PREVALENCE AND ASSOCIATED RISK FACTORS FOR OSTEOPOROSIS IN ADULTS

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Abstract

Osteoporosis is a disease that is characterized by low bone mass, weakening of bone tissue, and disturbance of bone micro structure which can lead to compromised bone strength and an increase the risk of fractures. Osteoporosis is the most common bone disease in humans which represent a main public health problem. The objective of the current study was to assess the prevalence of osteoporosis among adults, during the period between Feburary 2021 and June 2021. To analyze the diet and nutrition of adults with osteoporosis. One forty-eight males and females were randomly selected from two. The study was conducted through questionnaire consisted of 27 questions about sex, age, family history, preference of foods, food frequency, supplementation and dietary intake. All data was analyzed by SPSS. The maximum prevalence of osteoporosis was observed at the hip bone followed by kneecape and patients with, overweight body mass index, physical inactivity, consumption of Junk Food, low daily calcium and Vitamin D intake, were all positively associated with osteoporosis. There is a high prevalence of osteoporosis among women. Necessary steps are needed for more public education and a wider dissemination of information about osteoporosis and its prevention.

Key Words: Osteoporosis, Food frequency, dietary intakes

Introduction

Osteoporosis is a disease that is characterized by low bone mass, weakening of bone tissue, and interference of bone micro structure which can lead to compromised bone toughness and an increase the possibility of fractures (Föger-Samwald et al., 2020) Garach et al. (2020).

It is the most common metabolic bone disease among adults globally. Charles (2020) reported the prevalence of osteoporosis is approximately 200 million patients. About one in three postmenopausal women will encounter an osteoporotic

fracture of the hip, spine, or wrist. The magnitude of the disease is massive (Christina V & Oleson 2017). Cheng et al., (2020) observed that the prevalence of osteoporosis for the Chinese population aged >50 years was 29.0% for women and 13.5% for men, equating to 49.0 million and 22.8 million, respectively. Akbar & Ali. (2017) studied the prevalence of osteopenia and osteoporosis in men of Mardan region KP Pakistan. This was potential cross-sectional study. Osteoporosis was affecting males of age group 50-59 years in Mardan region KP Pakistan. It is more common in women, and older people. Osteoporosis affects huge number of people including both genders, and all races, and its prevalence rises as the population ages. It increases the chance of skeletal fractures and additional morbidity and mortality (Sözen *et al*., 2017; Clynes et al., 2020). Osteoporosis and fragility fractures are a worldwide public health problem. Heredity factors account for 60–80% of optimal bone mineralization, by changed factors such as nutrition, weight-bearing exercise, body mass and hormonal balance affects the evolution of osteoporosis in adulthood (Weng *et al*., 2020: Chen *et al*., 2019). Yoo and park, (2018) reported that low socioeconomic status, unhealthy lifestyle, and chronic kidney disease increased the chances of osteoporosis (Sheu *et al*., 2016). Bone mineral density (BMD) measurement is approved for women at age 65, and advance for those who have risk factors. Sufficient calcium, vitamin D, and weight-bearing exercise are major for bone health at all ages, and those at high chances for fracture based on BMD or FRAX should be offered medical therapy to lower fracture risk after actual medical assessment (Nelson, Watts. 2018). It is now very preventable and treatable disease. Despite of huge therapeutic

development, there is an increasing treatment gap for patients at high fracture chance. (Khosla *et al*., 2017). Current prevention of fractures is by lessening the loss of bone mass is the initial goal for physicians treating patients with osteoporosis. More preventive agents such as, lifestyle adjustment, fall prevention strategies, exercise, physical modalities and nutritional support can be used to treat osteoporosis or prevent further osteoporotic fracture (Chen *et al*., 2019). Dhoot, (2019) conducted that the well built and healthy bones need an sufficient dietary intake of calcium beginning in childhood and adolescence for both genders. Most evidently, although, a high dietary calcium intake or taking calcium supplements alone is not enough in treating osteoporosis and should not be perspective as an alternative to or substituted for more powerful prescription medication for osteoporosis. Garach et al. (2020) observed that the sufficient intake of protein, vegetables and other nutrients is also of interest, and guidance has been fixed by expert consensus and clinical practice instruction. It is important to understand the effect of nutrients not only in isolation but also in the context of a dietary pattern, which is complex mixture of nutrients. The role of vitamin D and calcium in the prevention of a reduced bone mineral density is well known, although other nutrients, including micronutrients, which are mostly of importance. In spite of the fact that zinc, copper, selenium, iron, cadmium, silicon and fluorine have not been regularly discussed with regard to the prevention of osteoporosis, it is believable that a deficiency or excess of the abovementioned component may affect bone mineralization. (Ratajczak *et al*., 2021). To assess the prevalence of osteoporosis among adults in

district Mardan, To analyze the diet and nutrition of adults with osteoporosis.

Materials and Methods

This study was carried out in District Mardan. One forty-eight males and females were randomly selected from different hospitals to assess prevalence of osteoporosis. The study was conducted through questionnaire consisted of 27 questions about sex, age, family history, preference of foods, food frequency, supplementation and dietary intake. Each patient was interviewed. Data was collected from February to march. Anthropometric measured such as height, weight was measured for computing BMI.

Results and Discussion.

Gender wise prevalence of osteoporosis was observed in patient. It was observed that female patients had higher osteoporotic prevalence i.e 60% while male patient were only 39% as shown in the table 1. Rajendran *et al*. (2017) conducted a study on prevalence of osteoporosis from elder people which showed that majority of osteoporotic levels were higher in female (60%) as compared to male (49.5%). These finding were in consistent with present study.

Osteoporosis was more common (36%) in patients having BMI 25.0-29.9 kg/m2 of category overweight, (30%) belonged to obese class I, 17% to obese class 2, 11% had normal BMI, 6% patients belonged to extremely obese category as shown in the table 1. Hyassat *et al*. (2017) carried out BMI study on osteoporotic patient the normal BMI patients were (8.7%), over weight were (29.7%) where as obese were (61%). This present study showed similarity with these findings because mximum percentage of patients were overweight (36%).

Table 1 Percentage of different categories of		
Variables	**Categories**	**Percentage**
Gender	Male	39
	Female	60
Age	44-54	56
	55-64	33
	65-74	11
BMI	normal	11
	overweight	36
	obese class 1	30
	obese class 2	17
	extremely	6
Osteoporosis in Family History	Yes	31
	No	69
Eating disorder	Yes	33
	No	66
Physical activity	Yes	20
	No	80
Associated Disorders	Yes	32
	No	68

The respondent who had the osteoporosis family history were 30% and those who don't have any family history were 69%. Alyan *et al*. (2017) analyzed a study on family history about osteoporotic patients which showed maximum had no family history (68.5%) where as the people who had family history were (31.5%). These findings were consistent with present study because highest percentage was recorded had no family history (69%) of osteoporosis. The patients which had eating disorder were 33% and those who don't have any eating disorder were 66%. Drabkin *et al*. (2017)

conducted a study on the eating disorders in osteoporotic patients which showed that only (2%) of the patients had eating disorders. This study showed no similarities with the above findings because majority

Eighty percent had physical activity or exercise, while 19% do not perform any physical activity. Jaddou *et al*. (2017) studied out a study on physical activity in osteoporotic patients which showed that majority people who don't do physical activity (59.9%) where as the people who used to do physical activity were (47.5%). This study shows no similarities with above findings because majority (80%) of patients does not do physical activity. Most probably the females don't go for heavy exercises they probably do mild exercise which includes household work. Pinheiro *et al*. (2020) estimated that the physical activity helps to improve bone health of osteoporotic patients.

Thirty two percent of patients had associated disorder while 66% don't have as shown in the table 1. Ajlouni *et al*. (2017) carried out a study of associated disorder in osteoporotic patients which showed that majority of people who had associated disorder were (67.9%) where as the people who don't were (32.1%). My study shows

(33%) of the patients had eating disorders. In the middle age the people who get associated disorder and use medicines they don't eat a lot of food or skip their meals.

similarity to above study the maximum percentage was of people who had associated disorder (66%).

Eighty one percent responded that they eat vegetables in their daily diet while 11% do not use vegetables in their daily diet. Twenty five percent responded that they use turmeric in their daily diet while 74% they don't use it in their daily diet. Sixty four percent responded that they eat junk food whereas 35% don't eat junk food. Sixty seven percent of responded that consume vegetables high in calcium content while 32 % don't consume vegetables in high calcium content. as shown in the figure 1 Hu *et al*. (2018) studied out that the study of consumption of vegetables in osteoporotic patients which showed that maximum percentage of patients who consume vegetables were (57.3%) where as the people who don't consume vegetables were (53.7%).This study do not shows similarity with above finding because maximum percentage (81%) of patients does consumption of vegetables.
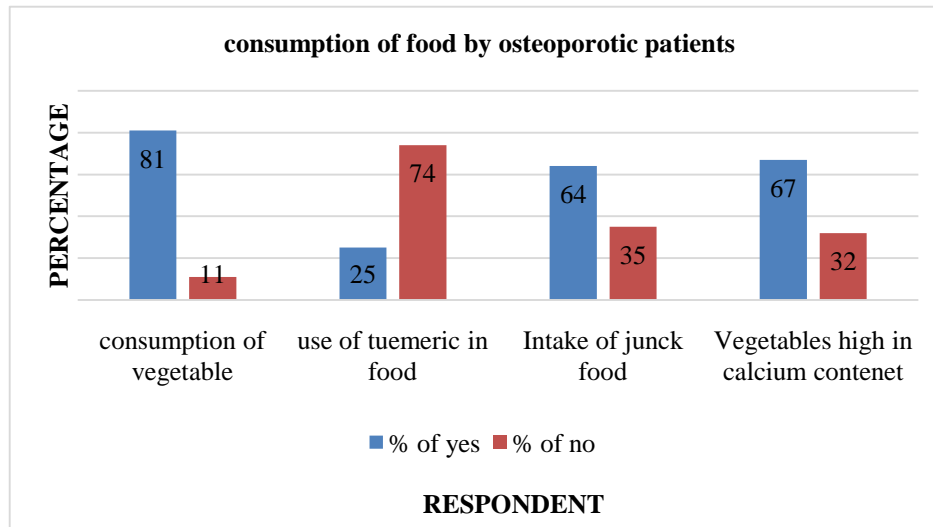
Figure 1

The osteoporotic patients who use do the intake of milk were 85% and those who don't drink milk were 14%. The patients who use to eat dairy product were 88% while 11% do not use dairy product in their daily diet. Park *et al*. (2018) analyzed that the intake of milk in osteoporotic patients which showed that majority people who do intake of milk were (95%). My study shows similarity with the above finding because majority (85%) of patients do intake of milk. The milk intake is important for osteoporotic patient because it contains calcium and calcium is good for bones which make the strong and prevent them from weakening which may results in fracturing of bone.

Park *et al*. (2018) studied that the intake of dairy product in osteoporotic patients which showed that majority of patients who do intake of dairy product were (95%). My study shows similarity with the above finding because maximum percentage (88%) of patients do consume of dairy product.

The patients were been also asked about the calcium supplements who use to do its intake were 52% and who doesn't were 48% while the intake of vitamin D supplements were 53% done whereas 46% of patient don't as shown in the figure 2. Maggie Hulbert *et al*. (2020) estimated that calcium supplements were used by the patients to lower the osteoporosis effect. In present study it is also shows the similarity with the above finding because majority of patients were using calcium to lower osteoporosis effect. Hyassat *et al*. (2017) conducted a study of vitamin D supplements in osteoporotic patients which showed that majority of patients consume vitamin D supplements were (89.3%) and who do not do intake of vitamin D supplements were (10.7%). This study do not shows similarity with the above finding because highest percentage was recorded for (53%) of patients were consuming of vitamin D supplements in daily routine.

Figure 2
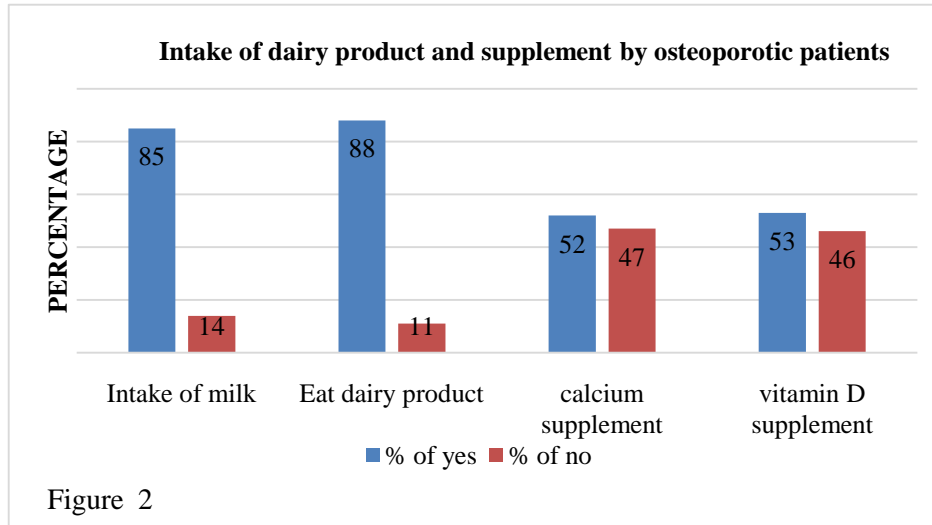
The fracture of hipbone was 23%, kneecap was 30 where as nobody fractured bone was 66%. Fifty six percent responded had leg pain and back pain (43%). Nine percent responded that they do calcium test once a month while 89% do their calcium test after 6 months. as shown in the figure 3 Rajendran *et al.* (2017) observed that fracture of hip bone is increased in the osteoporotic patients. Present study shows similar findings.

Figure 3
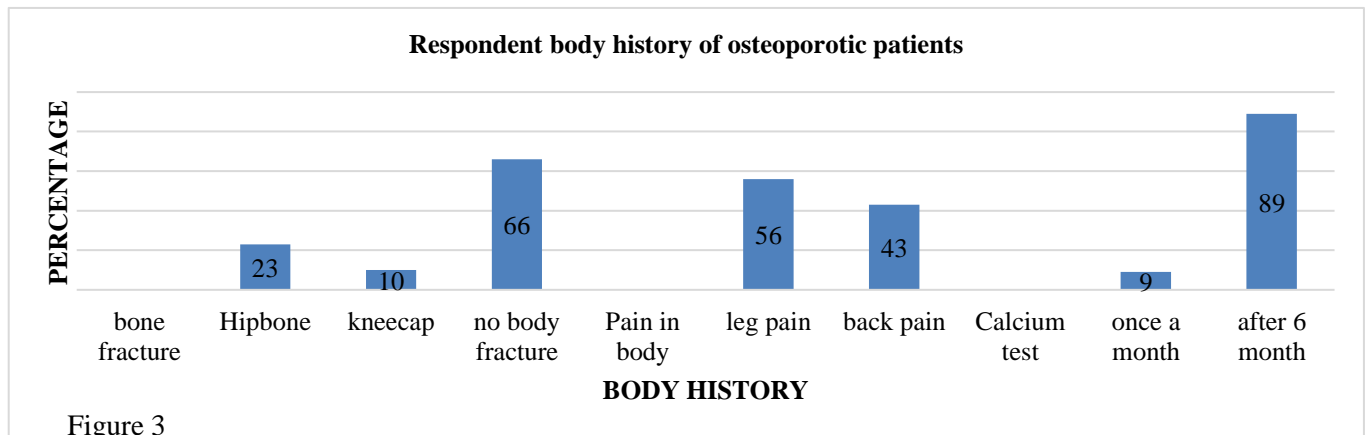
The percentage for different kind of dairy product like yogurt and butter were 81%, 4%, 14% respectively. The consumption of meal twice a day was 78% and thrice a day was 21%. The percentage junk food once a week was 57% where who not use was 42%. Then the patient was been asked about the consumption of fruits after 3 days was 70%, once a week was 23% where as once a day was 6% as shown in the figure 4   Ziwei liang (2020) result showed that increased in the amount of dairy product helps to lower down the osteoporosis effect. The current study it shows similarity with the above finding the patients were using dairy product.

Figure 4
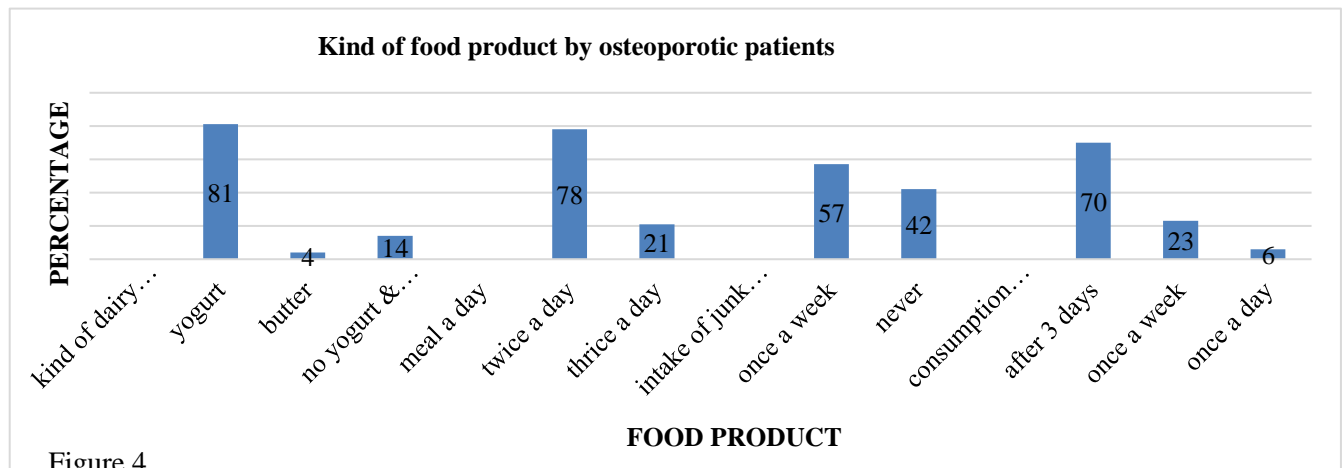
Conclusion

The study concluded that the prevalence of osteoporotic patients in District Mardan, it was observed that 60% females and 39% males were osteoporotic. The most prevalent BMI stage was overweight (36%) in osteoporotic patients. The people with osteoporosis were instructed to do more physical activity by their doctor or dietitians. Based on result of the study, most of osteoporotic patients consumed of vegetables and vegetables which were high in calcium content. The intake of junk food was also higher in osteoporotic patients. In this study the consumption of milk was higher as well as the consumption of dairy product was also increased in osteoporotic patients. According to this study the calcium supplements intake on daily bases was normal as well as the intake of vitamin D supplement was also normal. The ratio of patients with no body fracture was higher but also they had leg pain. The percentage of patients doing calcium test after 6 months was higher.

The maximum prevalence of osteoporosis was observed at the hip bone followed by kneecape and Patients with, overweight body mass index, physical inactivity, inadequate sun exposure, low daily calcium intake, were all positively associated with osteoporosis. There is a high prevalence of osteoporosis among women. Necessary steps are needed for more public education and a wider dissemination of information about osteoporosis and its prevention.

Recommendation

The patients should have proper diet plan. he consumption of calcium and vitamin D should be more in elderly age. The patients should be educated about the factors affecting osteoporosis.

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