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Knowledge, Attitude and Practice of Osteoporosis among Doctor of Physical Therapy Students at Sarhad University of Science and Information Technology Peshawar

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DECLARATIONS

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ABSTRACT

Background: Osteoporosis is a pathological condition characterized by lower bone density and an increased likelihood of fractures, as the normal bone architecture is gradually deteriorated. It is a chronic disease that progresses silently and is often detected late, with signs and symptoms typically becoming evident only after a fracture has occurred. **Objective:** The objective of this study was to assess the knowledge, attitudes, and practices related to osteoporosis among Doctor of Physical Therapy students at Sarhad University of Science and Information Technology, Peshawar. **Methodology:** This descriptive cross-sectional survey was conducted at SUIT, Peshawar in the department of physical therapy over six months on 98 students of Doctor of Physical Therapy using non-probability convenience sampling. Participants were both male and female students from the DPT 6th, 8th, and 10th semesters. After obtaining approval from the university's research and ethical committee, individuals were recruited in the survey from the settings. Data was collected using a questionnaire that included demographic information filled out by each participant. The osteoporosis knowledge assessment tool was employed. Data analysis included demographic data based on age, gender, and semester of the participants, and results were presented in tables and graphs. **Results:** A total of 98 students were selected, comprising 57 (58.16%) males and 41 (41.84%) females. The age range of participants was 20 to 28 years, and they were from the 6th, 8th, and 10th semesters. It was found that 90.9% of the students demonstrated good knowledge, attitudes, and practices regarding osteoporosis. **Conclusion:** This study concludes that most of the participants exhibited good knowledge, attitudes, and practices regarding osteoporosis. These results highlight the need for authorities to develop comprehensive health education programs to facilitate students in adopting healthy practices related to osteoporosis.

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INTRODUCTION

Osteoporosis is a significant pathological condition marked by decreased bone density and a higher susceptibility to fractures due to the breakdown of bone structure.[1] This long-term disease impacts physical, emotional, and mental well-being, affecting 1 in 5 men and 1 in 5 women over the age of 50.[2] In postmenopausal women, osteoporosis is largely driven by hormonal changes, particularly decreased estrogen levels. This hormonal shift heightens sensitivity to parathyroid hormone, leading to greater bone resorption than formation.[2] Osteoporosis often progresses unnoticed and is usually diagnosed only after a fracture occurs.[3] Nevertheless, effective management through targeted interventions is possible, with education being a key component of prevention.[4] Osteoporosis affects 21.7% of the elderly population worldwide, with Asia showing the highest prevalence at 24.3%. In the Middle East, around 24.4% of the population is affected, with Saudi Arabia at 32.7%.[5] Osteoporosis leads to over 8.9 million fractures annually, impacting an estimated 200 million individuals worldwide.[6] Osteoporosis can be categorized into Type I and Type II causes. Primary osteoporosis includes Type I, predominantly affecting postmenopausal women due to hormonal imbalances, and Type II, often linked to chronic nutritional deficiencies Secondary osteoporosis arises from various medical conditions and medications, accounting for up to 80% of cases globally.[7]

Diagnosis typically involves X-rays and Dual Energy X-ray Absorptiometry (DEXA) scans to assess bone density Treatment strategies emphasize daily intake of calcium and vitamin D, alongside regular exercise to reduce fracture risk.[8] Engaging younger populations in sports and physical activities can enhance bone mass density, thereby mitigating future osteoporosis risk Treatment strategies emphasize daily intake of calcium and vitamin D, alongside regular exercise to reduce fracture risk.[8] In 2023, an observational cross-sectional study by Alamri et al. was conducted to investigate preventable measures and complications of osteoporosis in Saudi Arabia. This observational cross-sectional study explored preventive measures and complications associated with osteoporosis in Saudi Arabia. Data was gathered using a self-administered questionnaire distributed nationwide, with 2,486 participants from both genders. Findings indicated that Saudi population demonstrated a moderate level of awareness about osteoporosis and its complications, which was comparatively lower than that observed in other countries.[9] A study in Saudi Arabia by Ahmed et al. in the year 2023 has evaluated the KAP pertinent to osteoporosis among the Saudi Arabian population. The objective of a study conducted on February 28, 2023, was to evaluate the knowledge, attitudes, and practices related to osteoporosis among male and female students in the Saudi Arabian population. The data consisted of 53% men and 47% women, with 440 participants selected. The Osteoporosis Knowledge Assessment Tool (OKAT) was used to assess awareness about osteoporosis.

The results showed that participants had a high level of knowledge, with the highest number of correct answers in OKAT related to the question about osteoporosis increasing the risk of fractures and the lowest number of correct answers pertaining to the question 'Is osteoporosis more common in men?' However, the study also found that risk factors for osteoporosis persisted, along with a low level of adherence to protective measures.[10] To evaluate the awareness regarding osteoporosis among post-menopausal females, Nelapati in 2022 conducted a research study which aimed to evaluate assess the perception of osteoporosis among postmenopausal women focusing on their knowledge, viewpoints, and practices related to osteoporosis in South India.

This cross-sectional study utilized the OKAT questionnaire, with a total of 300 postmenopausal women participating. The study revealed that 40% had poor awareness of osteoporosis in post-menopausal women. It was confirmed from the study that educating and raising awareness among women regarding the treatment and risk factors of osteoporosis is necessary.[11] Another cross-sectional study in 2022 by Nohra et al. have assessed awareness, perceptions and behaviors, along with factors influencing perceived risk among residents of Beirut and different districts in Lebanon. The study included 376 participants randomly selected from different strata based on education and altitude. They completed a KAP survey on osteoporosis. The majority demonstrated low (20.2%) or moderate (65.4%) awareness of osteoporosis, with females exhibiting greater awareness than males. The

study also concluded that physical exercise, reducing daily caffeine intake, and higher education about osteoporosis were protective factors.[12]

METHODOLOGY

This descriptive cross-sectional survey was conducted at SUIT, Peshawar in the department of physical therapy. The research was carried out over a span of six months on Doctor of Physical Therapy Students. The sample size was 98 participants with total population of 130 which was determined by using a sample size calculator i.e. Raosoft calculator. Non-probability convenience sampling technique was used. Participants were enrolled in the study based on the following criteria: All students enrolled in the Doctor of Physical Therapy (DPT) program at SUIT, Peshawar. Participants were both male and female students from the DPT 6th, 8th, and 10th semesters. After obtaining approval from the university's research and ethical committee, individuals were selected from the study settings. Consent for participation was secured after explaining the study's aim and methodology, ensuring participants understood their right to opt in or out. Data was collected using a questionnaire that included demographic information filled out by each participant. The osteoporosis knowledge assessment tool (OKAT) was employed, consisting of 20 questions with options for true, false, or don't know. The first 12 questions assessed knowledge of osteoporosis, questions 13 to 17 focused on attitudes, and the final 3 questions addressed practices to prevent osteoporosis. Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Analysis included demographic data based on age, gender, and semester of the participants, and results were presented in tables and graphs.

RESULTS

Table 1 illustrates the gender distribution of respondents, with 57 males (58.16%) and 41 females (41.84%) among the 98 participants, indicating that both genders were represented in the study. The semester of respondents in which 28 (28.57%) students were from 6th semester, 23 (23.47%) students were from 8th semester and 47 (47.96 %) students were from 10th semester. The table illustrates that, in response to the statement, "Osteoporosis usually causes symptoms (e.g. pain) before fractures occur," 38 respondents (38.78%) out of 98 respondents answered true, 55 (56.12%) responded "false" and only 5 (5.10%) of them selected for don't know. This shows that to the statement cigarette smoking can contribute to

Table 1. Frequency and percentage of variables

Variables	Frequency (%)		
	Females	**Males**	
Gender	41.84%	58.16%	
	Yes	**No**	**Don't know**
Pain	38 (38.78%)	55 (56.12%)	
Cigarette smoking	84 (85.71%)	8 (8.16%)	
Osteoporosis in women	89 (90.82%)	4 (4.08%)	5 (5.10%)
Risk in white women	78 (79.59%)	6 (6.12%)	14 (14.29%)
History of fracture	56 (57.14%)	20 (20.41%)	22 (22.45%)
Physical activity	26 (26.53%)	64 (65.31%)	8 (8.16%)
Family history	84 (85.71%)	10 (10.20%)	4 (4.08%)
Calcium supplements intake	13 (13.27%)	78 (79.59%)	78 (79.59%)
Alcohol intake	57 (58.16%)	28 (28.57%)	13 (13.27%)

osteoporosis, 84 (85.71%) out of 98 respondents answered true, 6 (6.12%) of them reported false while only 8 (8.16%) of them opted for don't know. This indicates that, in response to the statement, by age 80, most women have osteoporosis, 89 out of 98 respondents (90.82%) answered true, 4 (4.08%) of them reported false while only 5 (5.10%) of them opted for don't know.

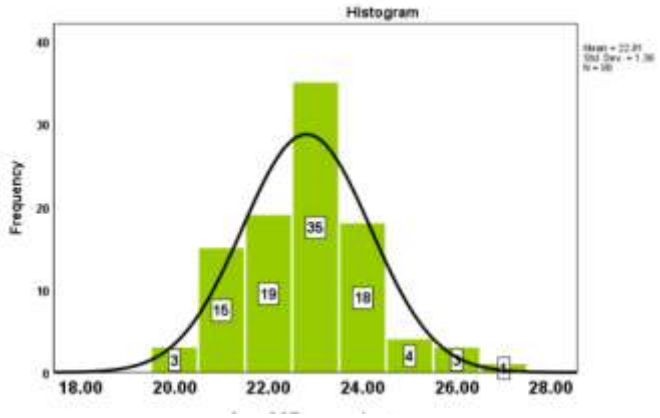
Additionally, regarding the statement, white women are at highest risk of fracture compared to other races, 78 (79.59%) out of 98 respondents answered true, 6 (6.12%) of them reported false while only 14 (14.29%) of them opted for don't know. This demonstrates that, in response to the statement, "From age 50, most women can expect at least one fracture before they die," 56 out of 98 respondents (57.14%) answered "true," 20 (20.41%) answered "false," and 22 (22.45%) selected "don't know." Similarly, regarding the statement, "Any type of physical activity is beneficial for osteoporosis," 26 respondents (26.53%) answered "true," 64 (65.31%) responded "false," and 8 (8.16%) chose "don't know." The above table shows that, in response to the statement, "family history of osteoporosis strongly predisposes a person to osteoporosis, 84 (85.71%) out of 98 respondents answered true, 10 (10.20%) of them reported false while only 4 (4.08%) of them opted for don't know. Figure I shows that to the statement calcium supplements alone can prevent bone loss, 13 (13.27%) out of 98 respondents answered true, 78 (79.59%) of them reported false while only 7 (7.14%) of them opted for don't know. This also illustrates that in response to the statement, alcohol in moderation has little effect on osteoporosis, 57 out of 98 respondents (58.16%) answered true, 28 (28.57%) of them reported false and only 13 (13.27%) of them selected don't know.

The histogram represents 98 students who satisfied the inclusion criteria, with a mean age of 22.8061 years and a standard deviation of 1.36 years in Figure I.

DISCUSSION

Our study aimed to assess the knowledge, attitude, and practice related to osteoporosis among physical therapy students at SUIT, Peshawar. A total of 98 students were selected, comprising 57 males (58.16%) and 41 females

Figure 1. Age of Participants



(41.84%). The mean age was 22.81 years (standard deviation: 1.36), with 38 participants aged 20 to 22 years, 56 aged 23 to 25 years, and 4 aged 26 to 28 years. Among the students, 28 were in the 6th semester, 23 in the 8th semester, and 47 in the 10th semester. Our results showed that among 98 physical therapy students, 5 (5.1%) students scored very good, 89 (90.9%) students scored good, 3 (3.0%) students scored average, 1 (1.0%) student scored poor, and 0 (0%) students scored very poor on OKAT questionnaire. A cross-sectional study was conducted by Almari et al., in 2023 in Saudi Arabia in which total of 2486 participants (59.1% and 40.9% were females and males respectively) in which 86.1% of the study subjects have knowledge about osteoporosis which is in agreement with our study findings.[9]

In our study, 90.9% of the participants have good knowledge regarding osteoporosis this seems to be similar to a study carried out by Rehman et al., in 2022 at physiotherapy students, Isra University Hyderabad in which 34 (18.7%) were male and 148 (81.35%) were female participants and 99.45% of the participants have knowledge about osteoporosis.[13] In our study 90.9% of the participants have good knowledge, attitude and practice about osteoporosis which is in contrast to the study which was carried out by Suresh et al., in 2022 among 245 women between the age group of 31 to 50 years living in a chosen countryside population at Tiruchirappalli Tamilnadu, in which 9% of the participants have good knowledge about osteoporosis.[14] The potential reason for the poor knowledge in this study may be due to a difference in age of the participants and they were selected from rural community. Our study result is in contrast to the study which was conducted by Alfadhul et al., in 2023 in which 391 Iraqi perimenopausal women 6.15% of the participants have good knowledge

about osteoporosis.[15] The potential difference for the poor knowledge in this study may be due to a difference in age or level of education of the participants. This study was limited to one setting and the sample size was very small. The study design was a descriptive cross-sectional study. The sampling method used in this study was a non-random availability sampling technique. Further studies should include large sample sizes from various universities and departments. Probability sampling techniques and experimental studies should be conducted to improve results. The study also recommends similar studies to promote efforts to combat osteoporosis by raising knowledge and awareness regarding osteoporosis.

Awareness campaigns and seminars should be required to increase knowledge and motivate healthy practices about osteoporosis. Social media should be used to increase knowledge regarding osteoporosis. This study was limited to one university and only one department. The sample size was very small. The study design was a descriptive cross-sectional study. The sampling technique used in this study was a non-probability convenience sampling technique. Further studies should include large sample sizes from various universities and departments. Probability sampling techniques and experimental studies should be conducted to improve results. The study also recommends similar studies to promote efforts to fight against osteoporosis by increasing knowledge and awareness regarding osteoporosis. Awareness campaigns and seminars should be required to increase knowledge and motivate healthy practices about osteoporosis. Social media should be used to increase knowledge regarding osteoporosis.

CONCLUSION

This study shows a good level of knowledge, attitude and practice regarding osteoporosis among Doctor of Physical Therapy students, and it could be due to the topic covered in the physical therapy syllabus of 6th to 10th semester (3rd to final year) students.

DECLARATIONS

Consent to participate: Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

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