Original Article

Study of Demographic and Clinical Profile of Patients with Osteoporosis

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ABSTRACT

Introduction: *Osteoporosis is a chronic and progressive disease with a multifactorial etiology, making it one of the most prevalent metabolic bone disorders globally. Currently, osteoporosis is recognized as a potential public health concern. Each year, numerous individuals seek treatment for osteoporosis in various hospitals and clinics across Bangladesh.* ***Aim of the study:*** *This study aimed to assess the socio-demographic and clinical profile of patients with osteoporosis.* ***Methods and materials:*** *This prospective observational study was conducted at the Department of Orthopedics, Monno Medical College and Hospital, Manikganj, Bangladesh from January 2022 to December 2022. A total of 137 confirmed patients with osteoporosis were chosen as study subjects through purposive sampling. Data were collected using a semi-structured predesigned questionnaire and analyzed using MS Office tools.* ***Results:*** *In this study, 34% of participants fell within the 60-69 age group, and 30% were in the 70-80 years bracket. Predominantly, participants were female (71%), hailing from lower-class families (52%) with a notable family history of fractures (79%). About one-third (33%) completed higher secondary education, 28% were housewives, 49% were married, and 47% exhibited*

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a normal BMI. Notably, half had a vitamin D status between 20-30 mg/ml, with 31% below 20 mg/ml and 24% exceeding 30 mg/ml. ***Conclusion:*** *Over-aged females of middle-class families are mainly prone to osteoporosis. The prevalence of osteoporosis is higher among married individuals, even those with normal body weight. Lower levels of vitamin D may be a risk factor for these conditions.*

Keywords: *Socio-demographic profile, Clinical, Osteoporosis, Fracture, Obese, Vitamin D*

INTRODUCTION

Osteoporosis stands as the most prevalent metabolic bone disease, impacting over 200 million people worldwide and resulting in physical, psychosocial, and economic consequences [1]. This metabolic bone disorder is characterized by diminished bone mineral density, accompanied by the deterioration of bone microarchitecture, ultimately increasing skeletal fragility and the risk of fractures [2]. The diagnosis of osteoporosis involves assessing the lumbar spine in the anterior-posterior (AP) view, proximal femoral neck and/or total femur, and forearm, following the criteria outlined by the World Health Organization [3]. In the United States, approximately 25 million individuals are affected by osteoporosis, leading to over 1.3 million fractures annually [4]. Clinical manifestations of osteoporosis are often linked to fractures of the hip, wrist, and spine. It's noteworthy that osteoporosis can be present even in the absence of a significant reduction in bone mineral density or evident bone symptoms [5]. Fractures resulting from osteoporosis contribute to back pain, diminish the quality of life, and impede daily activities [6]. Osteoporosis development is associated with various risk factors, some of which are unmodifiable, while others can be modified to decrease the incidence of the disease [7]. The socio-economic risk factors for osteoporosis are on the rise due to the global aging of the population [8]. Brennan et al. (2011) highlighted the need for further research to clarify the relationships between socioeconomic status, individual-level indicators, bone mineral density, and fractures [9]. They emphasized that there is incomplete evidence of good quality regarding social inequalities in mineral density and bone fractures. Understanding osteoporosis and fractures requires a social model that informs the planning of health service systems and social assistance, enabling public health strategies for prevention and treatment [10].

METHODS & MATERIALS

This was a prospective observational study that was conducted at the Department of Orthopedics, Monno Medical College and Hospital, Manikganj, Bangladesh from January 2022 to December 2022. In this study, a total of 137 confirmed patients diagnosed with osteoporosis were included as study subjects. A purposive sampling technique was employed to select samples from both male and female individuals aged 30-80 years. Written consent was obtained from all participants before data collection. The exclusion criteria for this study involved patients with active cancer, malignant bone metastases, secondary osteoporosis, current fractures, and individuals undergoing glucocorticoid therapy. Comprehensive demographic and clinical information of the participants was

recorded, and data analysis was performed using MS Office tools.

RESULT

In this study, regarding the age distribution of study subjects, 34% were from the 60-69 years age group, and an additional 30% were from the 70-80 years age group which was noticeable. Most of the participants (71%) were female. In analyzing the educational status of cases, 33% had completed higher secondary education. Additionally, some cases were found in primary (24%), secondary (22%), and graduate or above (21%). In terms of the occupational status of subjects, the study observed that more than one-fourth (28%) was housewives. Additionally, 20%, 18%, 15%, and 19% of cases were service holders, laborers, farmers, and unemployed, respectively. In this present study, concerning the marital status of subjects, nearly half of the cases (49%) were married, approximately one-third were widowed, and 9% and 11% were never married and divorced, respectively. A majority of the participants (52%) were from lower-class families, with some cases found in middle-class (29%) and higher-class (19%) families. Regarding the BMI status of study subjects, approximately half of the cases (47%) had a normal BMI (25.00–29.9 Kg/m^2), and 29% were overweight (25.00–29.9 Kg/m^2). Upon analyzing the fracture history of participants, it was found that the majority of cases (79%) had a positive family history of fracture. In the current study, regarding the vitamin D status of subjects, approximately half of the cases had a vitamin D status between 20-30 mg/ml. Additionally, 31% and 24% of cases had vitamin D levels <20 mg/ml and >30 mg/ml, respectively.

Table I: Age distribution of patients

Age (Years)	n	%
30-39	8	6%
40-49	18	13%
50-59	23	17%
60-69	47	34%
70-80	41	30%

Table I shows age distribution of patients.

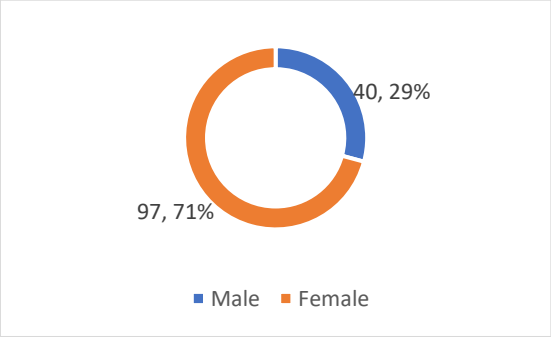

Figure 1: Gender distribution

Figure 1 summarized gender distribution.

Table II: Educational status of subjects

Educational status	n	%
Primary	33	24%
Secondary	30	22%
Higher Secondary	45	33%
Graduate or above	29	21%

Table II shows educational status of subjects.

Table III: Occupational status of subjects

Occupational status	n	%
Housewife	39	28%
Service holder	28	20%
Labor	24	18%
Farmer	20	15%
Unemployed	26	19%

Table III shows occupational status of subjects.

Table IV: Marital status of subjects

Marital status	n	%
Never married	12	9%
Married	67	49%
Widowed	43	31%
Divorced	15	11%

Table IV shows marital status of subjects

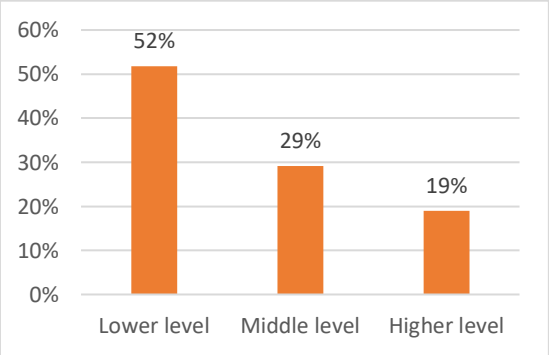

Figure 2: Family status of cases

Figure 2 summarized family status of cases

Table V: BMI status of study subjects

BMI (Kg/m^2) status	n	%
Underweight (<18.0)	14	10%
Normal weight (18.0–24.9)	65	47%
Overweight (25.00–29.9)	40	29%
Obese (30−34.9)	18	13%

Table V shows BMI status of study subjects.

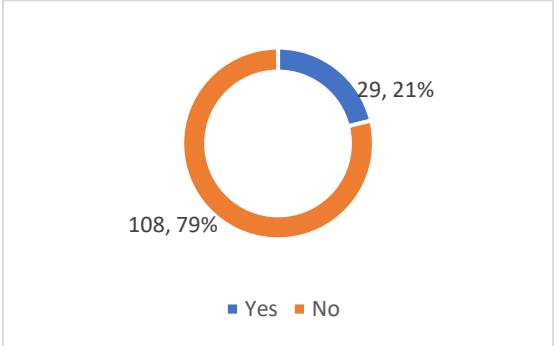

Figure 3: Distribution of fracture history

Figure 3 summarized distribution of fracture history

Table VI: Vitamin D status of subjects

Vitamin D (mg/ml) status	n	%
< 20	43	31%
20 – 30	61	45%
> 30	33	24%

Table VI shows vitamin D status of subjects

DISCUSSION

This study aimed to assess the socio-demographic and clinical profile of patients with osteoporosis. In this study, the age distribution of study subjects revealed that 34% were from the 60-69 years age group, with an additional 30% from the 70-80 years age group, indicating a noticeable concentration in these age ranges. The majority of participants (71%) were female, consistent with findings in another study [11]. Female predominance

has been observed in osteoporotic fractures, with figures as high as 61% reported in previous research [12]. Examining the educational status of cases, the highest number (33%) had completed higher secondary education, while others were distributed across primary (24%), secondary (22%), and graduate or above (21%). Another study reported associations between older age, poor living conditions, low education levels, and prolonged illness with lower disease acceptance [13]. In terms of the occupational status of the subjects, it was observed that more than one-fourth of the cases were housewives. Additionally, 20%, 18%, 15%, and 19% of cases were service holders, laborers, farmers, and unemployed, respectively. These findings align with a comparable study [14]. In the present study, concerning the marital status of subjects, nearly half of the cases (49%) were married, while about one-third were widowed. Additionally, 9% and 11% of cases were never married and divorced, respectively. Another study reported similar proportions, with 47% of cases being married or in a civil partnership, 7% never married, 36% widowed, and 10% divorced [15]. The majority of the participants (52%) were from lower-level families, while some cases were from middle-level (29%) and higher-level (19%) families. In a previous study, more than half of the cases (51%) were from low-level families, 31% from middle-level families, and the remaining 17% from higher-level families [14]. Regarding the BMI status of the study subjects, approximately half of the cases (47%) had a normal BMI (25.00–29.9 kg/m2), and 29% of cases were overweight (25.00–29.9 kg/m2). In a previous study [15], it was demonstrated that the highest number of cases (39.5%) had a normal weight (BMI 18.0–24.9 kg/m2), followed by underweight (BMI <18.0 kg/m2) (6.5%), overweight (BMI 25.00–29.9 kg/m2) (38%), and obesity (BMI 30−34.9 kg/m2) (16%). Upon analyzing the fracture history of participants, it was observed that the majority of the cases (79%) had a positive family history. As for the vitamin D status of our study subjects, nearly half of the cases had a vitamin D status between 20-30 ng/ml. Besides, 31% and 24% of cases had <20 ng/ml and >30 ng/ml, respectively. In some studies, myriad causes were accountable for osteoporosis, such as low dietary calcium intake and vitamin D deficiency [16,17].

LIMITATION OF THE STUDY

The limitations of this study include its single-center design and small sample size. Additionally, the study was conducted over a relatively short period, which may impact the generalizability of the findings to the entire country.

CONCLUSION & RECOMMENDATION

Osteoporosis tends to be more prevalent among over-aged females from middle-class families, particularly those who are married, even if they have a normal body weight. This observation suggests that factors beyond age and body weight, such as marital status and possibly socio-economic status, may contribute to the higher susceptibility to osteoporosis in this demographic. Additionally, the association with lower levels of vitamin D underscores the multifaceted nature of risk factors for osteoporosis. Recognizing these patterns is crucial for targeted preventive measures, emphasizing the importance of interventions aimed at promoting bone

health, especially in middle-class, over-aged, and married females, with considerations for vitamin D supplementation and lifestyle modifications.

FUNDING

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

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