International Journal of Community Medicine and Public Health
Chate PD et al. Int J Community Med Public Health. 2021 Nov;8(11):5383-5388
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20214275

Original Research Article

A cross sectional study to determine the sociodemographic profile and study prevalence of chronic noncommunicable diseases in an urban slum of Mumbai

Priyanka D. Chate*, Ashirwad K. Nagpurkar, Sophia Fernandes, Anita G. Shenoy, Vidula Patil

Department of Community Medicine, HBT and Dr. R. N. Cooper Hospital Mumbai, Maharashtra, India

Received: 05 September 2021
Revised: 13 October 2021
Accepted: 14 October 2021

***Correspondence:**
Dr. Priyanka D. Chate,
E-mail: priyankadchate@gmail.com

ABSTRACT

Background: Mumbai is the economic capital of India. According to 2011 census, 41.84% of total population of Mumbai city resides in slum areas; chronic noncommunicable diseases (NCDs) are the major cause of morbidity and mortality worldwide especially in developing countries where it has a huge impact on socioeconomic dynamics of the country and quality of life of its people.
Methods: This was a retrospective cross sectional community level study based on family assessment survey records filled by undergraduate medical students as a part of their curriculum. The survey was conducted over the period of 1 years from August 2017 to July 2018 on 300 families residing in 3 slums in the field practice area of Cooper Hospital in Mumbai.
Results: The total population was 1533, 720 were female and 813 were male. 417out of 1533 individuals were known cases of chronic noncommunicable diseases and were on treatment for the same, thus prevalence of chronic noncommunicable disease was 27.20%. There was significant association between age and prevalence of chronic noncommunicable disease ($p<0.05$) in the given population.
Conclusions: The slum areas will continue to expand along with economic and industrial development. Growing number of slums constitute a major challenge to development of the community. The result emphasizes the need to implement measures to improve sanitation and hygiene of slums along with improvement of health coverage in these areas for early detection and treatment of NCDs.

Keywords: Chronic non communicable disease, Metropolitan city, Socio-demographic, Socio-economic, Urban slums

INTRODUCTION

The census defines slum as residential area where dwellings are unfit for human habitation because they are dilapidated, cramped, poorly ventilated or unclean or any combination of the factors which are detrimental to the safety and health.[1] Unplanned and rapid urbanization puts a strain on the already diminishing civic amenities leading to formation of slum. Urban slums are settlements, neighbourhoods, or city regions that cannot provide the basic living conditions necessary for its habitation.[2] The United Nations Human Settlements Programme (UN-HABITAT) defines a slum settlement as a household that cannot provide one of the following basic living characteristics: durable housing of a permanent nature that protects against extreme climate conditions. Sufficient living space, which means no more than three people sharing the same room. Easy access to safe water in sufficient amounts at an affordable price. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people. Security of tenure that prevents forced evictions.[3] Slums

lack reliable sanitation services, supply of clean water, reliable electricity, timely law enforcement and other basic services.[4] Although Slums differ from country to country, but they all have similar characteristics like overcrowding, congestion, poor sanitation, poor housing, choked drains, high density of insects, flies and rodents, lack of garbage disposal facilities leading to uncollected garbage accumulation with poor sanitation, deteriorated houses crowded together, open sewer and stagnant water.[5] 41.84% of the total population of Mumbai city resides in slum area.[6] There are many complex reasons for Mumbai's housing crisis one being major migration from different parts of country, creating a problem of space. About half of Mumbai's slums are non-notified.[7] i.e., they are not located on state or municipal land.[8] Poverty is closely associated with NCDs. Chronic noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally. Noncommunicable diseases (NCDs), also known as chronic diseases, tend to be of long duration. The main types of NCD are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes.[9] These diseases are results of forces that include rapid unplanned urbanization, globalization of unhealthy living habits and ageing of population. Every year tobacco usage accounts for over 7.2 million deaths (including from the effects of exposure to second-hand smoke).[10] More than half of the 3.3 million annual deaths are related to alcohol usage are from NCDs, including cancer.[11] Urban slum comprises a social group that has a discrete set of health problems. With over billion people living in such a social arrangement, this underprivileged population is now a major repository for a huge spectrum of health problems that a health sector must deal.[8] Unlike with general population, the health sector becomes aware of the health problems of slum population relatively late in the course of their illnesses.[12] An absence of accurate health-related information from slum areas leads to unsuitable and impractical allocation of health care funds by the public and private providers.[9,13] In low-income settings, health-care costs for NCDs quickly drain household resources. The extravagant costs of NCDs, including treatment which is often prolonged and expensive, combined with loss of income, force millions of people into poverty annually and obstructs development. Investing in better management of NCDs is essential. Hence the current study was conducted with objective of assessing the sociodemographic profile and evaluating prevalence of chronic noncommunicable diseases in urban slum area.

METHODS

The present retrospective cross-sectional study had been carried out from Aug 2017 to July 2018 on 300 households selected by simple random sampling. Those families which were residing in the slum since one year before were included in the study. The survey was undertaken in 3 slum areas in the field practice area of Cooper hospital, Mumbai. The study was conducted as a part of under graduate medical curriculum. Prior informed consent was taken from the families for survey. Door to door household survey (primary data source) was conducted by students who were accompanied by faculty members and community development officer. A survey of 300 households was conducted using a preformed and prestructured questionnaire by interviewing the head and other members of family. The data was entered in Microsoft Excel 2010 version and analysed using data analysis package on Microsoft Excel spreadsheet. The prevalence of chronic noncommunicable diseases (hypertension, diabetes, arthritis, stroke, ischemic heart disease, alcohol and tobacco addiction) was expressed in percentages. The correlation between age, sex, socioeconomic status and chronic noncommunicable disease was analysed using Peterson's coefficient, p value <0.05 was considered as significant.

RESULTS

Sociodemographic characteristics

The total population was 1533, 813 (53%) were males and 720 (46.96%) were females. Out of these 8.023% were under-5, 14.35% were school age children and Infants and adolescents constituted 1.50% and 17.15% of the screened population respectively. Elderly (60 years and above) constituted 6.84% of the screened population. The most common age group was between 20 and 30 years (24.13%). The marital status of the population shown in Figure 1.

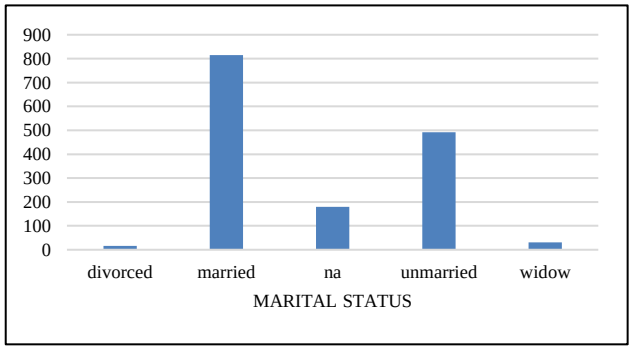

Figure 1: Marital status of urban slum population.

The socio-demographic characteristics of the study population are shown in Table 1.

Literacy

The literacy rate was 85.85% and 74.86% for males and females respectively. Almost (12.52%) of the adult population could not read or write in any one language. Female literacy was significantly lower compared to males (35.22% versus 45.59%; p<0.005).

Table 1: Socio-demographic characteristics of population, reported separately for men and women.

		Men (n=813)	Women (n=720)
Age (years) median		28	28
Age (years) mode		30	30
Mean		29.96	30.20
Religion N (% of total population studied)	Hindu	733 (47.81)	659 (38.02)
	Muslim	76 (4.95)	58 (3.78)
	Sikh	4 (0.26)	3 (0.195)
Caste N (% of total population studied)	SC	49 (3.19)	45 (2.93)
	ST	25 (1.44)	22 (1.43)
	Open	497 (28.67)	440 (28.70)
	OBC	172 (11.21)	144 (9.39)
	Others	70 (4.56)	69 (4.50)
Marital status N (% of total population studied)	Married	420 (27.39)	395 (25.76)
	Unmarried	284 (18.58)	208 (13.56)
	Divorced	8 (0.52)	9 (0.58)
	Widow	5 (0.32)	26 (1.69)
Education N (% of total population studied)	Pre-primary	20 (1.30)	21 (1.36)
	Primary school	82 (5.34)	87 (5.67)
	Middle school	99 (6.45)	123 (8.02)
	Secondary school	248 (16.17)	156 (10.17)
	Higher secondary	148 (9.65)	83 (5.41)
	Graduate	99 (6.45)	393 (25.76)
	Post graduate	2 (0.13)	2 (0.13)
	Illiterate	66 (4.30)	133 (8.67)
Occupation N (% of total population studied)	Unemployed	99 (6.45)	150 (9.78)
	Student	101 (6.58)	68 (4.43)
	Unskilled	199 (12.98)	251 (16.37)
	Semiskilled	152 (9.91)	78 (5.088)
	Skilled	119 (7.76)	45 (2.93)
Socioeconomic status (modified Kuppuswami classification) N (% of total population studied)	Upper middle	94 (6.13)	68 (4.43)
	Lower middle	139 (9.067)	114 (7.43)
	Upper lower	568 (37.05)	527 (34.37)
	Lower	15 (0.97)	11 (0.71)

Occupation and socioeconomic condition

About 70% and 16.66% families belonged to socio-economic status upper lower (class IV) and lower middle (class III) according to modified Kuppuswami classification. The average income was less in women as compared to men (7281 INR versus 2620 INR). Further, the unemployment rate was more in women (14.33%) as compared to men (13.1%). Unskilled labor (29.41%) was the predominant category, followed by semiskilled factory labourer (15.06%) and skilled-employment (10.69%).

Housing condition

Out of 300 surveyed households, 1.66%, 15.66% and 82.33% were katcha, semi-pucca and pucca type respectively. Most houses (87%) had only one room. Water supply is from corporation through tap both in individual households as well as common tap water connection for society, 36% of families have their individual water supply, 5.2% families were using hand pump as a source of drinking water. Nearly 98% of the population throw garbage in open space thereby practicing insanitary solid waste disposal.

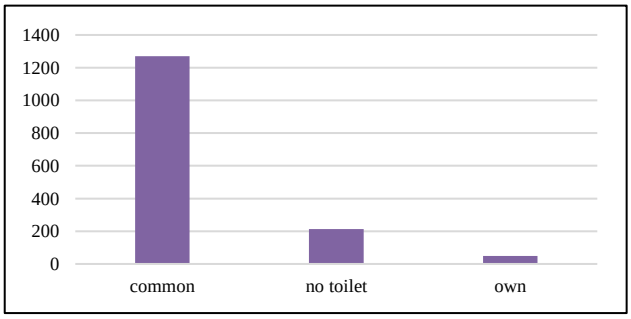

Figure 2: Type of toilet usage in urban slum population.

Excreta disposal

Majority of the households (85.67%), did not have access to their own toilet system. Out of 1533 individuals, 214

had no access to toilet and practiced open air defecation, 1271were using common toilet. Only 48 people had their own toilet (Figure 2).

Prevalence of disease

417 out of 1533 individuals were known cases of chronic noncommunicable disease (NCD) and were on treatment for the same, thus prevalence of chronic noncommunicable disease was 27.20% (Table 2).

Table 2: Prevalence of the chronic noncommunicable disease (NCD).

Chronic health issue	Percentage of people
Diabetes mellitus	239 (15.59)
Hypertension	188 (12.26)
Alcohol addiction	109 (7.11)
Arthritis	12 (0.78)
Asthma	40 (2.69)
Chronic kidney disease	4 (0.26)
Cancer	6 (0.39)
Cerebro-vascular accident	8 (0.52)
Handicap	4 (0.26)
Hypothyroidism	24 (1.56)
Ischemic heart disease	14 (0.91)

Most of the people reported to have diabetes (10.69% of men and 5.21% of women) and hypertension (10.20% of men and 2.06% of female). Experience of more complex conditions was lower: 2.08% for chronic conditions (such as cerebrovascular accident, cancer, chronic kidney disease, ischemic heart disease). There was significant association between age and prevalence of chronic noncommunicable disease (The p value was <0.00001, r score was 0.461, N was 97. The result was significant at p <0.05) in the given population. However, no significant correlation was found between socioeconomic status.

Co-existence of NCD in given population

Many a times the NCD tend to exist together i.e. more than 1 NCD exists in a single individual at a time, thereby worsening the prognosis of disease.

Diabetes: Out of total 239 people, 154 were purely diabetic.

Table 3: Coexistence of diabetes with other NCD.

Diabetes with coexisting NCD	Cases
Hypertension	65
Hypertension and ischemic heart disease	2
Ischemic heart disease	5
Stroke/cerebrovascular episode	3
Arthritis	6
Cancer breast	1
Hypothyroidism	3

Hypertension (HTN): Out of total 188 people, 110 were purely hypertensive.

Table 4: Coexistence of HTN with other NCD.

Hypertension with coexisting NCD	Cases
Diabetes (DM)	65
Arthritis	4
Ischemic heart disease	7
Cerebrovascular episode/stroke	2

DISCUSSION

In the present study of 1533 individual belonging to 300 households, it has been found that, there are 813 males (53.03%) and 720 females (46.96%) which is quite similar to study of urban slum dwellers in Gurugram by Singh et al (46.1% male and 53.90% females).[14] The sex ratio of given study population was 885 which was less than sex ratio of urban slum population i.e. 924 as per census data of 2011.[16] Majority of the population of the given slum i.e. 24.13% belonged to the age group of 20-30 years which was different from the findings of study on socio-demographic and housing condition urban slum and rural households, Gujarat, India wherein majority of population i.e. 43.5% belonged to age group of 1-20 years.[15] In the present study, majority i.e. 1392 (90.80%) were Hindus which is more than 64.3% of Hindus as per the study of Maurya et al on relation of sociodemographic factors and living conditions on health of female youth in urban slums of Amritsar city.[17]

In the present study most of the population belong to upper lower (class IV) 70% and lower middle (class III) 16.66%, which is similar to study done by Ray et al on socio demographic conditions and morbidity status of urban slum dwellers in Pune city, which is 55% class III and 30% class IV families as per modified Kuppuswami social classification.[2] Majority of the households dispose their waste on open grounds. Health is one of the ignored sectors in the urban slums; sanitation aspect was missing; public toilets were not clean. Review of the related research articles also depicts the similar findings of urban slums. A study done by Mehir et al on socio-demographic and morbidity profile of slum area in Ahmadabad showed similar findings.[18] There were no sanitary latrines and drainage facilities at studied slum. The literacy rate was 85.85% and 74.86% for males and females respectively. Female literacy was significantly lower than males, a finding similar to Indian census data 2011 wherein overall literacy rate was 84.6% male and female literacy rate was 89.3% and 79%.[19] In present study, 92.88% urban slum population have their own house. According to census 2011, 69.2% urban slum population have their own house. Study observed that 82.33% urban slum households was pucca house 1.66% urban slum households was kuccha house. According to census 2011, 4.6% urban slum households was kuccha and 51.9% urban slum households was pucca house. In present study, 36% urban slum houses have private tap facility

which is not similar with results of census 2011 where 70.6% urban slum houses have private water tap.[20] Prevalence of chronic noncommunicable disease such as diabetes, hypertension, asthma, stroke, ischemic heart disease in our study was 15.59%, 12.26%, 2.69%, 0.52% and 0.91% respectively which is more for diabetes (1%), and less for hypertension (20.3%), asthma (7.2%), ischemic heart disease (2.2%) and stroke (2.3%) when compared with the study done by Mcnairy et al.[21]

The study is based on secondary data hence only limited details about the families were available for study. No further follow up of families were done to get the recent information of their health status. The study being limited to only 3 slums, its results cannot be generalized.

CONCLUSION

The result emphasizes the need to implement measures to improve sanitation and hygiene, physical environment of the dwelling places, along with basic amenities of toilets, proper drainage, sewage and garbage disposal, water supply. There is a huge need to plan the slum dwellings in such a way that adequate ventilation, lighting of the houses can be done. Health care in these slum areas is extremely complex driven by poverty which can be improved by organizing routine camps at these places. There is a huge need to establish the mobile health vans and slum clinic at this underprivileged section of society so as to improve the health care coverage which will in turn help in early diagnosis and treatment of chronic noncommunicable disease, improve adherence to treatment in already detected cases thereby reducing morbidity and mortality from NCD in slums. Lifestyle modifications advised to slum inhabitants will go long way to prevent communicable disease and noncommunicable disease and prevent complications in those with noncommunicable disease.

ACKNOWLEDGEMENTS

Authors would like to thank Assistant Professor, Department of Community Medicine, HBT and Dr. R. N. Cooper Hospital, Mumbai Dr.Reema Wankar, Dr. Roshni Miranda for helping me in the collection and usage of relevant data from the family assessment survey forms of UG students. Authors would also like to thank Mrs.Vidula Patil, Community Development officer, for selecting the high-risk slum pockets under study from where the data of present study was collected.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee RN Cooper Hospital

REFERENCES

1. Mumbai City District: Census 2011-2020 Data. An official census 2011 details of Mumbai City, a district of Maharashtra released by Directorate of census operation in Maharashtra. Available at: https://www.census2011.co.in/census/district/357-mumbai-city.html. Accessed on 13 April 2021.
2. Ray S. Socio demographic conditions and morbidity status of urban slum dwellers in Pune city. Int J Multidiscipl Res Develop. 2016;3:65.
3. O'Hare G, Abbott D, Barke M. A review of slum housing policies in Mumbai. Cities. 1998;15(4):269-83.
4. Noncommunicable diseases. World Health Organization. Available at: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases. Accessed on 13 April 2021.
5. GBD 2015 Risk Factors Collaborators. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. Lancet. 2016;388(10053):1659-724.
6. Thakur JS, Kathirvel S, Paika R, Dhirar N, Nangia R, Kunjan K, et al. World NCD Federation guidelines for prevention, surveillance and management of noncommunicable diseases at primary and secondary health-care for low resource settings. Int J Noncommun Dis. 2020;5(5):1.
7. Murthy SL. Land security and the challenges of realizing the human right to water and sanitation in the slums of Mumbai, India. Health Hum Rights. 2012;14(2):61-73.
8. National Sample Survey Organization. Key indicators of urban slums in India. National Sample Survey 69th round. July 2012-December 2012. New Delhi: Ministry of Statistics and Programme Implementation; 2013. Available at: http://mospi.nic.in/Mospi_New/upload/KI_SLUM_report69round_24dec13.pdf. Accessed on 19 August 2015.
9. Riley LW, Ko AI, Unger A, Reis MG. Slum health: diseases of neglected populations. BMC Int Health Hum Rights. 2007;7:2.
10. Das BI. Slum dwellers in Surat City: a socio-demographic profile. Indian J Soc Work. 1997;58:35-56.
11. Gangadharan K. Utilization of health services in urban kerala: a socio economic study. Serials publications, New Delhi; 2005.
12. Melki IS, Beydoun HA, Khogali M, Tamim H, Yunis KA. Household crowding index: a correlate of socioeconomic status and inter-pregnancy spacing in an urban setting. J Epidemiol Community Health. 2004;58(6):476-80.
13. Singh V, Sangwan RS, Sangwan S. Social Conditions of Urban Slum Dwellers in Municipal Corporation Gurugram (MCG). Int J Res Analyt Rev. 2018;5(4):858-62.
14. Prajapati BJ, Banker K, Chauhan J, Nayak S. Sociodemographic and housing condition urban slum and rural households, Gujarat India. Nat J Community Med. 2017;8(2):90-3.

15. Primary Census Abstract for slum. Census of India. 2011. Office of the Registrar General and Census Commissioner, India. New Delhi; 2013:1-40.
16. Maurya N, Deepti SS, Mahajan S, Singh T, Lal M, Kaur J. A study on relation of sociodemographic factors and living conditions on health of female youth in urban slums of Amritsar city. Virtual Health Library. 2019;6(4):1505-9.
17. Goswami M, Kedia G. Socio-demographic and morbidity profile of slum area in Ahmedabad, India. Natl J Community Med. 2010;1(2):106-10.
18. Ray S. Socio demographic conditions & morbidity status of urban slum dwellers in Pune city. Int J Multidiscip Res. 2016: 65–68.
19. Ministry of home affairs. Census of India. Office of the Registrar General and Census Commissioner, India. Chapter 2. 2011: 22-23. Available at: http://censusindia.gov.in/. Accessed 2 January 2017.
20. Mcnairy ML, Tymejczyk O, Rivera V, Seo G, Dorélien A, Peck M, et al. High burden of non-communicable diseases among a young slum population in Haiti. J Urban Health. 2019;96:797-812.

Cite this article as: Chate PD, Nagpurkar AK, Shenoy AG, Fernandes S, Patil V. A cross sectional study to determine the sociodemographic profile and study prevalence of chronic noncommunicable diseases in an urban slum of Mumbai. Int J Community Med Public Health 2021;8:5383-8.