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Original Article

Prevalence, awareness, and control of hypertension in the slums of Kolkata

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ABSTRACT

Background: Slum dwellers have poor socio-environmental conditions and less access to medical care, which make them susceptible to illnesses. Studies on urban slums have primarily focused on communicable diseases and less on lifestyle diseases, such as hypertension. Consequently, there is a paucity of prevalence studies of hypertension in slums in different parts of the country. The aim of the study was to provide estimates of the prevalence, awareness, and control of hypertension in an adult population sample of the slums of Kolkata.

Methods: A population-based cross-sectional study was conducted in the slums of Kolkata in collaboration with Kolkata Municipality Corporation. Door-to-door survey was conducted by trained healthcare workers using a structured questionnaire. Age, sex, religion, housing conditions (house/hut), average monthly household income, education status, current use of tobacco, history of hypertension, and whether on antihypertensive treatment were recorded. Blood pressure (BP) was recorded as per standard guidelines. Hypertension was diagnosed by JNC-VII criteria. A total of 10,175 adults aged ≥20 years were enrolled in the study.

Results: Overall prevalence of hypertension was 42%. Hypertension was newly detected in 19% of the population. Fifty-four percent of the hypertensive subjects were aware of their hypertension status, 38% were on antihypertensive treatment, and 12% had their BP controlled to target level. Subgroup analysis showed that the prevalence of hypertension was higher in men, above 60 years age, in the minority community, in those with a higher household income, and among the tobacco users.

Conclusion: There is a high prevalence of hypertension in the slums of Kolkata. Although the awareness of the condition is high, the control of hypertension is poor.

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1. Introduction

Hypertension is an important public health problem. Worldwide, more than one billion adults have hypertension and this is predicted to increase to 1.56 billion by 2025.[1] Those with hypertension have higher risk of coronary artery disease, heart failure, and stroke. Hypertension accounts for 57% of all deaths from stroke and 24% of all deaths from coronary heart disease in India.[2]

Although the prevalence of hypertension has remained stable or has decreased in economically developed countries, it has increased in developing countries including India.[3,4] Existing data show that even within our country, the prevalence of hypertension varies considerably from one region to another, and between rural and urban populations.[2] Over a period of 55 years, there has been a 10-fold increase in prevalence in the rural population, but in the urban population, the increase is almost 30 times.[5] Various factors, such as diet, change in lifestyle, stress, and paucity of employment might have contributed to this rising trend.[6]

A considerable proportion of the urban population in India lives in slums, which are characterized by poor socioenvironmental conditions and poverty. Slum dwellers tend to neglect the importance of health and social advancement, which make them more prone to lifestyle diseases. Lack of regular employment, threat of eviction, overcrowding, alcoholism, and other social issues contribute to poor health in the slums and make the provision of health services in these areas more difficult. The growth rate of the slum population in India has been much higher than the growth rate of the nonslum population.[7]

Field-based studies on the prevalence of hypertension in different regions of India are still scarce.[8] Moreover, research in the urban slums has primarily focused on child health, and reproductive and communicable diseases.[9] Only a few reports are available on the prevalence of lifestyle diseases, such as hypertension, in the slums.

For planning effective strategies for preventing and controlling hypertension among the slum dwellers, the magnitude of the problem needs to be determined.

The aim of the study was to provide estimates of the prevalence, awareness, and control of hypertension in a population sample of the slums of Kolkata.

2. Methods

The study was approved by the local Institutional ethics committee and informed verbal consent was obtained from all participants.

2.1. Sampling site

This was a population-based cross-sectional study conducted in the slums of Kolkata in collaboration with Kolkata Municipality Corporation (KMC). Kolkata is the cosmopolitan capital of West Bengal, located in eastern part of India. It has an approximate resident population of 4.5 million (Census 2011), of which about 1.49 million reside in slums (about one-third of the total population). Kolkata municipality is divided into fifteen boroughs, each borough comprising of several wards. One of the boroughs (Number III) was selected by simple random sampling. Borough III comprises of 9 wards with a population of 401,332, of which about 44.3% are slum dwellers.[10]

2.2. Methodology

Ten healthcare workers who work in the slums of borough III were given adequate training in blood pressure (BP) measurement by a team of doctors. Door-to-door survey was conducted by these healthcare workers in their respective wards, under the supervision of the team of doctors. All slum residents aged 20 years or more, who were present on the days of the survey and were willing to participate, were included in the study. We planned to interview about 10,000 subjects. In each ward, the first household was randomly selected and then all contiguous households were selected until the target number was reached. A standard structured questionnaire (Fig. 1) was prepared, which comprised of demographics, such as age, sex, religion, housing condition (house/hut), average monthly household income, and education status. History of hypertension and whether on antihypertensive treatment were also noted.

BP was recorded as per the 2013 ESH/ESC Guidelines for the management of arterial hypertension.[11] Korotkoff phase V was taken as the diastolic pressure. Sitting BP was measured by using carefully calibrated hand-held aneroid sphygmomanometers at least twice at 2 min intervals. At the discretion of the surveyor, a third recording was allowed.

2.3. Definitions and diagnostic criteria

Hypertension was defined as per JNC-VII guidelines as systolic blood pressure (SBP) greater or equal to 140 mmHg and/or diastolic blood pressure (DBP) greater or equal to 90 mmHg. The average of two or three readings was taken as the BP value.[12]

Isolated systolic hypertension was defined as SBP ≥ 140 and DBP < 90 mmHg, and isolated diastolic hypertension as DBP ≥ 90 and SBP < 140 mmHg.

Those who reported that a doctor or a health worker ever told them they had hypertension or those who were already on antihypertensive medications were recorded as 'known hypertensive'.

Awareness was defined as proportion of persons with known hypertension divided by all hypertension patients (known and newly diagnosed).

Subjects were recorded as on antihypertensive treatment if they confirmed that they were taking at least one antihypertensive medicine every day. Subjects on treatment were expressed as proportion of patients with hypertension on drug treatment divided by all hypertension patients (known and newly diagnosed).

Control of hypertension was defined as hypertensive patients with SBP and DBP less than 140 and 90 mm of Hg, respectively. It was expressed as proportion of patients with BP <140 and <90 mmHg divided by all hypertension patients (known and newly diagnosed).