

## Awareness and Health Beliefs of Osteoporosis among Middle Aged Women in Selected Municipality of Kathmandu

\*Sarita Panta, Sarita Adhikari, Anju Gurung, Bimala Pandey, Amuda K C, Aruna Rai

Lecturer, Nepalese Army Institute of Health Sciences, College of Nursing, Sanobharyang, Kathmandu

\*Corresponding Author: Ms. SaritaPanta; Email: saritas.panta@gmail.com

### ABSTRACT



**Introduction:** Osteoporosis is a bone disorder characterized by a reduction in bone density accompanied by increasing porosity and brittleness. It is one of the major public health problem globally and its prevalence is rapidly increasing particularly in women. Osteoporosis causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds. Therefore the objectives of the study was to assess the existing awareness and health belief of osteoporosis among middle aged women.

**Methods:** Descriptive cross-sectional research design was used on a sample of 328 middle aged women residing in Nagarjun Municipality, Kathmandu. Non probability purposive sampling technique was used to collect the data. Data was collected after informed consent through face to face interview schedule using Osteoporosis Knowledge Assessment Tool (OKAT) and Osteoporosis Health Beliefs Scale (OHBS). Descriptive statistics and inferential statistics (Chi-Square test) were used for data analysis at 5% level of significance.

**Results:** The overall osteoporosis awareness and health beliefs mean scores were  $9.39 \pm 2.93$  and  $146.18 \pm 11.58$  respectively. Majority(60.0%) of the respondents were unaware of osteoporosis. Existing awareness of respondents was significantly associated with age ( $p < 0.001$ ) and level of education ( $p < 0.038$ ). Based on the OHBS subscale score, the highest perception was on health motivation (mean score:  $22.73 \pm 2.81$ ) and the lowest perception was on barriers to calcium intake (mean score  $17.71 \pm 4.32$ ).

**Conclusion:** Based on the findings, it is concluded that the majority of middle aged women were unaware about osteoporosis. Education and age of women was significantly associated with level of awareness.

**Keywords:** Osteoporosis, Awareness, Health belief

Access this article Online		Article Info.
Quick Response Code	Website:	How to cite this article in Vancouver Style?
 	<a href="http://www.jkahs.org.np">www.jkahs.org.np</a>	Panta S, Adhikari S, Gurung A, Pandey B, KC A, Rai A. Awareness and Health Beliefs of Osteoporosis Among Middle Aged Women in Selected Municipality of Kathmandu. Journal of Karnali Academy of Health Sciences 2020;3(2): 14-21
	DOI: <a href="https://doi.org/10.3126/jkahs.v3i2.30854">https://doi.org/10.3126/jkahs.v3i2.30854</a>	Received : 12 January 2020 Accepted : 19 May 2020 Published Online : 20 May 2020
		Conflict of Interest : None Source of Support : None

## INTRODUCTION

Osteoporosis is a chronic progressive disease. It is defined as a systemic skeletal disease characterized by low bone density and micro-architectural deterioration of the bone tissue with a consequent increase in bone fragility that greatly increases the risk of fractures.<sup>1</sup> According to World Health Organization (WHO), osteoporosis is classified as the 10<sup>th</sup> most common worldwide disease that is linked to civilization in the modern world.<sup>2</sup> The entire population is at risk of osteoporosis at any age but elderly and post-menopausal are more susceptible to development of this disease.<sup>3-4</sup>

Osteoporosis is a major public health problem; it is estimated to affect 200 million women worldwide and causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds.<sup>5</sup> In Asia, osteoporosis is often left undiagnosed and untreated. This is true for even those patients who have the highest susceptibility to the disease and have also suffered fractures previously. Furthermore, this issue is more severe in rural settlements. A large proportion of the population resides in rural areas in countries such as China and India. People in rural settlements tend to treat hip fractures at home rather than opting for hospital management and care.<sup>6</sup> Osteoporosis is not curable, but it can be prevented in part by ever-increasing the level of physical activity at all ages, together with adequate dietary calcium and vitamin D intake, and fall prevention. Cessation of smoking and reduction of alcohol consumption may play a role. Among most important preventive measures are weight-bearing exercises e.g. going up and down stairs, jogging, aerobics, swimming, and isometrics; at least 30 minutes daily.<sup>7</sup>

There are very few such studies conducted in developing countries. That's why researchers are interested to conduct this research in Nepal. So the findings of this research will be milestone for those researcher who wants to do research in this area. Thus the aim of this study was to determine the level of the awareness and health belief of osteoporosis among middle aged women and to find out association between level of osteoporosis among middle aged women and related variables.

## MATERIALS AND METHODS

A descriptive cross-sectional research design was carried out in Nagarjun Municipality of Kathmandu among 328 middle aged women using purposive sampling technique. Data were collected using three parts interviewing questionnaire. Part I covered the socio-demographic information, Part II and III are two valid and reliable standardized tools: the Osteoporosis Knowledge Assessment tool (OKAT) and the Osteoporosis Health Belief Scale (OHBS), respectively for measuring existing awareness and health belief of respondents towards osteoporosis. OKAT is a 20 item questionnaire, each item of OKAT has "correct" and "incorrect" options. Scoring "1" for a correct response, and "0" for incorrect response with a range of 0–20 for the total score. The OHBS is a 42-item scale which examines the individual's health beliefs about osteoporosis and preventive behaviors. The OHBS consists of seven subscales: perceptions of osteoporosis regarding seriousness, susceptibility, Benefits of exercises, Benefits of calcium intake, Barriers to exercises, Barriers to calcium intake and Health motivation. The respondents rate each item on a five-point Likert scale with "1" representing "strongly disagree" and "5" representing "strongly agree." The range of scores for each subscale is 6–30, and the possible range of total scores is 42–210 with a higher score indicating better beliefs.<sup>8</sup>

Ethical approval was taken from Institutional Ethical Review Committee of Nepalese Army Institute of Health Sciences. Similarly, written permission was taken from the administration of Nagarjun Municipality, Ramkot 6 and informed consent was taken from each respondents before data collection.

Data was collected by face to face interview technique from May 12, 2019 to June 12, 2019. Every precaution was taken to safeguard the right of the respondents. Data was checked for completeness and accuracy. Immediate and in house editing was done to correct and minimize the errors. Data were coded, entered and analyzed by using Statistical Package for Social Sciences (SPSS) version 20. The data were analyzed by using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (chi-square test)

## RESULTS

### Socio-demographic Information

Half (50.0%) of the respondents belonged to age group between 50-59 years with mean  $\pm$  SD (52.0  $\pm$  6.83 years). In terms of religion, almost all (92.1%) of the respondents were Hindu. More than one third (37%) of respondents were house manager. With regards to ethnicity two third (65.5%) of the respondents belonged to upper caste groups. In terms of education, just above half (57.0%) of the respondents were illiterate. In terms of occupation (37.8%) of respondents engaged in agriculture. Similarly, more than one third (43.3%) of respondents had enough household income for more than one year (Table 1).

As Shown in Table 2, nearly half (45.1%) of respondents received the information from health care provider and family member or friends.

**Table1: Socio-demographic Information of Respondents(n=328)**

Characteristics	Frequency	Percentage
Age (completed years)		
40-49	120	37.0
50-59	165	50.0
60 and above	43	13.0
Mean age SD=52.0 $\pm$ 6.83 years		
Religion		
Hinduism	302	92.1
Buddhism	23	7.0
Christianity	3	0.9
Ethnicity		
Brahmin/Chhetri	215	65.5
Janjati/Magar	80	24.4
Dalit	12	3.7
Others (Muslim, Churoute)	21	6.4
Occupation		
Agriculture	124	37.8
Service	32	9.8
House maker	124	37.8
Business	48	14.6
Education		
Literate	141	43.0
Illiterate	187	57.0

If literate (n=141)		
Primary	64	19.5
Secondary	49	14.9
Bachelor and above	28	8.5
Income		
Enough for less than 6 month	71	21.6
Enough for 6-12 month	115	35.1
Enough for more than 12 month	142	43.3

**Table 2: Sources of Information regarding Osteoporosis (n=328)**

Characteristics	Frequency	Percentage
Health care provider	148	45.1
Family member or friend	147	44.8
Newspaper/ books	26	7.9
Internet	7	2.1

### Awareness regarding Osteoporosis

Finding of this research reveals that most of the respondents (81.4%) answered correctly regarding the symptoms of osteoporosis. Concerning the higher peak bone mass at the later life majority (70.1%) of respondents answered correctly. Nearly two third (63.1%) of respondents answered physical activity is beneficial for osteoporosis. Similarly more than half (55.5%) of respondents answered osteoporosis increases the risk of fractures. In terms of knowledge, the overall average knowledge score among middle aged women was 9.39 (SD =2.93)

**Table 3: Respondents Awareness regarding Osteoporosis(n=328)**

Characteristics	Response Correct (%)	Incorrect (%)
Osteoporosis leads to increased risk of bone fracture	182 (55.5)	146 (44.5)
Osteoporosis usually causes symptoms before fractures occur	267 (81.4)	61 (18.6)
Having a higher peak bone mass at the end of childhood gives no protection against the development of osteoporosis in later life	230 (70.1)	98 (29.9)
Osteoporosis is more common in men	141 (43.0)	187 (57.0)
White women are at highest risk of fracture as compared to other races	117 (35.7)	211 (64.3)
White women are at highest risk of fracture	58 (17.7)	270 (82.3)
A fall is just as important as low bone strength in causing fractures	219 (66.8)	109 (33.2)
By age 80, the majority of women have osteoporosis (correct answer	172 (52.4)	156 (47.6)
From age 50, most women can expect at least one fracture before they die	205 (62.5)	123 (37.5)
Any type of physical activity is beneficial for osteoporosis	207 (63.1)	121 (36.9)
It is easy to tell whether at risk of osteoporosis by my clinical risk factors	179 (54.6)	149 (45.4)
Family history of osteoporosis strongly predispose a person to osteoporosis	144 (43.9)	184 (56.1)
An adequate calcium intake can be achieved from two glasses of milk a day	203 (61.9)	125 (38.1)
Sardines and broccoli are good sources of calcium for people who can take dairy	175 (53.4)	153 (46.6)
Calcium supplements alone can prevent bone loss	177 (54.0)	151 (46.0)
Alcohol in moderation has little effect on osteoporosis	86 (26.2)	242(73.8)
A high salt intake is a risk factor for osteoporosis	93 (28.4)	235 (71.6)
There is a small amount of bone loss in the 10 years following the onset of menopause	170 (5.8)	158 (48.2)
Hormone therapy prevents further bone loss at any age after menopause	96 (29.3)	232 (70.7)
There are no effective treatments for osteoporosis available in Nepal	242(73.8)	86(26.2)

As shown table 4, majority (60.0%) of the respondents were unaware regarding osteoporosis.

**Table 4: Awareness Level of the Respondents regarding Osteoporosis (n=328)**

Awareness level	Frequency	Percentage
Unaware(<50%)	198	60.0
Aware(≥50%)	130	40.0

As shown in Table 5, statistically significant variables with level of association of awareness with socio-demographic variables. Respondents age above 50 years and illiterate were unaware about osteoporosis which was statistically significant at ( $P = 0.038$ ) and ( $P < 0.01$ ) respectively.

**Table 5: Association of Awareness regarding Osteoporosis with Socio-demographic Variables**

Characteristics	Level of Awareness		Chi square value	p-value
	Aware F (%)	Unaware F (%)		
Age in years				
≤50	71(54.6)	85(42.9)	4.297	0.038*
>50	59(45.4)	113(57.1)		
Religion				
Hinduism	122 (40.4)	180 (59.6)		
Non-Hinduism	8(30.8)	18(69.2)	0.928	0.406
Ethnicity				
Brahmin/Chhetri	90(41.9)	125(58.1)		0.286
Others	40(35.4)	73(64.6)	1.293	
Occupation				
Working inside home	83(40.7)	121(59.3)	0.643	0.250
Working outside home	47(37.9)	77(62.1)		
Education				
Literate	96(68.1)	45(31.9)	83.67	<.001*
Illiterate	34(18.2)	153(81.8)		
Economic status				
Enough for less than 12 month	29(40.8)	42(59.2)	0.056	0.819
Enough for more than 12 month	101(39.3)	156(60.7)		

**Table 6: Respondents’ Health Beliefs on Osteoporosis (n=328)**

OHBS Score	Mean(SD)	Obtained Range (Min-Max)	Possible Range (Min-Max)
Health motivation of Osteoporosis (Q 37 to 42)	22.7 (2.8)	9-30	6-30
Benefits of exercise (Q13 to 18)	22.6 (3.5)	9-30	6-30
Perceived seriousness of Osteoporosis (Q7 to 12)	22.0 (3.8)	11-30	6-30
Benefits of calcium intake (Q19 to 24)	22.0 (3.2)	11-30	6-30
Perceived susceptibility of Osteoporosis (Q1 to 6)	20.6 (3.4)	10-29	6-29
Barriers to exercise(Q25to30)	18.3 (4.3)	6-29	6-29
Barriers to calcium intake (Q31to36)	17.7 (3.5)	7-26	6-26
Total mean score(Q 1-42)	146.1(11.5)	91-178	42-210

As shown in table 6, the total mean score for all the seven sub scale of OHBS was (146.1±11.5). Based on the OHBS subscale score, the highest perception was on health motivation (22.7± 2.8) and the lowest perception (17.7 ± 3.5) on barriers to calcium intake.

## DISCUSSION

In the present study majority (60.0%) of respondents were unaware and more than one third (40.0%) of respondents were aware of osteoporosis. Educated women were more aware when compared to uneducated women (68.1% vs 18.2%). The result is consistent with the study conducted on Turkish middle aged women which showed that nearly half (46.0%) of respondents were aware of osteoporosis. Educated women were more aware as compared to uneducated women (56.2% vs 27.7%).<sup>9</sup> In the present study more than half (55.5%) of respondents were aware of at least one risk factor of osteoporosis. Whereas similar type of study conducted in Malaysia showed that nearly half (47.5%) of respondents were aware of at least one risk factor of osteoporosis.<sup>10</sup>

Current study found that there was significant association between level of awareness and education ( $p < 0.001$ ) which is supported by the study conducted on Chinese women in Singapore which depicts significant association between awareness and education ( $p < 0.003$ ). It was mentioned that education increases the identification of individuals at risk and may reduce hip fractures and associated healthcare costs.<sup>11</sup> Similarly, in the present study awareness of osteoporosis is significantly associated with age ( $p < 0.038$ ). Whereas similar type of study conducted in Greek middle aged women showed that awareness of osteoporosis is significantly associated with age ( $p < 0.004$ ). Some studies suggest that as age increases level of awareness on osteoporosis increases. Women with high level of education were more aware about osteoporosis in all aspects, though a general lack of awareness with respect to risk factors was identified by majority of studies.<sup>12</sup>

In current study the total mean scores of OKAT is ( $9.39 \pm 2.93$ ) and total OHBS subscale score is ( $146.18 \pm 11.58$ ). Based on the OHBS subscale score, the highest perception is found on the health motivation and the benefits of exercise. The lowest perception is on the barriers of calcium intake. Similar type of study conducted on Mansoura, Egypt showed that total OKAT score was ( $10.8 \pm 3.3$ ) and total OHBS subscales score was ( $140.9 \pm 18.1$ ). Based on the OHBS subscale score, the perception

for the benefits of exercise was highest and the lowest perception was for barriers to calcium intake mean score ( $15.7 \pm 4.7$ ).<sup>13</sup> Similarly, perceptions for the benefits of exercise and calcium intake were higher than perceptions of their barriers to calcium intake, indicating that women were motivated towards practicing physical exercises and taking calcium-rich food.<sup>14</sup>

In the present study the middle aged women the perception of health motivation is highest with a mean score of  $22.7 \pm 2.8$ . Which is similar to the study conducted in South Asia which showed that high health motivation mean score of  $22.3 \pm 3.0$ . This high perception of health motivation may be an important trigger for implementing relevant public health promotions for osteoporosis prevention and increasing dietary calcium intake in women.<sup>15</sup> In the present study the perception of benefits of exercise mean score is  $22.68 \pm 3.5$ . The finding is consistent with the study conducted in Manosura, Egypt showed that perception to the benefits of exercise mean score was  $23.2 \pm 5.2$ .<sup>16</sup>

In the present study, respondents perceived a moderate susceptibility to osteoporosis with a mean score of  $20.68 \pm 3.4$ . Which is similar to the study conducted in United State in the middle aged women the perceived osteoporosis susceptibility scores was  $17.1 \pm 5.3$ .<sup>17</sup> Finding of the present study shows that mean score of perceived seriousness is  $22.0 \pm 3.8$ , which is similar to the study conducted in South Asian women where the mean score of perceived seriousness of osteoporosis was  $18.7 \pm 4.04$ . Likewise, a study conducted in Canada showed high perception towards the seriousness of osteoporosis ( $22 \pm 2.3$ ).<sup>18</sup>

In the present study the middle aged women perceived a dietary calcium intake to be beneficial for the prevention of osteoporosis ( $22.0 \pm 3.2$ ). The finding is consistent with the study conducted among South Asian women ( $22.7 \pm 3.5$ ).<sup>19</sup>

In the current study the respondents has lowest perception on barriers to calcium intake with the mean score of  $17.7 \pm 3.5$ . The finding is consistent with the

study conducted in Manosura, Egypt showed that the respondents had lowest perception on barriers to calcium intake( $21.97 \pm 5.4$ ).<sup>16</sup>

## CONCLUSION

The middle aged women were unaware about osteoporosis and had limited perception on osteoporosis. Increasing age and illiteracy are the significant determinants for unawareness. Therefore, community based awareness campaigns specially targeted to middle aged illiterate women on osteoporosis should be reinforced.

## Acknowledgement

The researcher is highly indebted to Executive Officer of Nagarjun Municipality Mr. Rajendra Budhathoki, for granting the permission to carry out this study also the researcher is extremely grateful to all the respondents of Nagarjun Municipality for their kind cooperation and participation in this study.

## REFERENCES

- Horowitz M, Eastell R, Insogna K, editors. Essentials of the pathogenesis of osteoporosis. London: Current Medicine Group (Springer Healthcare);2010:38(3)225-231. [[CrossRef](#)][[Googlescholar](#)].
- Kanis JA, Burlet N, Cooper C, Delmas PD, Reginster JY, Borgstrom F, Rizzoli R. European guidance for the diagnosis and management of osteoporosis in postmenopausal women. *Osteoporosis international*. 2009;1;19(4):399-428. [[CrossRef](#)] [[Full Tex](#)]
- Alonge TO, Adebusoye LA, Ogunbode AM, Olowookere OO, Ladipo MA, Balogun WO, Okoje-Adesomoju V. Factors associated with osteoporosis among older patients at the Geriatric Centre in Nigeria: a cross-sectional study. *South African Family Practice*. 2017;59(3):87-93.[[CrossRef](#)] [[Full Tex](#)]
- Barzanji AT, Alamri FA, Mohamed AG. Osteoporosis: a study of knowledge, attitude and practice among adults in Riyadh, Saudi Arabia. *Journal of community health*. 2013;38(6):1098-105. [[CrossRef](#)][[Googlescholar](#)].
- Barzanji AT, Alamri FA, Mohamed AG. Osteoporosis: a study of knowledge, attitude and practice among adults in Riyadh, Saudi Arabia. *Journal of community health*. 2013;38(6):1098-105. [[CrossRef](#)][[Googlescholar](#)].
- Drake MT, Clarke BL, Lewiecki EM. The pathophysiology and treatment of osteoporosis. *Clinical therapeutics*. 2015;1;37(8):1837-50. [[CrossRef](#)][[Googlescholar](#)].
- de Silva RE, Haniffa MR, Gunathillaka KD, Atukorala I, Fernando ED, Perera WL. A descriptive study of knowledge, beliefs and practices regarding osteoporosis among female medical school entrants in Sri Lanka. *Asia Pacific family medicine*.Collection 2014;13(1):15. [[CrossRef](#)][[Full Tex](#)]
- Watts NB, Lewiecki EM, Miller PD, Baim S. National Osteoporosis Foundation 2008 Clinician's Guide to Prevention and Treatment of Osteoporosis and the World Health Organization Fracture Risk Assessment Tool (FRAX): what they mean to the bone densitometrist and bone technologist. *Journal of Clinical Densitometry*. 2008;11(4):473-7.[[CrossRef](#)][[Googlescholar](#)].
- Riaz M, Abid N, Patel MJ, Tariq M, Khan MS, Zuberi L. Knowledge about osteoporosis among healthy women attending a tertiary care hospital. *Journal of the Pakistan Medical Association*. 2008;58(4):190.[[Googlescholar](#)]
- Khan YH, Sarriff A, Khan AH. A review of knowledge, attitude and practices (kap) of community population towards osteoporosis. *Journal of Applied Pharmacy*. 2012;1;4(3).
- Masterson R. A descriptive survey of the knowledge of female orthopaedic patients in Ireland about the effects, the risk factors and the prevention of osteoporosis. *Journal of Orthopaedic Nursing*. 2009;10(2):98-105. [[CrossRef](#)][[Googlescholar](#)]
- Edmonds E, Turner LW, Usdan SL. Osteoporosis knowledge, beliefs, and calcium intake of college students: utilization of the health

- belief model. *Open J Prev Med* 2012; 2:27–34. [[CrossRef](#)][[Googlescholar](#)]
13. El-Masry R, Elkhawaga G, El-Gilany AH, Alam RR. Knowledge and health beliefs of elderly women toward osteoporosis in Mansoura, Egypt. 2018;2(2):27-33[[CrossRef](#)][[Full Tex](#)]
  14. Ford MA, Bass M, Zhao Y, Bai JB, Zhao Y. Osteoporosis knowledge, self-efficacy, and beliefs among college students in the USA and China. *Journal of osteoporosis*.2011;11(2):319-328 [[CrossRef](#)][[Googlescholar](#)]
  15. Naz MS, Ozgoli G, Aghdashi MA, Salmani F. Prevalence and risk factors of osteoporosis in women referring to the bone densitometry academic center in Urmia, Iran. *Global journal of health science*. 2016;8(7):135. [[CrossRef](#)][[Googlescholar](#)]
  16. Ma R, Bb B, Fc A. Osteoporosis-related life habits and knowledge about osteoporosis among women in Tabriz, Iran. 2009;8(2):17-20[[Googlescholar](#)]
  17. Malak MZ, Toama ZT. The effect of osteoporosis health education program based on health belief model on knowledge and health beliefs towards osteoporosis among Jordanian female teachers. *European Scientific Journal*. 2015;1(2):1857-7881[[Googlescholar](#)]
  18. Fourie H, Floyd S, Marshall B. Exploring New Zealand orthopaedic nurses' knowledge of osteoporosis. *Orthopaedic Nursing*. 2015;34(1):29-35. [[Googlescholar](#)][[Crossref](#)]
  19. McLeod KM, Johnson CS. A systematic review of osteoporosis health beliefs in adult men and women. *Journal of osteoporosis*. 2011;56(1):43-47.[Crossref](#)][[Googlescholar](#)]