticosteroids, no milk use, no intake of fresh vegetables and fruits, no intake of calcium supplements, no sunshine exposure, and overweight in comparsion to patients who had, no family history of osteoporosis, active lifestyle, no history of use of corticosteroids, consumed milk, fresh vegetables and fruits in diet, calcium supplements in daily diet, sunshine exposure, and lower BMI respectively.

Table 2: Frequency and percentages of the risk factors of osteoporosis in the study population.

Variables	Frequency	Percentage
Family History		
Yes	74	61.67%
No	46	38.33%
Lifestyles		
Active	51	42.50%
Sedentary	69	57.50%
Use of corticosteroids		
Yes	64	53.33%
No	56	46.67%
Use of milk		
Yes	37	30.80%
No	83	69.20%
Intake of fresh vegetables and fruits		
Yes	24	20.00%
No	96	80.00%
Intake of calcium supplements		
Yes	26	21.67%
No	94	78.33%
Sunshine exposure		
Yes	27	22.50%
No	93	77.50%
Nutritional Status		
Underweight	10	8.33%
Normal weight	30	25.00%
Overweight	58	48.33%
Obese	22	18.33%

DISCUSSION

The results of this research study have provided valuable information regarding the risk factors of a common bone disease which is osteoporosis.

In the first phase of data analysis, the impact of socio-demographic characteristics of the study participants in the development of osteoporosis was evaluated. Osteoporosis was more prevalent among the patients with age above 45 years. A study that was conducted in China reported similar findings with the high prevalence of renal stones in same age group of 45 years [2]. The higher incidence of osteoporosis in the female gender in current study was also backed by a study that was carried out in different parts of the world [3]. The development of osteoporosis because of low educational level was presented in another study that was performed in Korea.as well as in present study [6]. Current study also recorded that patient with lower socioeconomic status had a higher frequency of osteoporosis, and this finding was also supported by another study in literature [7]. Therefore, we could say that it's agreeable that socio-demographic features affect osteoporosis development.

In the next and final phase of the data analysis, frequencies and percentages of other possible risk factors of osteoporosis among the patients of the osteoporosis were recorded. Osteoporosis was more common in the patients who had family history of osteoporosis and consistent findings about the impact of family history of osteoporosis on incidence of osteoporosis were noted in another study that was also performed in Karachi, Pakistan [4]. Sedentary lifestyles also prone the people to osteoporosis. Same results about the role of lifestyles in the development of osteoporosis was presented in a study that was performed in Poland [8]. Current study showed that use of corticosteroids for long time also leads to osteoporosis and another study that was conducted in Iran suggested similar role of corticosteroids in causing osteoporosis [1]. Low or no consumption of milk could also cause people to have osteoporosis and this impact of milk on bone health was also endorsed in another study [11]. No intake of fresh vegetables and fruits also predisposes people to osteoporosis and this statement of current study was also supported by another study that was carried out in Algeria [10]. No intake of calcium supplements also prone people to osteoporosis and it was documented in other research paper as well, like this study [4]. Osteoporosis was more common among the people who had no daily sunshine exposure. Another study described similar result about the impact of sunshine on osteoporosis incidence [12]. High BMI which shows overweight, or obesity was also found to raise the incidence of the osteoporosis and a similar result about the role of BMI in the development of osteoporosis was also observed by another study of India [9].

Health experts should educate people about the risk factors of osteoporosis and how people ca avoid these factors for the prevention of osteoporosis. Even though this study has presented very important information about the role of the demographic and other factors that lead to osteoporosis, however, it still has some limitations such as cross-sectional design of the study because of which it could not find the temporal association between osteoporosis and factors affecting it and other limitation is the small sample size of the study. Therefore, further research is required to assess the temporal relationship between osteoporosis and factors affecting it with some other study type and larger sample size.

CONCLUSION

This study results show that from socio-demographic characteristics of the study population, age group with age above 45 years, female gender, lower educational level, and lower socioeconomic status, whereas other factors such as family history of osteoporosis, sedentary lifestyle, use of corticosteroids, no intake of milk, no intake of fresh vegetables and fruits, no intake of calcium supplements, no sunshine exposure, and high body mass index are main risk factors for osteoporosis development. Health authorities should educate people regarding the risk factors that lead to osteoporosis in people. By increasing the educational level of the people about the risk factors of osteoporosis and their preventive technique s, the osteoporosis incidence could be brought down, which would surely enhance the quality of life of the general people that could suffer from osteoporosis. Moreover, it would also decrease the chance of osteoporosis -associated complications and would support the resource limited heath care system.

RECOMMENDATIONS

1. People should add milk in their diet.
2. People should take fresh vegetables and fruits in diet,
3. People should take calcium supplements after consulting physician.

4. People should take sun bath for adequate time.
5. People should add habit of exercise in their lives and should reduce weight.

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