

Prevalence of selected chronic disease and health-seeking behavior among elderly persons in an urban underprivileged area, Bengaluru city, India

Rock Britto Dharmaraj¹, Arvind Kasthuri², Pretesh Kiran²

¹Department of Community Health, Chennai Medical College Hospital and Research Centre, Chennai, Tamil Nadu, India, ²Department of Community Health, St. John's Medical College, Bengaluru, Karnataka, India

Correspondence to: Rock Britto Dharmaraj, E-mail: rockbritto@gmail.com

Received: December 06, 2017; **Accepted:** February 01, 2018

ABSTRACT

Background: The share of the elderly in the Indian population is rising. Side-by-side, the country is witness to rapid urbanization, with large numbers of city dwellers living in underprivileged areas. Studying the burden of chronic disease among the urban underprivileged elderly and their health-seeking behavior will provide useful information to guide urban health policy. **Objectives:** This study aims to estimate the prevalence of selected chronic disease among elderly persons and assess their health-seeking behavior and factors associated. **Materials and Methods:** This was a cross-sectional study done among 265 elderly persons, selected by systematic random sampling in LR Nagar, an urban underprivileged area in Bengaluru city in the period June 2013–May 2014. Elderly persons who were recruited were administered a questionnaire (to assess the presence of known chronic disease and health-seeking behavior) followed by physical examination, glucometry, and sphygmomanometry. **Results:** The prevalence of hypertension was found to be 67.5%, of whom 38.4% were newly detected. 47.5% of the study group were detected with musculoskeletal disorders and 30.5% with cataract. Diabetes mellitus was present in 18.5% of the study population, of whom 3.8% were newly detected. 95.6% of subjects sought treatment when they fell ill, the majority of them (78.7%) from private clinics. The healthcare expenditure incurred by the subjects was met by their sons in the majority of the subjects (55.1%). **Conclusion:** Designing new models in the public sector for addressing the health problems of the urban underprivileged elderly are required, with emphasis on chronic illness.


KEY WORDS: Chronic Disease; Elderly; Diabetes; Hypertension; Health-Seeking Behavior

INTRODUCTION

Globally, the population is rapidly aging. Between 2000 and 2050, the proportion of the world's population over 60 years will double from about 11% to 22%. The absolute number of people aged 60 years and over is expected to increase from 605 million to 2 billion over the same period. Low- and

middle-income countries like India will experience the most rapid and dramatic demographic change.^[1] Population aging can be seen as a success story for public health policies and socioeconomic development, but it also challenges society to adapt, to maximize the health and functional capacity of older people as well as their social participation and security.^[2]

The population living in urban areas is rising, as also the proportion of population in urban underprivileged areas. One-third of urban dwellers live in slum areas which are often overcrowded with life-threatening conditions. In low-income countries, disparities will increase as the combination of migration, natural growth, and scarcity of resources results in cities being unable to provide the services needed by those who come to live in them. There is evidence of poorly

Access this article online	
Website: http://www.ijmsph.com	Quick Response code
DOI: 10.5455/ijmsph.2018.1232501022018	

International Journal of Medical Science and Public Health Online 2018. © 2018 Rock Britto Dharmaraj, *et al.* This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.

planned or unplanned urbanization patterns which have negative consequences for the health and safety of people. This includes the increase of risk factors such as physical inactivity and unhealthy diets for heart disease, cancer, diabetes, and chronic lung diseases.

The elderly living in urban underprivileged areas represent a vulnerable group.^[3] The main health burdens for older people are from chronic, non-communicable diseases (NCD's). Already, even in the poorest countries, the biggest killers are heart disease, stroke, and chronic lung disease, while the greatest causes of disability are visual impairment, dementia, hearing loss, and osteoarthritis.^[4]

India is experiencing a rapid health transition, with large and rising burdens of chronic diseases, which accounted for 53% of all deaths and 44% of disability-adjusted life years lost in 2005.^[5] In 2010, 53% of deaths were due to NCD's, of which cardiovascular diseases accounted for 24%, respiratory diseases 11%, cancers 6%, diabetes 2%, and other NCDs 10%.^[6] The burden of chronic disease in India is high, with high rates of morbidity and mortality, especially in the elderly, since the prevalence of chronic disease rises with age. It is known that chronic disease is preventable, with 80% of premature heart disease, stroke, and diabetes being amenable to prevention.^[7] With early detection, treatment, and support, the burden of chronic disease can be reduced.^[8]

A large proportion of morbidity among the elderly remains hidden due to ignorance and lack of access to healthcare facilities. The health-seeking behavior of the elderly is a determinant of their access to health care.^[9] Good health-seeking behavior provides an opportunity for addressing the health problems of elderly persons, echoed in the World Health Day theme for the year 2012, "aging and health-good health adds life to years."^[10]

This study aims to estimate the prevalence of chronic disease and assess health-seeking behavior among elderly residents of an urban underprivileged area. This is a step toward developing strategies aimed at improving their health status and quality of life. This study focuses on a vulnerable group, i.e., elderly individuals residing in an urban underprivileged area. Since chronic disease is a major health problem among the elderly, and health-seeking behavior is an important determinant of healthcare utilization, this study aims to estimate the prevalence of chronic disease among elderly persons and assess their health-seeking behavior.

Objectives

The objectives of this study are as follows:

1. To estimate the prevalence of selected chronic diseases among elderly persons residing in an urban underprivileged area in Bengaluru city.
2. To assess the health-seeking behavior of these elderly persons.

3. To determine the association of sociodemographic factors with the prevalence of selected chronic disease and with health-seeking behavior of these elderly persons.

MATERIALS AND METHODS

This was a cross-sectional study done during the period June 2013–May 2014 among elderly persons in Laxman Rao Nagar, an urban underprivileged area in Bengaluru city. The population of LR Nagar was 10000 (Estimates from Government data and previous surveys of the institution) which included 800 elderly persons. A sample size of 260 was calculated using an estimated prevalence of chronic disease as 72.4% and a precision of 5.8% (8% of 72.4%) about the estimate, with 95% confidence.^[11] It was decided to use systematic random sampling to identify the required number of subjects. At every household, the presence of an elderly person was first ascertained. Only those elderly persons who were resident in the area for more than 1 year were included. The first subject was selected randomly using the currency method. Subsequent subjects were identified serially, and information was thus collected from every third individual (sampling interval = 3), yielding a total of 265 individuals aged 60 years and above. Elderly persons who were seriously ill, unable to give information, and unavailable even after 2 visits were excluded from the study and replaced with the next available subject.

The Institutional Ethical Committee clearance was obtained before the study. Before the actual study, a pilot study was conducted in Austin town, an urban underprivileged area in Bengaluru city, located adjacent to Laxman Rao Nagar. The purpose of this pilot study was to assess the utility and feasibility of the research instruments and methods used. Suitable changes were then incorporated into the study tools and methodology.

The elderly person (60 years of age and above) who was recruited was administered a questionnaire (to assess the presence of chronic disease and health-seeking behavior) followed by physical examination, glucometry for blood sugar estimation, and sphygmomanometry for blood pressure assessment. The interview schedule consisted of following sections:

- Section 1: Interview schedule consisting of personal details and demography.
- Section 2: Questions regarding the presence of chronic disease.
- Section 3: Measurements and physical examination.
- Section 4: Assessment regarding health-seeking behavior and the factors associated.

Chronic diseases included in the study were hypertension, coronary artery disease, stroke, bronchial asthma, chronic obstructive pulmonary disease (COPD), cancer, diabetes,

cataract, deafness, musculoskeletal disorders, mental illness, anemia, and urinary problems.^[7] Hypertension was defined as systolic blood pressure (SBP) of 150 mmHg or greater and/or diastolic blood pressure of 90 mmHg or greater based on the average of two readings on two occasions and/or who are taking antihypertensive medication. The cutoff for SBP was reduced to 140 when the elderly person was having comorbidities such as diabetes mellitus and chronic kidney disease.^[12] Diabetes was defined as a random plasma glucose value ≥ 200 mg/dl based on glucometric examination, and/or the person is on oral antidiabetic drug or insulin.^[13] The following conditions were identified based on self-report/clinical examination, coronary artery disease, stroke, bronchial asthma, COPD, cancer, and musculoskeletal problems including osteoarthritis, mental illness, anemia, urinary problems, cataract (clinical examination using torchlight), and hearing impairment (clinical examination by whisper test).

Statistical Analysis

The data collected were entered into Microsoft Excel and analyzed using Epi info Software. The demographic data were initially analyzed using frequencies, means, median, and standard deviations. The presence of chronic disease was studied for potential association with sociodemographic variables. For this, tests of significance such as Chi-square test and Fisher exact test were used as appropriate. When the associated factor was a binomial variable, odds ratio was calculated with a confidence interval.

RESULTS

Demographic Details of the Study Population

Of 265 elderly persons, 155 (58.5%) were females and 188 (70.9%) were between 60 and 69 years of age. A majority of the elderly subjects, i.e., 140 (52.8%) were currently married. 111 (41.9%) of the elderly subjects were either widows or widowers. Majority of the elderly subjects 50.6% were following the Hindu religion. Majority (56.2%) of the elderly subjects had not attended school and 74% of the subjects were currently unemployed. A higher proportion of males were engaged in semi-skilled and skilled occupations. None of the study population was engaged in professional, semi-professional, or clerical occupations. Majority of the elderly subjects were living with their children (46.8%), followed by spouse and children (36.6%). 11.3% were living with their spouse only. 4.2% of the subjects were living alone. Majority (64.9%) of the study population belonged to upper lower class (Class 4) according to modified Kuppaswamy's classification for year 2013. None of the study subjects belonged to upper, upper-middle, or lower classes. 24.2% of 265 elderly subjects stated that used tobacco either in smokeless form or smoking form at least once in the preceding 3 months. All female tobacco users were using

tobacco in the smokeless form. 24.2% of 265 elderly subjects reported having used alcohol at least once in the preceding 3 months, mostly males.

Prevalence of Chronic Diseases

Of the 14 chronic diseases studied, the prevalence of hypertension was found to be 67.5%, followed by 47.5% for musculoskeletal disorders (includes joint pain and myalgia), 30.5% for cataract, and 18.5% for diabetes mellitus. 55 (20.7%) new cases of cataract, 31 (11.7%) new cases of deafness, 102 (38.4%) new cases of hypertension, and 10 (3.8%) new cases of diabetes mellitus were detected in the course of the study. The prevalence of chronic diseases is represented in Figure 1.

Factors Associated with Prevalence of Chronic Diseases

The presence of the heart disease was significantly more among who attended any form of school and those who were not employed. COPD was significantly higher among the elderly aged more than 70 years, using tobacco, using alcohol, and elderly who were underweight. Musculoskeletal disorders were significantly higher in female subjects and significantly lower among the elderly reporting use of tobacco or alcohol. Hypertension was significantly higher among elderly subjects who were overweight or obese and among those who reported alcohol use. Diabetes mellitus was significantly lower among subjects who reported using alcohol.

Health-Seeking Behavior

Of the 265 elderly persons interviewed, 136 (51.3%) reported that they suffered from any illness (acute or chronic) in the preceding 3 months. These 136 elderly persons were assessed for their health-seeking behavior. 95.6% (130 of 136) of elderly said that they sought some form of treatment when they fell ill. 126 of 130 were satisfied with the treatment provided. Majority of the subjects (78.7%) sought treatment from private clinics. 40.4% of the subjects stated that they sought health care approximately once in every month. The healthcare expenditure incurred by the subjects was met by their sons in the majority of the subjects (55.1%).

DISCUSSION

Of the 14 chronic disease studied, the prevalence rate of hypertension was found to be 67.5%, followed by 47.5% for musculoskeletal disorders (includes joint pain and myalgia), 30.5% for cataract, and 18.5% for diabetes mellitus. 95.6% of elderly sought treatment when they fell ill. Majority of them (78.7%) sought treatment from private clinics.

5.7% of the study population reported having heart disease, as against 17.36% (provisional prevalence from the National

Health Profile 2010). The lower prevalence in the current study is probably due to the self-reporting method, which could have missed undetected disease. Other studies among the elderly from rural Tamil Nadu and Urban Bengaluru Using a similar methodology showed similar results, i.e., 8.4% and 6.3%, respectively, as also a study among elderly urban population in India which showed the prevalence of ischemic heart disease as 5.7% using Rose questionnaire.^[14] None of the study participants reported either cancer or mental illness. The National Health Profile of India shows the prevalence of cancer as 0.86% among the general population, and a study in urban underprivileged areas of Bengaluru showed the prevalence of cancer as 0.7%.²⁷ Even if the prevalence in the elderly is higher, the detection rates in this population

are very low and case fatality is high, and both of which could have led to the study finding. In the case of mental illness, the lack of insight about the disease and the stigma associated with it could be responsible for the fact that none of the study subjects reported mental illness. About 3% of the study population reported having disorders of the urinary system. The studies done among urban elderly in Bengaluru, urban underprivileged in Bengaluru, and rural elderly in Tamil Nadu show similar prevalence rates of 4.0%, 4.4%, and 5.6%, respectively. About 67.5% (179) of the study population were found to be having hypertension. Of 67.5%, 29.1% (77) had been previously diagnosed. Other studies among the elderly from rural Tamil Nadu and urban Bengaluru showed the prevalence of hypertension as

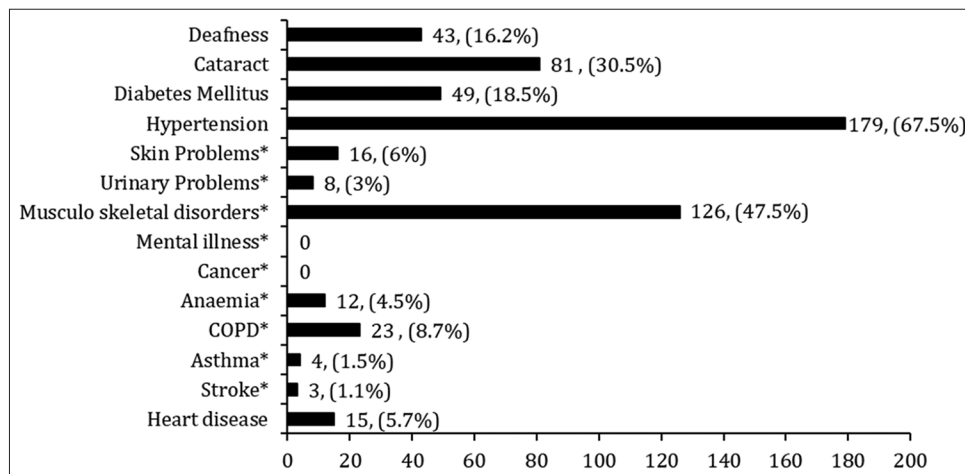


Figure 1: Prevalence of chronic diseases. *Self-reported disease

Table 1: Comparison with other studies

Disease	Current study (%)	National Health Profile 2010 ^[15] (%)	NCD's India profile 2011-WHO ^[16] (%)	Purty <i>et al.</i> , rural elderly, Tamil Nadu ^[11] (%)	Niranjan and Vasundhara, urban underprivileged areas, Bengaluru. ^[17] (%)	Reddy, urban elderly, Bengaluru. ^[18] (%)
Heart disease	5.7	17.36 (elderly)	-	8.4	-	6.3
Stroke	1.1	0.76 (overall)	-	-	-	-
Asthma	1.5	-	-	5.9	23.2	-
COPD	8.7	-	-	-	-	-
Anemia	4.5	-	-	52.5	-	-
Cancer	0	-	-	-	0.7	-
Mental illness	0	0.81 (overall)	-	-	0.7	-
Musculoskeletal disorders	47.5	-	-	43.4	19.8	38.8
Urinary problems	3.0	-	-	5.6	4.4	4.0
Skin problems	6.0	-	-	11.9	4.6	-
Cataract	30.5	-	-	32.1	-	-
Deafness	16.2	-	-	14.3	-	-
Hypertension	67.5	16.4 (overall)	32.55 (overall)	25.9	-	17.5
Diabetes Mellitus	18.5	10.78 (elderly)	10.0 (overall)	20.9	-	5.3

COPD: Chronic obstructive pulmonary disease, NCD's: Non-communicable diseases

25.9% and 17.5%, respectively. Considering that 38.7% of hypertension was newly detected at the time of the study, the burden of undiagnosed disease appears to be higher than expected. However, the fact that new detection was based on two readings, follow-up would be required to weed out those found falsely positive. 18.5% (49) of the study population were found to be having diabetes mellitus, of whom most (14.7%) were already diagnosed. While the National Health Profile 2010 showed a 10.78% prevalence rate of diabetes mellitus among the elderly, the study from urban Bengaluru showed the prevalence of diabetes as 20.9%, which is similar to our study. The prevalence of chronic illness among elderly subjects is compared in Table 1, with other studies, data from the Government of India (Ministry of Health and Family Welfare) and data from the WHO.

Limitation

Except for diabetes mellitus, hypertension, cataract, and deafness, all the other chronic illnesses in the study were documented either by self-reporting or by operational definitions from the history of symptoms. This may have led to underreporting of these diseases in the study. The difficulty in capturing the accurate age could have affected the study results. Data collection was mostly done during working hours, which might have been the reason for fewer males in the study population.

CONCLUSION

The high burden of chronic disease and the low preference for government facilities for healthcare point to the need to re-look at the model of chronic disease control currently available in the country. With the proportion of elderly persons rising, along with the urban population as a whole, this needs to be done quickly and effectively.

ACKNOWLEDGMENTS

The authors would like to thank all the study participants. We thank the Faculty and Department of Community Health for their inputs all along the study and giving us this opportunity.

REFERENCES

1. Interesting Facts about Ageing-WHO. Available from: <http://www.who.int/ageing/about/facts/en>. [Last dated on 2014 Jul 08].
2. Ageing Facts-WHO. Available from: <http://www.who.int/topics/ageing/en>. [Last dated on 2014 Jul 08].
3. Urban Health-WHO. Available from: <http://www.who.int/world-health-day/2010/media/whd2010faq.pdf?ua=1>. [Last dated on 2014 Jul 08].
4. 10 Facts on Ageing and the Life Course-WHO. Available from:

http://www.who.int/features/factfiles/ageing/ageing_facts/en/index3.html. [Last dated on 2014 Jul 08].

5. Global Health Statistics-Global Burden of Disease and Injury Series. Available from: <http://www.who.int/mip/2003/other/en/globalburdenofdisease.pdf>. [Last dated on 2012 Aug 14].
6. WHO-NCD Country Profiles; 2011. Available from: http://www.who.int/nmh/publications/ncd_profiles_report.pdf. [Last dated on 2012 Aug 14].
7. Chronic Disease Facts-WHO. Available from: <http://www.who.int/gho/ncd/en/index.html>. [Last dated on 2012 Aug 13].
8. Chronic Disease and Health Promotion. Available from: http://www.who.int/chp/chronic_disease_report/en. [Last dated on 2012 Aug 13]
9. Babar TS, Juanita H. Health seeking behaviour and health service utilization in Pakistan: Challenging the policy makers. *J Public Health* 2005;27:49-54.
10. World Health Day Theme; 2012. Available from: http://www.who.int/kobe_centre/mediacentre/forum/forum_whd-2012/en. [Last dated on 2012 Aug 14].
11. Purty AJ, Joy B, Malini K, Kavita V, Anita V, Panda P. Morbidity pattern among the elderly population in the rural area of Tamil Nadu, India. *Turk J Med Sci* 2006;36:45-50.
12. The Eighth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Available from: <http://www.nhlbi.nih.gov/guidelines/hypertension/jnc8full.pdf>. [Last dated on 2014 Aug 21].
13. Screening for Type 2 Diabetes-Report of a World Health Organization and International Diabetes Federation Meeting. Available from: http://www.who.int/diabetes/publications/en/screening_mnc03.pdf. [Last dated on 2012 Aug 10].
14. Singh RB, Niaz MA, Ghosh S, Beegom R, Chibo H, Agarwal P, *et al.* Epidemiological study of coronary artery disease and its risk factors in an elderly urban population of north India. *J Am Coll Nutr* 1995;14:628-34.
15. National Health Profile. Ministry of Health and Family Welfare; 2010. Available from: <http://www.cbhidghs.nic.in/writereaddata/mainlinkFile/File1012.pdf>. [Last dated on 2014 Sep 21].
16. WHO. Non-Communicable Diseases Country Profiles; 2011. Available from: http://www.who.int/publications/2011/9789241502283_eng.pdf. [Last dated on 2014 Sep 21].
17. Niranjan GV, Vasundhra MK. A Study of health status of aged persons in slums of urban field practice area, Bangalore. *Indian J Community Med* 1996;21:37-40.
18. Reddy PH. The health of the aged in India. *Health Transition Rev* 1996;6:233-44. Available from: <http://www.htc.anu.edu.au/pdfs/Reddy1.pdf>. [Last accessed on 2014 Sep 22].

How to cite this article: Dharmaraj RB, Kasthuri A, Kiran P. Prevalence of selected chronic disease and health-seeking behavior among elderly persons in an urban underprivileged area, Bengaluru city, India. *Int J Med Sci Public Health* 2018;7(4):311-315.

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