Research Article

Assessment of domestic environment of elderly residents in an urban slum of Bengaluru, Karnataka, India

Navya Sri Sreenivasa, Saraswathi Sakranaik, Ranganath T S, Viswanatha Neela

Department of Community Medicine, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India

Correspondence to: Saraswathi Sakranaik, E-mail: ssdrsaras@gmail.com

Received: February 21, 2019; **Accepted:** July 07, 2019

ABSTRACT

Background: A safe, supportive, and accessible environment is vital to the quality of life of the elderly population. Elderly are staying in an domestic environment more prone for accidents. There should be a multisectoral approach aimed at creating an age-friendly environment to the elderly. With this perspective, the study was conducted to assess the domestic environment of the elderly. **Objective:** Assessment of domestic environment of the elderly residing in an urban slum. **Materials and Methods:** A cross-sectional study was conducted among 184 geriatrics residing in an urban slum. Five slums were selected randomly, and from each slum, the samples were chosen by probability proportionate sampling. Data regarding sociodemographic and environment assessment were collected using a prestructured questionnaire. Appropriate statistical tests were used. **Results:** Of 184 participants, 139 (75.5%) were 60–70 years of age group. 76.08% of the respondents' houses did not have a slip-resistant floor. Majority of the elderly used public latrines that are of squatting type, and it was not age-friendly because only 7.7% of the toilets had grab bars. About 8.88% of the houses had switches near the door. 70% and 63.3% of the houses had inadequate lighting and ventilation, respectively. **Conclusion:** Majority of the elderly residents are living in an unsafe environment. Minor modifications in the home environment can make a major difference in the life of homebound older people to prevent accidents.

KEY WORDS: Elderly; Environment; Supportive

INTRODUCTION

Aging is an inevitable, progressive, physiological process, leading to universal deterioration in physical, mental, behavioral, and biomedical systems.[1] Life expectancy has been increasing over the years, and there is an increase in aged population.[2] Percentage share of elderly persons in the population of India is increasing since 1961. It has been increased from 5.6% to 8.6% as per 2011 Census.[3]

Access this article online	
Website: http://www.ijmsph.com	Quick Response code
DOI: 10.5455/ijmsph.2019.0204307072019	

Among the various factors that contribute to the morbidity of elders, falls are considered to be one of the major problems, i.e., "geriatric giants."[4] Studies showed that about one-third of elders living in the community have a fall every year.[5] One of the risk factors could be poor environment.[6]

A safe, supportive, and accessible environment is vital to the quality of life of elderly population. Risk factors for fall among elderly are classified as internal and external causes. Internal causes are age, cognitive impairment, vision impairment. external causes include the living arrangement.[7]

In urban slums elderly are staying in an environment which are unsafe and unsupported leading the elderly more prone for domestic accidents. The United Nations defines a slum as, "one or a group of individuals living under the same roof in an urban area, lacking in one or more of the following

amenities such as durable housing, sufficient living area, access to improved water, access to improved sanitation and secure tenure".[8]

The elderly residing in such an environment are more prone to health hazards. Hence, there should be a multisectoral approach aimed at creating an age-friendly environment to the elderly. There is a paucity of published data on the assessment of domestic environment of the elderly residing in urban slums. With this perspective, the study was conducted to assess the domestic environment of the elderly in an urban slum of Bengaluru.

MATERIALS AND METHODS

A community-based, cross-sectional study was conducted among 184 geriatrics in an urban slum. The sample was estimated based on a previous study, considering $P = 86.7\%$[9] and with precision of 5%, using the formula $4Pq/d^2$. Sample size arrived was 184. Of 12 slums, 5 slums were randomly selected, and from each slum, the samples were chosen by probability proportionate sampling.[10] The study was conducted after obtaining ethical clearance from the institutional ethical clearance committee. Data regarding sociodemographic and environment assessment were collected using a prestructured questionnaire. Data collection was done by house-to-house visit, and interview method was followed after obtaining informed consent from the study participants.

Statistics

Descriptive statistical tests in the form of percentage and mean (standard deviation [SD]) were used to analyze the data.

RESULTS

The mean age of the study participants was 68.48 SD (6.03). Of 184 participants, 139 (75.5%) were 60–70 years of age group. Majority of the study population were female residing in a slum. 73.91% of them belonged to Hindu religion. About 78.80% of the respondents belonged to third-generation family. As per the education status, 53.26% of the elderly were literate and about 46.74% were illiterate. As per the employment status, almost 73.91% of the respondents were unemployed. As per the modified Kuppuswamy scale, 51.63% of the respondents belonged to lower class as illustrated in Table 1.

As per the observation of environment, 76.08% of the respondents' houses did not have a slip-resistant floor, and doormats were present in about 147 (79.44%) of the houses. Only about 8.33% of the families had a rubber mat in bathroom as shown in Table 2.

Table 1: Illustrates sociodemographic of the elderly

Sociodemographic factors	*n* (%)
Age	
<70	139 (75.54)
>70	45 (24.46)
Gender	
Male	61 (33.15)
Female	123 (66.85)
Religion	
Hindu	136 (73.91)
Christian	6 (3.26)
Muslim	42 (22.83)
Type of family	
Nuclear	31 (16.85)
Joint	8 (4.35)
III generation family	145 (78.80)
Literacy	
Literate	98 (53.26)
Illiterate	86 (46.74)
Employment	
Employed	48 (26.09)
Unemployed	136 (73.91)
Socioeconomic status	
Lower middle	28 (15.22)
Upper lower	61 (33.15)
Lower	95 (51.63)

Table 2: Depicts the environment factors

Environment factors	Present (%)	Absent (%)
Slip-resistant floor	44 (23.91)	140 (76.08)
Doormat	147 (79.44)	37 (20.55)
Rubber mat in bathroom	15 (8.33)	169 (93.88)
Switches near the door	16 (8.88)	168 (93.33)
Reachable switch from the bed	23 (12.77)	161 (89.44)
Grab bars in bathroom and toilet	14 (7.77)	170 (94.44)
Handrails on stairs	9 (5)	175 (97.22)
Obstacles present between living area and bathroom	170 (94.44)	14 (7.77)

Majority of the elderly used public latrines that are of squatting type [Figures 1 and 2], and it was not age-friendly because only 7.7% of the toilets had grab bars. Almost 94.4% of the houses did not have grab bars in bathrooms.

As per the observation of accessibility of switches, about 8.88% of the houses had switches near the door and about 12.77% of the switches were at a reachable distance from the bed. Obstacles were present between living area and bathroom among 94.4% of the houses. As per lighting and ventilation, 70% and 63.3% of the houses had inadequate lighting and ventilation, respectively, as depicted in Figure 3.

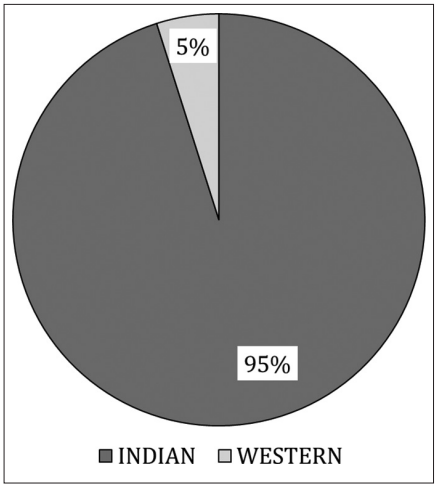

Figure 1: The type of toilet

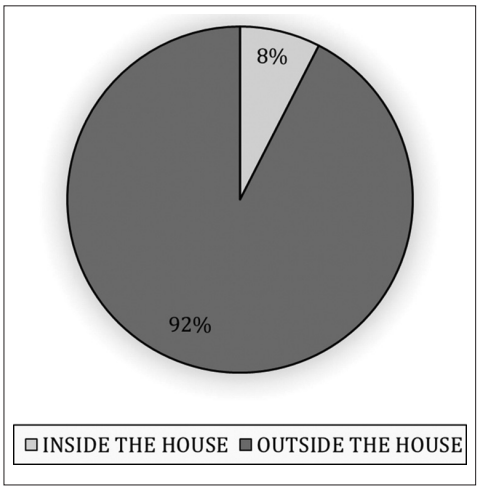

Figure 2: The location of toilet

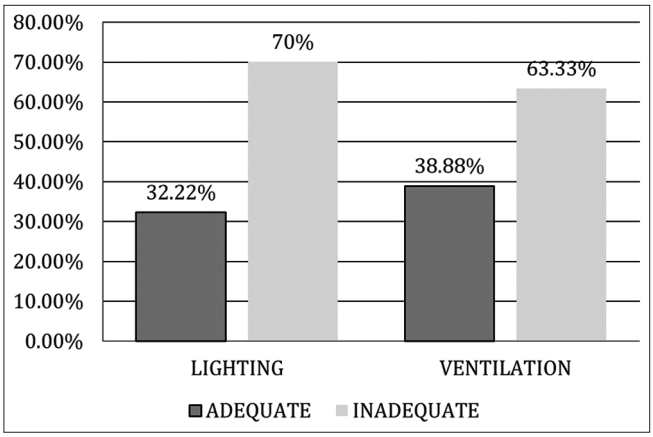

Figure 3: The adequacy of lightening and ventilation

DISCUSSION

In the present study, the mean age of the elderly residing in an urban slum was 68.48 years SD (6.03). Majority of them were female, with 46.74% being illiterate. The present study findings depict that 76.08% of the respondent's houses did not have a slip-resistant floor; only few of the houses had a doormat and a rubber mat in bathroom. Majority of the elderly used public latrines that are of squatting type of latrine, and it was not age-friendly because only 7.7% of the toilets had grab bars. Majority of houses did not have reachable switches from the bed or near the door. Most of the elderly were residing in ill-ventilated and poorly lightened houses. Similar study on environmental risk factor for falling among elderly conducted by Nesilihan *et al* states that there was a significant risk of falling in bathroom and kitchen. Major problems and poor condition was noted in bathroom and kitchen. As per the study by Aras et al the mean of elderly was 67.8 years SD (6.8). As per the recordings of housing conditions, In nuclear families, stairway was kept adequately lighted. habit of not cleaning spills were noted among 85.2% of elderly, 60.7% of the elderly walked on wet floor making them more prone for accidents. About 53.3% of the bathrooms did not have grab bars.[9] As per the study by Mahesh *et al*., 90.2% use Indian type of toilet and only about 20.6% of toilets are located within the house. Grab rail is present in about 8.6% of the houses. Slippery or uneven floors are present in about 22.8% of the dwellings. 65% of the houses where an elderly was residing had adequate lightening. Rubber mats in bathroom were present in about 60.7% of the residences. Reachable light switches from the bed were absent among 44.4% of the houses whereas grab bars were present in about 46.7% of the houses and also stated that critical concerns due to fall can be reduced by minor environmental modification.[11] A study by Steel *et al*. noted that there is a conviction that figuring out the environment is critical when working with older adults. In this study, 53.3% of the houses did not have grab bars in bathroom and 46.6% did not have hand rails. However, rubber mats in bathroom, switches near every door, reachable switch light, and outdoor area free from tripping are some of the positive findings.[12] In comparison with other studies, majority of the elderly are residing in dwelling having a slippery or uneven floor, inadequate lighting, and absence of grab rails, and majority are using an Indian type of latrine. These findings suggest that majority of the elderly are residing in an environment which is not age-friendly and more prone to hazards. The present study provides baseline data about the domestic environment, so that an educational tool can be framed to provide edification on environmental modification to the older as well as caregivers. Using a checklist for environmental assessment is a time proficient and an inclusive method being one of the limitations of the present study. The record on home safety for senior citizens also gives prominence on general safety standards, kitchen safety, and bathroom safety standards. Making domestic arrangements so as to provide elders with comfort has a significant role in preventing falling among elderly. An multi sectoral approach should be aimed in creating a age friendly environment and in turn improving the quality of life of elderly. Awareness has to be created among elderly and as well as caregivers in adapting minor modifications in urban slums.

CONCLUSION

Majority of the elderly residents are living in an unsafe environment. Majority of the elderly are residing in uneven, slippery, inadequate lighting, and ill-ventilated houses which are more prone to accidents and other health hazards. Minor modifications in the home environment can make a major difference in the life of homebound older people to prevent accidents as some elderly persons will experience decreasing ability to carry out the activities of daily living due to both normal aging and pathological processes that occur more frequently with advancing age. Hence, this study of the assessment of domestic environment infers that the elderly people are living in unsafe domestic environment which requires minor modifications to make it better and safe for this vulnerable population.

REFERENCES

1. Dersak R. Mental Health of Older People in Relation to Stressful Life Events, Adjustment and Social Support; 2006. Available from: http://shodhganga.inflibnet.ac.in/bitstream/10603/30846/7/07%20_%20chapter%201.pdf. [Last accessed on 2019 Apr 04].
2. Global Health and Aging; 2011. Available from: https://www.who.int/ageing/publications/global_health.pdf?ua=1. [Last accessed on 2019 Apr 12].
3. Elderly in India; 2016. Available from: http://mospi.nic.in/sites/default/files/publication_reports/ElderlyinIndia_2016.pdf. [Last accessed on 2019 Apr 07].
4. Chacko T, Thangaraj P, Muhammad GM. Epidemiology of fall and its risk factors among elders in a rural area of Coimbatore, India. Int J Community Med Public Health 2017;4:3864. Available from: http://file:///C:/Users/Navya/Downloads/1941-7568-1-PB%20(4).pdf. [Last accessed on 2019 Jun 12].
5. Mertz KJ, Lee DC, Sui X, Powell KE, Blair SN. Falls among adults: The association of cardiorespiratory fitness and physical activity with walking-related falls. Am J Prev Med 2010;39:15-24.
6. Dionyssiotis Y. Analyzing the problem of falls among older people. Int J Gen Med 2012;5:805-13.
7. World Report on Ageing and Health 2015. World Health Organization; 2019. Available from: https://www.who.int/ageing/events/world-report-2015-launch/en/. [Last accessed on 2019 Jun 01].
8. Mirror. Available from: http://mirror.unhabitat.org/documents/media_centre/sowcr2006/sowcr%205.pdf. [Last accessed on 2019 Apr 05].
9. Aras R, D'souza N, Narayan V, Veigas I. Assessment of accident risk among elderly in domestic environment: A cross-sectional study in rural South Karnataka, India. Ann Trop Med Public Health 2012;5:565.
10. Steps in Applying Probability Proportional to Size (PPS) and Calculating Basic Probability Weights. Available from: https://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings/prevalence_survey/psws_probability_prop_size_bierrenbach.pdf. [Last accessed on 2018 Feb 05].
11. Venkatesha M, Latha K, Mokhasi VR, Ravishankar S, Lakshmi L. Prevalence and risk for fall among elderly in urban area of Southern Karnataka. Natl J Community Med 2016;7:768-71.
12. Steel K, Musliner M, Berg K. Assessment of the home environment. In: Rubenstein LZ, Wieland D, Bernabei R, editors. Geriatrics Assessment Technology. The State of the Art. New York: Springer Publishing; 1995. p. 135-45.

How to cite this article: Sreenivasa NS, Sakranaik S, Ranganath TS, Neela V. Assessment of domestic environment of elderly residents in an urban slum of Bengaluru, Karnataka, India. Int J Med Sci Public Health 2019;8(10):785-788.

Source of Support: Nil, **Conflict of Interest:** None declared.