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Awareness of osteoporosis among medical and health-related students of Umm Al-Qura University, Saudi Arabia

Salah Bakry[1], Wael Abdullah Hamed Alqurashi[1], Ibrahim Ali Hasan Alasmari[1], Mohammad Ghazi Fintyana[1], Saad Naif Saad Albagami[1], Younis Abdulrahman Alharbi[1], Fawaz Mohammed Alzubaidi[2], Mohammed R Alhayli[3], Mohamed A Elhefny[4]

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Authors' Affiliation:
[1]Faculty of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia
[2]Faculty of Medicine, Umm Al-Qura University, Al Qunfudah, Saudi Arabia
[3]Consultant of Pediatrics and Neonatal ICU, Head of pediatric department, ministry of health at South Qunfudah General hospital, Ministry of health, Kingdom of Saudi Arabia
[4]Department of Medical Genetics, Faculty of Medicine, Umm Al-Qura University, Al-Qunfudah, Saudi Arabia

ORCID
Salah Bakry https://orcid.org/0000-0002-2389-7952
Saad Naif Saad Albagami https://orcid.org/0000-0002-0739-2073
Mohamed A. Elhefny https://orcid.org/0000-0002-1034-0354

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ABSTRACT

Background: Osteoporosis still encompasses a health problem worldwide that can lead to critical complications if not managed properly. *Aim:* The current study aimed to explore the awareness and knowledge of osteoporosis among medical and health-related students of Umm Al-Qura University (UQU), Saudi Arabia. *Methodology:* A cross-sectional survey, based on a self-administered questionnaire was conducted using a google form during December 2021. All students of medical and health-related colleges of UQU were targeted in this survey to investigate their Awareness of osteoporosis. *Results:* The number of participants in this study was 351. Their mean age was 22.01 ± 1.77 years. Overall, 67% of students were males, and 33% were females. The majority were 6th-year students. College of medicine represents the highest responding among all colleges 84%. Importantly, about 94.02% of the students had good knowledge regarding osteoporosis with no significant variation among students of different colleges. *Conclusions:* Medical and health-related students of UQU had a good awareness regarding osteoporosis. However, studies targeting the non- medical students are necessary to evaluate the degree of knowledge of osteoporosis in order to ensure early recognizing and prevention of its serious consequences.

Keywords: Osteoporosis, knowledge, awareness, medical and health-related students, Saudi Arabia

1. INTRODUCTION

Osteoporosis (OP) is defined as a bone disease that is described by loss of bone mass and process of weakening and deterioration of the bone tissue' microstructure, increasing the risk of fracture (Alghamdi & Mohammed, 2018; Wright et al., 2014). It is a significant health issue that present in both developed and developing countries (Alghamdi & Mohammed, 2018; Pande,

2002) and is considered the second most crucial health problem in developed countries after heart disease (Alghamdi & Mohammed, 2018; Kanis, 2007). It is among the most critical health problems with high prevalence worldwide, affecting approximately 75 million people (Shahi et al., 2019; Amin & Mukti, 2017; Bilal et al., 2017). According to some studies, osteoporosis in Saudi Arabia is stronger than in other parts of the world (Shahi et al., 2019; Sadat-Ali et al., 2012; Hassan & Hassan, 2017). However, the incidence of OP in Saudi Arabia is similar to that of high prevalence countries such as the United States and Europe (Shahi et al., 2019; El-Desouki, 2003).

Osteoporosis is a disease of skeletal system that progresses slowly and silently and causes decreased bone density and fractures (Shahi et al., 2019; Weppner & Lo, 2017). Osteoporosis-related fractures (ORFs) are significant morbidity, mortality, and expenditure (Shahi et al., 2019; Chapurlat, 2017). Many influential and uncontrollable risk factors can lead to osteoporosis. B. Especially postmenopausal vitamin D consumption, low calcium intake, female gender (Shahi et al., 2019; Edmonds et al., 2012; Ahmad et al., 2014; Abukhelaif et al., 2021). However, people with osteoporosis-related fractures lack secondary prevention of fractures (Shahi et al., 2019; Leslie et al., 2012). Primary prevention and early detection are essential factors in reducing the burden of illness (Shahi et al., 2019; Amin & Mukti, 2017). Therefore, people's awareness, attitudes, and practices regarding help significantly to primary prevention and early detection of disease (Shahi et al., 2019; Toh et al., 2015; von Hurst & Wham, 2007).

Several studies from multiple countries have noted the insufficient awareness of OP among the general population and physicians (Alghamdi & Mohammed, 2018; Shams et al., 2011; Oh et al., 2016; Hassan et al., 2021). Thus, increasing knowledge and awareness level of osteoporosis are important factors warranting better care of osteoporosis, which results in improvement of quality of life and decreased disease burden. Furthermore, a recent study showed that physicians' level of knowledge improve patient care and outcome (Alghamdi & Mohammed, 2018; Goelz et al., 2011). Consequently, health professionals and health-related students' adequate and updated knowledge of osteoporosis will be the future mediators and counselors to patient care. Accordingly, more research is required to investigate the knowledge and awereness of health-related students at Saudi's universities. Therefore, this study aimed to estimate the level of knowledge and awareness of osteoporosis among health-related students at Umm Al-Qura University.

2. METHODOLOGY AND SUBJECTS

A self-administered questionnaire was made in this cross-sectional investigation at UQU, Makkah, Saudi Arabia. The study was done out during December 2021. Ethical approval was received from UQU's research ethics committee. Random sampling was used to classify students according to their collages. Stat Calc of Open Epi software of Rollin School of Public Health, Emory University, USA (Sullivan et al., 2009) was used for sample size estimation. The least sample size to achieve a precision of 5% with a 95% confidence interval is 350.

The survey was consist of two main parts; we firstly gathering students' demography. Then, the second parts aim to assessing students' osteoporosis knowledge and awareness by closed-end questions that are driven from previous survey (Shahi et al., 2019). Modified Bloom's criteria with cut off value of 75% was utilized in estimation of the knowledge score in the second part of survey, whereas was used to classify participants' knowledge scores (Wildani et al., 2021). The SPSS software version 23 was used to in the data statistics. The frequency was computed for the categorical variables, which were then compared using the test of Chi-square, and the mean, the standard deviation was calculated for the continuous variables.

3. RESULT

A group of 351 students studying in the area of health that took part in this study. (Table 1) sets that students' gender allocation; two-thirds of the participants were male (235, 67.0 %), and only one-third were female (116, 33.0 %). The participants' mean age was 22.0 ± 1.77 years, and the 23 year –old age group was mostly represented (18.5 %) of the participants. Otherwise, the 26-year-old students were the smallest number of participants (0.6 %). All the ages are shown in (Table 1). The number of single participants (342, 97.4%) was more significant than the number of married participants. The college of medicine was the most considerable represented compared with other Colleges about (84.0 %); however, the faculty of public health and health informatics was the smallest, representing about (0.9%). Furthermore, the 6th year students were the most, they were about (97, 27.6%) but the intern students were the smallest number; they were about (22, 6.3%).

Concerning students' awareness about Osteoporosis, most of the entrants have a reasonable level of awareness (94%). The students' awareness corresponds with students' knowledge score regarding Osteoporosis, in which (94.02%) of the participants have a good degree of knowledge. Most of the entrants have no osteoporosis in the family (65%), while (35.0 %) have a positive history (Table 1).

Table 1 Demographic data

Variable	Category	Frequency n. (%)
Age (mean [SD])	(22.01 [1.77])	
Age	19	26 (7.4)
	20	61 (17.4)
	21	64 (18.2)
	22	47 (13.4)
	23	65 (18.5)
	24	64 (18.2)
	25	22 (6.3)
	26	2 (0.6)
Gender	Male	235 (67.0)
	Female	116 (33.0)
Academic year	2nd year	74 (21.1)
	3rd year	50 (14.2)
	4th year	60 (17.1)
	5th year	48 (13.7)
	6th year	97 (27.6)
	intern	22 (6.3)
Collage	College of medicine	295 (84.0)
	College of dentistry	11 (3.1)
	College of nursing	6 (1.7)
	College of pharmacy	19 (5.4)
	college of applied medical sciences	17 (4.8)
	College of health informatics and public health	3 (0.9)
Marital status	Single	342 (97.4)
	Married	9 (2.6)
Heard about osteoporosis	Yes	330 (94.0)
	No	21 (6.0)
Family member with Osteoporosis	yes	123 (35.0)
	No	228 (65.0)

The background knowledge scores of Osteoporosis got from 19 questions; the degree of the background knowledge in each question is seen in (Table 2 and figure 1). The students' answers showed that most of them have a good awareness of Osteoporosis knowledge. Additionally, the background knowledge about Osteoporosis differs between subgroups concerning respondents' demographic data, as shown in (Table 3).

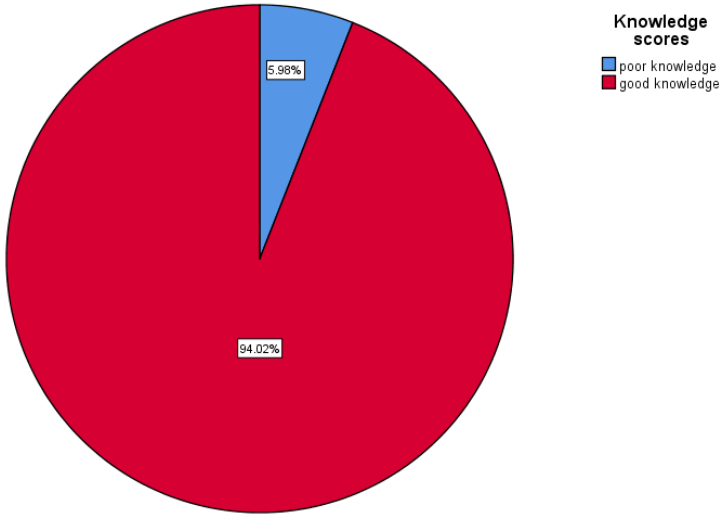

Figure 1 Participants' knowledge score

Table 2 Percentage of knowledge questions among participants

Question	True n. (%)	False n. (%)
OP results in bone fractures.	335 (95.4%)	16 (4.6%)
Symptoms before presentation	260 (74.1%)	91 (25.9%)
The relation between peak bone density in the end of childhood and the occurrence of osteoporosis.	144 (41.0%)	207 (59.0%)
Prevalence according to gender	65 (18.5%)	286 (81.5%)
Risk of smoking	281 (80.1%)	70 (19.9%)
White women are at highest risk of fracture compared to other races.	267 (76.1%)	84 (23.9%)
Risk of age	299 (85.2%)	52 (14.8%)
From age 50, most women can expect a minimal of one fracture before they die.	187 (53.3%)	164 (46.7%)
Beneficial of physical activity in osteoporosis.	190 (54.1%)	161 (45.9%)
It is easy to tell whether I am prone to having osteoporosis by my clinical risk factors.	255 (72.6%)	96 (27.4%)
Family history in osteoporosis	274 (78.1%)	77 (21.9%)
Calcium intake in osteoporosis	247 (70.4%)	104 (29.6%)

Sardines and broccoli for prevent osteoporosis	282 (80.3%)	69 (19.7%)
Calcium supplements for prevent osteoporosis	95 (27.1%)	256 (72.9%)
Alcohol in moderation has little effect on osteoporosis.	165 (47.0%)	186 (53.0%)
Risk of a high salt intake	162 (46.2%)	189 (53.8%)
There is a small amount of loss of bone in the ten years following the onset of menopause.	224 (63.8%)	127 (36.2%)
Hormone therapy in osteoporosis	252 (71.8%)	99 (28.2%)
Treatments of osteoporosis.	143 (40.7%)	208 (59.3%)

Table 3 Association between degree of awareness and Demographic data

Variable	Level of knowledge		P VALUE
	Good n. (%)	Poor n. (%)	
Age			
19	25 (96.2%)	1 (3.8%)	0.521
20	55 (90.2%)	6 (9.8%)	
21	62 (96.9%)	2 (3.1%)	
22	44 (93.6%)	3 (6.4%)	
23	63 (96.9%)	2 (3.1%)	
24	60 (93.8%)	4 (6.3%)	
25	19 (86.4%)	3 (13.6%)	
26	2 (100.0%)	0 (0.0%)	
Gender			
Male	219 (93.2%)	16 (6.8%)	0.475
Female	111 (95.7%)	5 (4.3%)	
Collage			
College of medicine	279 (94.6%)	16 (5.4%)	0.501
College of dentistry	9 (81.8%)	2 (18.2%)	
College of nursing	6 (100.0%)	0 (0.0%)	
College of pharmacy	17 (89.5%)	2 (10.5%)	
College of applied medical sciences	16 (94.1%)	1 (5.9%)	
College of health informatics and public health	3 (100.0%)	0 (0.0%)	
Marital status			
Single	322 (94.2%)	20 (5.8%)	0.430
Married	8 (88.9%)	1 (11.1%)	
Academic year			

2nd year	67 (90.5%)	7 (9.5%)	0.077
3rd year	49 (98.0%)	1 (2.0%)	
4th year	54 (90.0%)	6 (10.0%)	
5th year	46 (95.8%)	2 (4.2%)	
6th year	95 (97.9%)	2 (2.1%)	
Intern	19 (86.4%)	3 (13.6%)	

4. DISCUSSION

Osteoporosis has been among the most common disorders affecting the musculoskeletal system worldwide, and it is causing millions of fractures yearly. Good awareness about osteoporosis is among the things that helps control and prevent osteoporosis (Alghamdi & Mohammed, 2018; Sullivan et al., 2009). This study aimed to deduce the degree of knowledge among medical students in umm Al-Qura University about osteoporosis. This study has an adequate level of knowledge; however, it can be improved further. This study demonstrated that the participants mean age was 22 ± 1.77 years, which is comparable to the mean age of another Saudi study, which is an investigation has been conducted in King Faisal University among female medical students (Alghamdi & Mohammed, 2018). The current study results showed that 94.02% of the participants have good knowledge about osteoporosis, representing most of the population in this study, which is higher than what Shahi et al., (2019) reported (66.4%). On the contrary, Sarah Ali Alawi et al., (2020) showed in a study targeting the females of Saudi Arabia that 61% of the participants have a good knowledge about osteoporosis which is lower than our results. This could be interrupted by the knowledge and the education of the medical students rather than the general population (Sarah, 2020).

The current study reported that 95.4% of the respondents agreed that osteoporosis increases the tendency of bone fractures, which is similar to what Shahi et al., (2019) study reported, accounting for 98.9% (Alghamdi & Mohammed, 2018). On the contrary, Sarah Ali Alawi et al., (2020) study showed a lower percentage that accounts for 74.4%. The present study reported that 74.1% of the participants knew the symptoms that occurred before the bone fractures. In comparison, Shahi et al., (2019) study reported 64.2% of the participants, and Sarah Ali Alawi et al., (2020) study showed much lower, accounting for 55.8% of the participants.

The percentage of the participants who have good knowledge about the risk factors of osteoporosis in the study account for 72.6%, while what Shahi et al., (2019) study reported is lower, accounting for 59.1%. One of the top critical factors that may increase knowledge of the participants is osteoporosis in the family, which is accounted in the study for 35%. This may give the students a background of osteoporosis with the medical background.

Study limitations

Because the research was conducted at only one university, the findings are not representative of all Saudi Arabian universities. Furthermore, this work requires further inquiry among all Saudi Arabian health populations. Moreover, all responses are self-reported, and we lack the instruments necessary to assess the validity of the responses. Furthermore, both the nursing and public health colleges and health informatics represents the lowest responses among all colleges.

5. CONCLUSION

According to our findings, participants had a good degree of awareness and knowledge. Furthermore, there was no remarkable difference in osteoporosis awareness between students' age, gender, academic year, collages, or marital status. Furthermore, increased public and general population awareness strategies are required to preserve reliable information to identify, manage, and prevent serious consequences.

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Ethical approval

This study was approved by UQU's research ethics committee 2021 with ethical number: (HAPO-02-K-012-2021-12-883). All procedures used in this study involving human subjects will comply with the bioethical committee of Umm Al-Qura University's ethical requirements and the 1964 Helsinki statement and its subsequent amendments.

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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