Knowledge and Awareness of Osteoporosis in Female Population of Hyderabad, Pakistan.

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ABSTRACT

Objectives: To assess the knowledge and awareness of Osteoporosis in female population of Hyderabad Pakistan.

Methods: This cross-sectional study was conducted from 10th April 2019 to 10th June 2019 in Muhammad Medical College and Hospital Mirpurkhas, Pakistan. All female post-menopausal women of Hyderabad district fulfilling the inclusion criteria and attending Orthopaedic Outpatient Department (OPD) were included in our study. The knowledge and awareness of Osteoporosis was assessed through a questionnaire based on Osteoporosis Health Belief Scale (OHBS) and explained in local language. The bone mineral density (BMD) and body mass index (BMI) of all the participants were also determined. Important study variables like BMI was compared with BMD and Chi square test was used to calculate *P* value (*P* value <0.05 was considered significant) Pearson's correlation and Spearman's ρ analysis was done for important variables of OHBS questionnaire.

Results: This study included 200 women. The mean age was 54± 4 years. There were 36(18%) women with Osteoporosis, 110(55%) with Osteopenia and 54(27%) were normal. The mean BMI were 28.2± 3.11 among normal women, 26.2±3.37 among Osteopenic women and 25.2±3.65 among Osteoporotic women. Only few (39.5%, n=79) women agreed that they were susceptible to Osteoporosis, 71(35.5%) disagreed and 50(25%) were neutral. About 81(40.5%) women were serious about Osteoporosis, 65(32.5%) neutral and 54(27%) disagreed that Osteoporosis was a serious health problem. The benefits of physical exercises were acknowledged by 50(25%) women while 84(42%) ladies disagreed. The importance of enough dietary calcium and supplements were recognized by 79(39.5%) women while 68(34%) ladies disagreed. About 98(49%) women agreed that health motivation was essential to prevent Osteoporosis, 66(33%) disagreed and 36(18%) were neutral.

Conclusion: Although many women agreed that health motivation was essential to prevent and treat Osteoporosis, their level of knowledge and awareness of Osteoporosis was low.

Key words: Body Mass Index (BMI), Bone Mineral Density (BMD), DEXA scan, Osteoporosis.

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INTRODUCTION

Osteoporosis is a major health problem globally as it increases the risk of fractures with decreasing bone density.[1]It has been estimated that approximately 8.9 million fractures are caused by Osteoporosis annually worlwide.[2] Currently In Asia every 1 out of 4 hip fractures occur due to osteoporosis and by the year 2050 this ratio will increase to 1 in 2 hip fractures.[3] In Pakistan 6.7% post-menopausal women of Karachi were reported suffering from Osteoporosis and 32.4% from Osteopenia.[4] Many risk factors for Osteoporosis have been identified.[5] These include

non-modifiable risk factors like female gender, old age, positive family history of Osteoporosis and Asian/Caucasian origin. The modifiable risk factors include sedentary lifestyle, deficiency of calcium and vitamin D, smoking, alcohol, caffeine and certain drugs. Although various treatment options are available to treat Osteoporosis, prevention is still considered as the best treatment strategy[6] particularly for developing country like Pakistan where we have limited resources and many other health related issues. Information of the baseline knowledge of the community regarding Osteoporosis is however mandatory to formulate an effective preventive strategy.[7]

In Pakistan previous studies on this topic focused on a wide age range of women including both premenopausal and post-menopausal women, medical students and health care workers. We therefore, planned for a cross sectional analysis of post-menopausal community women both normal and abnormal (Osteopoenia, Osteoporosis) to assess their knowledge and awareness of Osteoporosis. We are confident that our results would help in formulating standard guidelines for awareness programs of women at community level regarding Osteoporosis and its preventation.

METHODS

We conducted this cross-sectional study from 10th April 2019 to 10th June 2019 in Muhammad Medical College and Hospital Mirpurkhas, Pakistan. The study was approved by the Ethical Committee of hospital and informed written consent was taken from all the women participated in this study. All women 50 years and above otherwise healthy were included in our study. Women suffering from Osteoporotic fractures and those receiving medications for osteoporosis were excluded from our study. The knowledge and awareness of Osteoporosis was assessed through a questionnaire based on Osteoporosis Health Belief Scale (OHBS) [8] explained in local language and filled in face to face interview. The bone mineral density (BMD) and body mass index (BMI) of all the participants were also determined in the same setting. BMD was calculated with the help of Dual Energy X-ray Absorptiometry (DEXA) scan and interpreted as Normal, Osteopenia and Osteoporosis according to the World Health Organization (WHO) classification.[9] we analyzed our data with SPSS version 25.Frequency and percentages were calculated for respondents of OHBS questionnaire while mean and standard deviation for age of women and BMI. Important study variables like BMI was compared with BMD and Chi square test was used to calculate *P* value (*P* value <0.05 was considered significant). Pearson's correlation and Spearman's ρ analysis was done for important variables of OHBS questionnaire. Data presented in table where necessary. We reported our study in accordance with STROBE guidelines.[10]

RESULTS

The total number of women in our study were 200. The mean age was 54± 4 years (range 50 to 59 years). Majority (110, n=55%) of our study participants were Osteopenic, 54(27%) women were normal and 36(18%) were osteoporotic on DEXA scan.

Table I: Responses of our study participants as per OHBS questionnaire.

		Normal (54, 27%)					**Osteopenia (110, 55%)**					**Osteoporosis (36, 18%)**				
S.#	OHBS Questions	SD+	D∞	N*	A©	SA¶	SD	D	N	A	SA	SD	D	N	A	SA
1	Susceptible	1	14	12	9	18	1	41	32	27	9	2	12	6	6	10
2	Serious about osteoporosis	3	7	10	15	19	1	30	45	23	11	1	12	10	7	6
3	Benefits of exercise	3	9	8	16	18	1	60	8	19	22	2	9	8	11	6
4	Benefits of calcium intake	1	14	18	19	2	2	40	24	4	40	1	10	11	3	11
5	Barriers to exercise	1	19	12	9	13	2	35	29	36	8	2	7	8	11	8
6	Barriers to calcium intake	1	17	16	13	7	1	46	18	32	13	1	10	8	12	5
7	Health motivation	1	16	17	7	13	2	31	14	38	25	1	15	5	4	11

Key: + Strongly Disagree, **∞** Disagree, ***** Neutral, **©** Agree, **¶** strongly agree

The mean BMI was 28.2±3.11 among normal women, 26.2 + 3.37 in Osteopenic women and 25.2±3.65 in Osteoporotic women. (P value > 0.05). The responses of participating women as per OHBS questionnaire is summarized in table I.

Overall 79(39.5%) respondents agreed/strongly agreed that they were susceptible to Osteoporosis, 71(35.5%) women disagreed/strongly disagreed that they were susceptible to Osteoporosis while 50(25%) women were neutral. The number of Osteoporotic women in the agreed/strongly agreed respondents were 16(8%) while 14(7%) women in the disagree/strongly disagreed group were Osteoporotic when screened on DEXA scan. Maximum(40.5%,n=81) number of respondents were serious about Osteoporosis and they believed that would be crippled if they got Osteoporosis, treatment would be costly and they might got depression while 65(32.5%) respondents were neutral and 54(27%) disagreed/strongly disagreed that Osteoporosis was a serious health problem.

Physical exercise was considered not beneficial for bone health and prevention of Osteoporosis by 84(42%) women, beneficial by 50(25%) women while 24(12%) women were neutral. Enough dietary or supplemental calcium intake was considered beneficial by 79(39.5%) respondents, not beneficial by 68(34%) respondents and neutral by 53(26.5%) respondents.

Most(42.5%,n=85) women agreed/strongly agreed that barriers to physical exercise like exercise would be uncomfortable, would disturb their daily routine, discouraging behavior of family members or lack of a place to exercise. Some (33%, n=66) women, however disagreed/strongly disagreed to these barriers to exercise while few (24.5%, n=49) remained neutral. Barriers to calcium intake like disliking calcium rich foods, high cost of calcium rich foods, calcium rich foods had high cholesterol and changing diet in search of calcium rich food were confirmed by 82(41%) women,76(38%) denied such barriers while 42(21%) were neutral in their response. Health motivation in the form having a healthy life, eating a well-balanced diet, acquiring new information regarding health care, regular health checkup and following recommendations to maintain healthy life was considered essential by 98(49%) respondents, not essential by 66(33%) while 36(18%) were neutral in response.

No statistically significant difference was found among the women responding in each category (strongly disagree, disagree, neutral, agree, strongly agree) of the seven parameters of OHBS questionnaire (*P* value > 0.05). Pearson's correlation analysis was done and the relation between the seven parameters of OHBS questionnaire was compared to each other and it was found to be significant. It was assumed that the level of awareness regarding the component subsets of OHBS was the same among all women irrespective of the group they were classified into. This was the same when Spearman's ρ analysis was used to analyze these variables.

DISCUSSION

In our study few (39.5%, n=79) women agreed that they were susceptible to Osteoporosis, 71(35.5%) disagreed and 50(25%) were neutral. Similarly a small percentage (40.5%, n=81) of women were serious about Osteoporosis while 65(32.5%) were neutral and 54(27%) disagreed that Osteoporosis was a serious health problem. Ali and his colleagues[11] conducted a cross sectional study comprising of 246 literate urban women of Karachi and concluded that majority had very poor knowledge about osteoporosis and unhealthy life style and dietary habits. Wazir and Ali[12] used OKAT(Osteoporosis Knowledge Assessment Tool) for assessing the knowledge of Osteoporosis of 385 women attending the Outpatient Department(OPD) of Fauj Foundation Hospital Rawalpindi and found that the total mean knowledge score was 8(maximum 14).They found a statistically significant difference of knowledge score between women of different age, residential place and education level. They concluded that older, uneducated women belonging to poor socio economic status had very poor knowledge of Osteoporosis. Riaz[13] assessed the knowledge of Osteoporosis of 320 women (age 25 to 35) through Osteoporosis Knowledge Assessment Tool (OKAT) and documented that younger women had poor knowledge of Osteoporosis than older women. Educated women and those belonging to better socioeconomic class however, had more knowledge of Osteoporosis than others.

Contrary to the above mentioned studies where low level of knowledge of Osteoporosis was generally documented, Shakeel S and his colleagues[14] interviewed 325 women(18 to 55 years) of Karachi in a cross sectional study and noted that majority(71.4%) of women were fully aware of Osteoporosis and 69.5% of them knew that Osteoporosis was a serious disease. Majority (68.9%) of their participants agreed that physical exercise

helped in preventing Osteoporosis, 85% knew calcium rich foods and 61.5% agreed that they need more calcium after menopause.

The low or inadequate level of knowledge and awareness of Osteoporosis in women which we documented in our study was not peculiar to Pakistan only because many international studies reported almost the same results thus clearly indicating that Osteoporosis is a global health issue indeed.Khan[15] in his systematic review of 750 articles from Canada, USA, UK, Middle East, South East Asia, Brazil and New Zealand revealed that there was lack of adequate knowledge and awareness of Osteoporosis in general population in these countries. A national cross sectional study on 579 patients in Saudia Arabia[16] documented that 68.1% of the respondents agreed that they were susceptible to Osteoporosis with 58% male and 44.4% female knew that Osteoporosis is a silent but serious disease. However, majority of the participants knew only one risk factor for developing Osteoporosis (not eating calcium rich food). Agrawal and his colleague[17] conducted a cross sectional study on Osteoporosis in Bhopal India. The study participants were 100 women of age above 45 years belonging to upper socio economic class. They reported inadequate and inaccurate knowledge of Osteoporosis among majority women. Similarly one Turkish study[18] conducted on 768 women (age 40 to 70 years) revealed that knowledge of Osteoporosis was very low among Turkish women belonging to rural areas and majority of them were not aware of risk factors and complications of Osteoporosis.

There were some limitations of our study. We were not able to calculate proper sample size for our study. Although we used OHBS interviewing questionnaire but for simplicity we avoided numerical scaling or rating of individual questions. Moreover the questionnaire was not pretested. We were not able to analyze the education level or socioeconomic status of our study participants or their relationship with their response level on OHBS questionnaire. We therefore recommend further studies to address these limitations and to confirm our findings.

CONCLUSION

Although many women agreed that health motivation was essential to prevent and treat Osteoporosis, their level of knowledge and awareness of Osteoporosis was low. We therefore recommend seminars, workshops and medical camps at community level to create awareness of Osteoporosis. The electronic and print media can also be utilize for this purpose.

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REFERENCES

1. NIH Consensus Development Panel on Osteoporosis Prevention, Diagnosis, and Therapy. Osteoporosis prevention, diagnosis, and therapy. JAMA. 2001; 285:785-95.
2. Alhomoud FK, Basil M, Bondarev A. Knowledge, attitudes and practices (KAP) relating to dietary supplements among health sciences and non-health sciences students in one of the universities of United Arab Emirates (UAE). J Clin Diagn Res. 2016;10(9):5-9.
3. Kanis JA, Johnell O, De Laet C, Jonsson B, Oden A, Ogelsby AK. International variations in hip fracture probabilities: implications for risk assessment. J Bone Miner Res.2002;17:1237-1244.
4. Baig L, Mansuri FA, Karim SA. Association of menopause with osteopenia and osteoporosis: results from population based study done in Karachi. J Coll Physicians Surg Pak. 2009; 19: 240-4.
5. Haris S, Jahan F, Afreen A, Ahmed H, Ahmed Z. To Determine the Risk Factors and Prevalence of Osteoporosis among Adult Pakistani Population Residing in Karachi Using Quantitative Ultrasound Technique. J Community Med Health Educ.2014; 4: 299-301.
6. Memon A, Pospula WM, Tantawy AY, Abdul-Ghafar S, Suresh A, Al-Rowaih A.Incidence of hip fracture in Kuwait.1998; Int J Epidemiol.1998;27(5): 860-65.
7. Wallace LS. Osteoporosis prevention in college women: application of the expanded health belief model. Am J Health Behav.2002;26 (3):163-72.
8. Kim KK, Horan ML, Gendler P, Patel MK. Development and evaluation of the osteoporosis health belief scale. Res Nurs Health. 1991;14:155-63.
9. Woolf AD, Pfleger B. Burden of major musculoskeletal conditions. Bull World Health Organ. 2003; 81: 646-56.
10. Vandenbroucke JP, von Elm E, Altman DG, Gotzsche PC, Mulrow CD Pocock SJ, Poole C, et al.) Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): Explanation and Elaboration. PLoS Med.2007;4(10):297-312.

11. Ali M, Tariq S M, Siddiqui A, Hussain N, Adnan, Imran. Awareness of osteoporosis in health literate urban women of Karachi. J Pak Orthop Assoc.2011;23(2):65-70.
12. Wazir A, Ali F. Knowledge about osteoporosis in women of child bearing age (15-49 years) attending Fauji Foundation hospital Rawalpindi. Pak Armed Forces Med J .2016;66(4):558-63.
13. Riaz M, Abid N, Patel J, Tariq M, Khan MS, Zuberi LM. Knowledge about Osteoporosis among healthy women attending a tertiary care hospital. J Pak Med Assoc.2008;58(4):190-4.
14. Shakeel S, Naveed S, Iffat W, Nazeer F, Yousuf V. Pakistani Women Knowledge, Beliefs and Attitudes towards Osteoporosis. J Bioequiv Availab.2015; 7: 270-273.
15. Khan YH, Sarriff A, Khan AH. A review of Knowledge, attitude and practices(KAP) of Community population towards Osteoporosis. J App Pharm.2012;03(04):628-638.
16. Tlt AE, Barghash SS, Al-Salamah NI. Knowledge, Attitude and Practice (KAP) Regarding Osteoporosis among General Population in Saudi Arabia. British Journal of Medicine & Medical Research(BJMMR).2016; 13(4):1-10.
17. Agrawal J, Badkur P. Knowledge, attitude and preventive practice of women concerning osteoporosis above 45 years women. Int J Reprod Contracept Obstet Gynecol.2018;7:3863-7.
18. Gemalmaz A, Oge A. Knowledge and awareness about osteoporosis and its related factors among rural Turkish women. Clin Rheumatol.2008;27(6):723-8.