Original Research Article

Analysis of Beliefs and Confidence Regarding Osteoporosis Among Nurses Working in Orthopedic Department

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Abstract: *Osteoporosis is a major global health concern, particularly in ageing populations. Nurses play a pivotal role in patient education and preventive care, making their health beliefs and self-efficacy regarding osteoporosis crucial in promoting effective prevention strategies. Understanding orthopaedic nurses' perceptions and confidence in managing osteoporosis can inform targeted educational interventions to enhance patient care.* **Methods:** *A cross-sectional analysis of 100 nurses working in the Orthopedic Department of Nishtar Hospital, Multan was conducted from January 2024 to January 2025. Inclusion criteria were registered nurses working full-time in the department. All participants were presented a self-reported questionnaire divided into three sections; sociodemographic data, Osteoporosis Health Belief Scale, and Self-efficacy.* **Results:** *The overall health beliefs score was 123.5 ± 13.66 with a moderately high score for advantage of exercise (20.53 ± 4.33) and health motivation (21.25 ± 4.11). While the susceptibility score (17.08 ± 5.28), seriousness for osteoporosis (16.70 ± 4.1), barriers to exercise (14.98 ± 3.75), and calcium intake (13.18 ± 3.93) had moderately low scores. Participants had a neutral score for the advantages of calcium intake (19.87 ± 3.7). The overall self-efficacy score was 71.97 ± 24.44 which was a moderately high score. The score for exercise was 31.48 ± 12.56 and for calcium consumption, it was 40.49 ± 11.88.* **Conclusion:** *The orthopaedic nurses had a moderately high self-efficacy and satisfactory health beliefs which highlight the importance and need for educational programs to educate nurses.*

Keywords: Nurses, Nursing, Osteoporosis, Orthopedics

Introduction

Osteoporosis is a common condition in women presenting as poor bone quality and low bone mass which increases the risk of fractures. It significantly affects the quality of life, motility, and morbidity of an individual. In Pakistan, 9.9 million people suffer from osteoporosis among which 7.2 million are women and this number is predicted to rise by 3 million in the next 25 years. (1).

Osteoporosis can develop due to lifestyle, genetic factors, aging, and race which can be prevented by increasing and preserving bone mass during adolescence. (2). Osteoporosis occurs in both sexes but 80% of cases are reported in females.(3) Exercise, healthy BMI, sodium and calcium intake, smoking abstinence, and avoiding excessive coffee and alcohol can help in maintaining a healthy lifestyle free of osteoporosis. (4). Additionally, correct knowledge beliefs and self-efficacy also greatly contribute to prevention.

Since healthcare staff especially nurses are responsible for educating patients about risk factors and practices. However, studies have revealed that nurses possess unsatisfactory levels of knowledge and self-efficacy about osteoporosis themselves (5). This study was conducted to analyze the health beliefs and self-efficacy of orthopedic nurses about osteoporosis.

Methodology

A cross-sectional analysis of 100 nurses working in the Orthopedic Department of Nishtar Hospital, Multan was conducted from January 2024 to January 2025. Inclusion criteria were registered nurses working full-time in the department. All nurses provided their consent to become a part of the study while non-consenting participants were excluded. Ethical approval was granted by the ethical committee of the hospital.

All participants were presented with a self-reported questionnaire divided into three sections. Sociodemographic data including age, sex, qualification, marital status, job title, and experience was collected in the first section. Participants' beliefs regarding osteoporosis were evaluated in the second section through a 42-item Osteoporosis Health Belief Scale. The scale assessed health beliefs on seven dimensions including susceptibility, advantages of exercise, health motivation, seriousness, and advantages of calcium consumption which could be responded to on a Likert scale from 1 to 5 with 1 being strongly disagree and 5 being strongly agree. The minimum score possible was 6 and the maximum score was 30 for every dimension. A score from 6 to 11 showed a low score, a score from 12 to 16 was considered moderately low, a score from 17-19 was considered neutral, a score from 20 to 24 was moderately high and a score higher than 25 was considered high.

Self-efficacy regarding osteoporosis was assessed by 12-item scale measuring participants' behaviors for calcium intake and exercise recorded on a visual analog scale with 0 representing least confidence and 10 representing most confidence. The minimum possible score was 0 and the maximum score was 120. A self-efficacy score from 0 to 25 was considered low, a score from 26 to 50 was considered moderately low, a score from 51 to 75 was considered moderately high and a score higher than 76 was considered high.

Data analysis was done by SPSS version 15. Descriptive statistics was performed to present demographic data. Health belief and self-efficacy parameters were calculated as mean ± SD. The association between health beliefs and self-efficacy was assessed by the Pearson coefficient. Statistical significance was considered at a probability value of less than 0.05.

Results

Among the 100 participants included in the study, all were women with a mean age of 27.4 ± 5.30. 46 (46%) nurses were aged between 26-35 years. 50 (50%) were married, 80 (80%) were staff nurses and 55 (55%) had a bachelor's degree or higher. Most of the participants (40%) had less than 3 years of orthopedic experience. The participants' characteristics are shown in Table I.

The overall health beliefs score was 123.5 ± 13.66 with a moderately high score for advantage of exercise (20.53 ± 4.33) and health motivation (21.25 ± 4.11). While the susceptibility score (17.08 ± 5.28), seriousness for osteoporosis (16.70 ± 4.1) barriers to exercise (14.98 ± 3.75), and calcium intake (13.18 ± 3.93) had moderately low scores. Participants had a neutral score for the advantages of calcium intake (19.87 ± 3.7). The Health Belief Scale scores are shown in Table II.

The overall self-efficacy score was 71.97 ± 24.44 which was a moderately high score. The score for exercise was 31.48 ± 12.56 and for calcium consumption, it was 40.49 ± 11.88 (Table III).

Table 1: Participants' data

Variables	N (%)
Age	
25 years or younger	40 (40%)
26-35 years	46 (46%)
36-45 years	12 (12%)
46 years or older	2 (2%)
Gender	
Male	-
Female	100 (100%)
Marital status	
Single	50 (50%)
Married	50 (50%)
Qualification	
Diploma	45 (45%)
Bachelors and higher	55 (55%)
Job title	
Staff Nurse	80 (80%)
Supervisor	20 (20%)
Experience	
Less than 3 years	40 (40%)
3-5 years	30 (30%)
6-9 years	20 (20%)
10 or more years	10 (10%)

Table 2: Health Beliefs Score on Different Dimensions

Subsets	Mean ± SD
Susceptibility	17.08 ± 5.28
Advantages of exercise	20.53 ± 4.33
Seriousness	16.70 ± 4.1
Health Motivation	21.25 ± 4.11
Advantages of calcium intake	19.87 ± 3.76
Barriers to exercise	14.98 ± 3.75
Barriers to calcium intake	13.18 ± 3.93

Table 3: Self-efficacy scores in exercise and calcium intake

	Mean ± SD
Self-efficacy on exercise	31.48 ± 12.56
Self-efficacy on calcium consumption	40.49 ± 11.88

Discussion

This study was conducted to analyze the health beliefs and self-efficacy among orthopedic nurses regarding osteoporosis. The results showed a moderately high self-efficacy and moderate health belief score among participants. Similar scores were reported by previous studies (6, 7).

The susceptibility score (17.08 ± 5.28) and seriousness for osteoporosis (16.70 ± 4.1) was moderately low among nurses. The reason for that could be that 76% of the population was younger than 35 years so they might consider osteoporosis as a less severe condition because of their age and poor knowledge about susceptibility. It has been observed that individuals with positive health beliefs take part in behaviors promoting their health (8). However, nurses think that being susceptible to osteoporosis and severity can impact the thinking and behaviors of patients as well. The education and behaviors of patients depend upon the health information of nurses so the moderately low health belief in our study may be detrimental to quality of care (9).

The perception regarding the advantages of calcium consumption and exercise had a moderately high score. However, the belief regarding barriers to these was moderately low, which is contradictory to as reported by Thai and Chinese studies and similar to Syrian studies (10-12). The self-efficacy score was moderately high with a higher score for calcium intake than exercise which indicates that nurses had more confidence in making improvements in diet than engaging in regular exercise.

Our study has some limitations. The difference in questionnaire parameters was not compared with respect to participant groups. Secondly, we did not assess the background of participants related to exercise frequency and calcium consumption.

Conclusion

Good knowledge, attitudes, practices, and nutritional behaviors were noted in nurses regarding osteoporosis prevention. The KAP scores had a direct and strong association with nutritional behaviors promoting lifestyle changes.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-MNS-034-24)
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SB (Charge Nurse)
Manuscript drafting, Study Design,
SP (Nursing Officer)
Review of Literature, Data entry, Data analysis, and drafting article.
AA (Registered Nurse)
Conception of Study, Development of Research Methodology Design.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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