

Awareness and Knowledge of Osteoporosis in Elderly Individual

Dr. Rachana Mavar¹, Dr. Gira Thakrar², Dr. Sadhana Mukhi³

¹Second Year MPT student, JG College of Physiotherapy, Ahmedabad

²Senior Lecturer, JG College of Physiotherapy, Ahmedabad.

³Assistant Lecturer, JG College of Physiotherapy, Ahmedabad

Corresponding Author: Dr. Rachana Mavar

DOI: <https://doi.org/10.52403/ijhsr.20220917>

ABSTRACT

BACKGROUND: Elderly people may suffer from multiple health disorders due to the vulnerability for many physical and mental disturbances. Quality of life in elderly population can be affected by many environmental factors.

INTRODUCTION: Osteoporosis is a global public health problem which is commonly referred to as a systemic skeletal disease characterized by low bone tissue with a consequent increase in bone fragility and susceptibility to fracture. OPAAT scale assesses osteoporosis knowledge by asking participants to rate the likelihood of getting osteoporosis based on the type of preventive measures taken. The aim of our study was to assess the knowledge and awareness about osteoporosis in elderly individuals.

METHODOLOGY: We conducted a survey of 100 men and women aged ≥ 60 years. The validated Osteoporosis Prevention and Awareness Tool (OPAAT) was used to assess their knowledge about osteoporosis prevention and awareness and perceived barriers to osteoporosis screening. The OPAAT consists of 30 items, categorized into three domains. The higher scores indicate higher knowledge level. The domains of the scale are "osteoporosis in general", "consequence of untreated osteoporosis" and "osteoporosis preventive measure". A score of one was given for a correct response and zero for an incorrect or do not know response. The total score was converted into percentage ranging from 0–100.

RESULT: Present study determines that awareness and knowledge of osteoporosis in elderly individuals in general domain is 30.90%, knowledge of consequence of untreated osteoporosis is 39%, and knowledge of osteoporosis preventive measure is 38%.

CONCLUSION: Knowledge and awareness of osteoporosis in elderly individuals is low which suggests the need for increased awareness campaigns in the elderly population.

Keywords: Elderly, Osteoporosis, OPAAT, Knowledge, Awareness.

INTRODUCTION

Osteoporosis is defined as a systemic skeletal condition that is characterized by the low bone mass and progressive micro architectural deterioration of bone tissue, which predisposes one to increased risk of fragile bones and fractures⁽¹⁾. It is seen in old age population and is considered as a modern epidemic. Osteoporosis makes the bones weak and fragile and also increasing

the chances of them getting fractured even with trivial trauma. Such fractures may lead to extreme pain, deformity, and disability in the population⁽²⁾. Osteoporosis contributes significant morbidity among the geriatric population, especially in postmenopausal females. The basic requirement for managing any health related disorder starts with evaluating the current awareness of the disorder in the target subjects residing in a

region. The prevention and management of osteoporosis requires understanding and commitment from the vulnerable population, i.e., postmenopausal women and elderly men in the society. ⁽³⁾

The bone is a biological tissue which can be considered as a flexible tissue in the human body. With the progressive reduction of the bony mass, osteopenic bone loses its capacity to resist to loads, because no longer flexible, thus becoming very fragile. The Break point under stress load will be reached with progressively lower loads as the bony mass decreases, both in its cortical and cancellous components in the human body. Furthermore, there are intrinsic features in the bony conformation that may vary from individual to individual and increase the risk of the fracture, for example a long femur neck increases the load at the base of the neck itself, a varus angle also increases the load on the femur neck, a very important, kyphosis increases load on the lower dorsal and dorsolumbar vertebrae and once dorsal vertebra is deformed kyphosis itself also increases, thus determining a domino effect which in turn increase risk of fracture. ⁽⁴⁾

Age is a one of the determinant of *osteoporosis*, but the elderly are infrequently assessed and often remain untreated for this condition. Fall co-morbidities and co-medications multiple the risk of fracture in *senile osteoporosis*. The prevalence of osteoporosis is expected to increasing life expectancy, and the associated fractures mostly *hip fractures* will lead to major demands on health resources. ⁽⁵⁾

Knowledge and awareness regarding osteoporosis should be given to elderly individuals to clarify all the misconceptions in the population. The awareness campaigns that run on ground level basis by medical and paramedical professionals will enhance the level of knowledge and awareness in all the strata of the society and can prevent many complications.

Risk factor for osteoporosis

Excessive alcohol intake (>4 drinks per day for men; >2 drinks per day for women), caffeine intake (>2.5 units [e.g., cups of coffee] per day), and tobacco use (any smoking), Family history of osteoporotic fracture, Gonadal hormone deficiency, Immobilization and inadequate activity, Increasing age, Low body weight (< 58 kg [128 lb]), Low calcium or vitamin D intake, Low level of physical activity, Personal history of fracture. ⁽⁶⁾

Muscle Mass and strength

Sarcopenia is a main feature of the aging process. It is characterized by decrease in muscle mass and strength. Sarcopenia is related with an increased risk of fractures after a greater predisposition to falls. Fractures may also result from the accelerated bone remodeling that increases bone loss and impairs bone strength. The fractures may also be related to reduce mechanical muscle strength, which may influence the response during the fall process. Furthermore, muscle strength determines the quality of bone modifications such as density, strength and micro-architecture. Variations in the ratios of cortical and muscle areas effectuate to many types of osteoporosis, with varying risks of fractures. ⁽¹⁰⁾

Kyphotic posture and balance performance

Lower spinal muscle density repeatedly presents in osteoporosis patients, and normally in those with spinal deformities such as thoracic kyphosis, it may cause a reduced range of motion ⁽¹¹⁾. Reduced flexibility and mobility of trunk affects the walking of people with osteoporosis and contributes towards a major risk of falling, which leads to bone fractures. Flexibility and balance both are necessary to counteract the effects of gravity and other external forces in addition to the normal sagittal alignment of the spine and adequate muscle strength. A reduction in range of motion and deterioration in coordination that affects body balance is a

sequence of osteoporosis and aging in general.⁽¹²⁾

Knowledge of osteoporosis plays an important role in developing attitudes towards the disease which in turn impacts health care professional's behavior.

OPAAT assessed osteoporosis knowledge by asking participants to rate the likelihood of getting osteoporosis based on the type of preventive measure taken. The OPAAT consists of 30 items, categorized into three components. More the score higher is the knowledge level. Osteoporosis in general, consequence of untreated osteoporosis and osteoporosis preventive measure. A score of one was given for a correct response and zero for an incorrect or do not know response. The total score was converted into percentage ranging from 0–100.⁽¹³⁾

MATERIALS & METHODS

An observational study was conducted on Elderly individuals of Ahmedabad, Gujarat. Ethical clearance was taken from institutional ethical committee. Target the original version into the Gujarati language. The Gujarati translation was done by translators knowing both the languages by the experts of the committee. Google forms and self administered questionnaire in paper (OPAAT) was filled by elderly individuals (age 60-80 years) which included both males and females who can read and understand Gujarati in the Ahmedabad city.

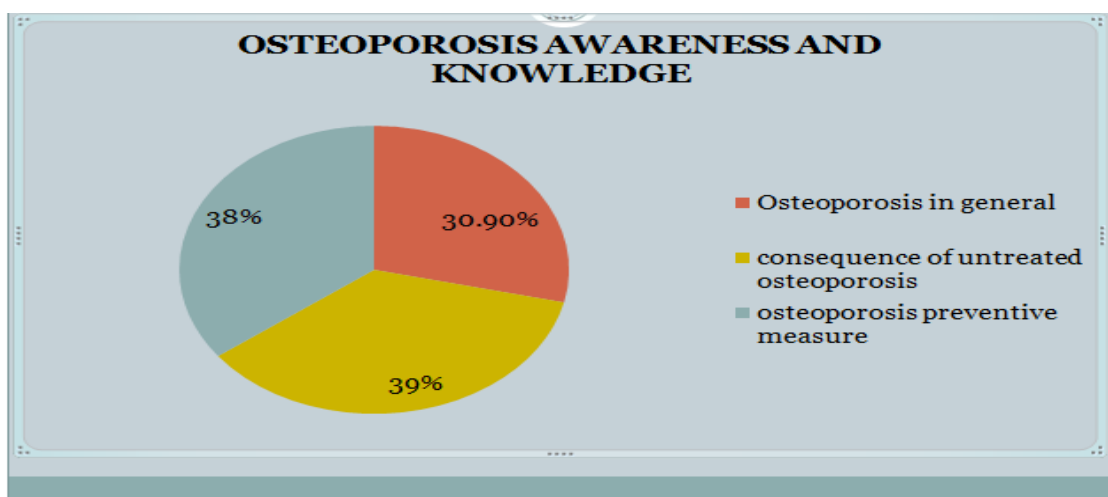
Data was collected over 100 people and the result was statically analyzed.

OSTEOPOROSIS PREVENTION AND AWARENESS TOOL (OPAAT)

The OPAAT is a 30-item instrument scale which assesses awareness and knowledge related to osteoporosis. Items in this the tool cover three key themes related to osteoporosis which are (1) OSTEOPOROSIS IN GENERAL (2) CONSEQUENCES OF UNTREATED OSTEOPOROSIS and (3) OSTEOPOROSIS PREVENTION. Each correct answer is awarded 1 point with a maximum score of 30. An OPAAT score of 24 or greater is defined as high osteoporosis-related knowledge, as per the developer of the tool.⁽¹⁴⁾ A score of ≥ 24 out of 30 on the OPAAT was considered good knowledge and a score of 19–23 was considered average knowledge. A score of < 19 was considered low knowledge.⁽¹⁵⁾

RESULT

Present study determines that awareness and knowledge of osteoporosis in elderly individuals in general domain is 30.90%, knowledge of consequence of untreated osteoporosis is 39%, and knowledge of osteoporosis preventive measure is 38%. Out of 30, 10.79 is the mean score of our population which is considered as the lowest awareness and knowledge of osteoporosis in elderly individuals.



DISCUSSION

The OPAAT performed satisfactorily in its psychometric properties and was able to discriminate between knowledge levels of elderly individuals. The previous analysis of the scale confirmed that there were three domains (osteoporosis in general, consequences of untreated osteoporosis and osteoporosis prevention) in the OPAAT to assess patient's knowledge on osteoporosis and its prevention.

The purpose of our study was to evaluate the awareness and knowledge of osteoporosis in elderly individuals who showed low osteoporosis awareness and knowledge among elderly individuals. The knowledge and awareness of the general domain was 30.90%, consequence of untreated osteoporosis was 39% and knowledge and awareness of preventive measure was 38%. This study showed that the low osteoporosis awareness and knowledge among elderly individual in Ahmedabad city. It is concluded that, osteoporosis and resultant fragility fractures have noteworthy implications on the quality of life of elderly patients and result in a significant economic burden on the healthcare system.

The less-educated population also lack osteoporosis knowledge, which often leads to misconceptions about osteoporosis and the need for osteoporosis screening. Health education should rectify these common misconceptions of the disease, increase awareness of osteoporosis and improve screening rates.⁽¹⁶⁾

Previous studies have found that the knowledge of osteoporosis in adult women aged 21–90 years in Europe, Canada, United States, Middle East, and Australia was low. However, another study in Malaysia found that the knowledge of osteoporosis was moderate in women aged 49–84. In which, patients' overall knowledge score was 63.6 ± 17.4 , which indicate that their knowledge level was moderate.⁽¹⁵⁾

CONCLUSION

Overall, Knowledge and awareness of osteoporosis in elderly individuals is low which suggest that Knowledge and awareness regarding osteoporosis should be given to elderly individuals.

Acknowledgement: We thank all the senior faculties and participants for their support and cooperation.

Conflict of Interest: None

Source of Funding: None

REFERENCES

1. Compston J, Cooper A, Cooper C, Gittoes N, Gregson C, Harvey N, Hope S, Kanis JA, McCloskey EV, Poole KE, Reid DM. UK clinical guideline for the prevention and treatment of osteoporosis. Archives of osteoporosis. 2017 Dec;12(1):1-24.
2. Gopinathan NR, Sen RK, Behera P, Aggarwal S, Khandelwal N, Sen M. Awareness of osteoporosis in postmenopausal Indian women: An evaluation of Osteoporosis Health Belief Scale. Journal of mid-life health. 2016 Oct;7(4):180.
3. Toh LS, Lai PS, Wu DB, Wong KT, Low BY, Anderson C. The development and validation of the Osteoporosis Prevention and Awareness Tool (OPAAT) in Malaysia. PloS one. 2015 May 4;10(5):e0124553.
4. Boonen S, Dejaeger E, Vanderschueren D, Venken K, Bogaerts A, Verschueren S, Milisen K. Osteoporosis and osteoporotic fracture occurrence and prevention in the elderly: a geriatric perspective. Best Practice & Research Clinical Endocrinology & Metabolism. 2008 Oct 1;22(5):765-85.
5. Tan HC, Seng JJ, Low LL. Osteoporosis awareness among patients in Singapore (OASIS) - a community hospital perspective. Archives of Osteoporosis. 2021 Dec;16(1):1-0.
6. US Department of Health and Human Services. Bone health and osteoporosis: a report of the Surgeon General. Rockville, MD: US Department of Health and Human Services, Office of the Surgeon General. 2004 Oct 14;87.

7. Baudry S, Lecoivre G, Duchateau J. Age-related changes in the behavior of the muscle-tendon unit of the gastrocnemius medialis during upright stance. *Journal of applied physiology*. 2012 Jan;112(2):296-304.
8. Crepaldi G, Romanato G, Tonin P, Maggi S. Osteoporosis and body composition. *Journal of endocrinological investigation*. 2007 Jan 1;30(6 Suppl):42-7.
9. Cunha-Henriques S, Costa-Paiva L, Pinto-Neto AM, Fonsechi-Carvesan G, Nanni L, Morais SS. Postmenopausal women with osteoporosis and musculoskeletal status: a comparative cross-sectional study. *Journal of clinical medicine research*. 2011 Aug;3(4):168.
10. Sinaki M, Brey RH, Hughes CA, Larson DR, Kaufman KR. Balance disorder and increased risk of falls in osteoporosis and kyphosis: significance of kyphotic posture and muscle strength. *Osteoporosis international*. 2005 Aug;16(8):1004-10.
11. Guido G, Scaglione M, Fabbri L, Ceglia MJ. The "osteoporosis disease". *Clinical cases in mineral and bone metabolism*. 2009 May;6(2):114.
12. Boonen S, Dejaeger E, Vanderschueren D, Venken K, Bogaerts A, Verschueren S, Milisen K. Osteoporosis and osteoporotic fracture occurrence and prevention in the elderly: a geriatric perspective. *Best Practice & Research Clinical Endocrinology & Metabolism*. 2008 Oct 1;22(5):765-85.
13. Tan HC, Seng JJ, Low LL. Osteoporosis awareness among patients in Singapore (OASIS) - a community hospital perspective. *Archives of Osteoporosis*. 2021 Dec;16(1):1-0.
14. Lulla D, Teo CW, Shen X, Loi ZB, Quek KW, Lis HL, Koh SA, Chan ET, Lim SW, Low LL. Assessing the knowledge, attitude and practice of osteoporosis among Singaporean women aged 65 years and above at two SingHealth polyclinics. *Singapore medical journal*. 2021 Apr;62(4):190.
15. Toh, L. S., Lai, P. S. M., Wu, D. B.-C., Wong, K. T., Low, B. Y., & Anderson, C. (2015). The Development and Validation of the Osteoporosis Prevention and Awareness Tool (OPAAT) in Malaysia. *PLOS ONE*, 10(5), e0124553

How to cite this article: Rachana Mavar, Gira Thakrar, Sadhana Mukhi. Awareness and knowledge of osteoporosis in elderly individual. *Int J Health Sci Res*. 2022; 12(9):129-133. DOI: <https://doi.org/10.52403/ijhsr.20220917>
