

Original Research Article

A cross sectional study, for risk assessment of non-communicable disease in urban slum of South India

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ABSTRACT

Background: Non communicable diseases (NCDs) contribute to around 5.87 million deaths that account for 60% of all deaths in India. India shares more than two-third of the total deaths due to NCDs in the south-east Asia region (SEAR) of WHO. Objective was to monitor the trends and determinants of non-communicable diseases (NCDs) in the study population in slum of Telangana.

Methods: The cross-sectional community-based study, was conducted in the urban field practice area of Apollo Institute of Medical Sciences and Research, Hyderabad. Sample size was estimated, data was collected in WHO STEPS questionnaire (STEP 1 and STEP 2) after obtaining informed consent from the participants. The performance included anthropometric measurements, blood pressure and questions related to tobacco use, alcohol consumption, dietary pattern, physical exercise. Microsoft Excel 2007 was used for data entry, SPSS version 24 for data analysis.

Results: Tobacco smoking use in any form was seen in 22.1% males of the study population and 1.8% of females. The mean waist hip ratio amongst male is 0.92 cm. The mean waist hip ratio amongst 113 voluntary participants was 0.89.

Conclusions: NCDs in the urban slum that requires appropriate early actions to prevent risk factors, reducing the disease burden. Health education among households through behaviour change, formulation and implementation of health policy for urban slums will go a long way in lessening the burden.

Keywords: Non communicable diseases, Underprivileged population, Urban slum

INTRODUCTION

Non communicable diseases (NCDs) contribute to around 5.87 million deaths that account for 60% of all deaths in India. India shares more than two-third of the total deaths due to NCDs in the south-east Asia region (SEAR) of WHO. Non communicable diseases account for 62% of the total age-standardized burden of forgone disability adjusted life years (DALYs) in India.¹ Public and private financing of clinical services to reduce the NCD burden is a major challenge.

Four types of NCDs- cardiovascular diseases, cancer,

chronic respiratory diseases and diabetes make the largest contribution to morbidity and mortality.² Four behavioral risk factors are responsible for significant proportions of these diseases- tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. Non communicable diseases now make the greatest proportion of the total burden of disease and injuries in India. Many of these conditions are amenable to preventive measures. However, effective action to prevent and control disease depends on timely access to accurate and reliable information, both to inform where resources should best be targeted and to monitor and evaluate the impact of the actions taken.

In our country, many components needed for the surveillance of non-communicable diseases and associated determinants are already in place. Despite that, significant gaps remain. It is widely recognized that NCD surveillance can be improved upon by building on, harmonizing and complementing existing systems.

Low socio-economic communities are generally presumed to suffer from morbidities and fatalities due to communicable diseases.³ Most research on non-communicable diseases has been conducted in high-income countries, but the need for research in low resource settings has been recognized. The large national level economic impacts are underpinned by adverse economic outcomes for households affected by disease.

In this study, a cross sectional approach has been taken due to feasibility of such an exploration, as well as accommodate multiple variables at the time of recording the data and the input from this analysis can be used for various types of research. In addition to this, many findings and outcomes can be analyzed to create new studies or further in-depth research. The STEP wise approach to non-communicable disease risk factor surveillance (STEPS) focuses on obtaining core data on the established risk factors that determine the major disease burden.⁴ This core data includes elucidating the prevalence of smokers, the habit of drinking alcohol, sedentary lifestyle in conjunction with intake of an unhealthful diet in the given population. The waist and hip ratio has also been calculated as it is a beneficial indicator of visceral adipose tissue. Fat which resides in the abdominal area is more closely associated to chronic non communicable illnesses, commonly affecting the cardiovascular system, thus augmenting the overall ill health of the individual. Identification of diabetic and hypertensive patients is also carried out in order to counsel them about the adversities of the risk factors which can lead to the fatal complications of non-communicable diseases.

Aims and Objectives

To monitor the trends and determinants of non-communicable diseases (NCDs) in the study population. To reduce modifiable risk factors for NCDs and underlying social determinants through creation of health-promoting environments.

METHODS

Settings and design

The cross sectional was conducted in urban slum of southern India.

Subjects

The study was carried out amongst the urban slum dwellers, between 30 to 60 years of age.

Study period

The study was conducted in the month of May-August 2019. Data was collected through questionnaire in the month of May, June and July.

Inclusion criteria

Residents of the slum, between 30 to 60 years of age, who voluntarily participate in the study.

Sample size estimation

As no previous data were available, assuming the prevalence of non-communicable disease among thirty plus age group, to be 50% (for maximum sample size at 6% precision) at the 5% significance, the sample size was estimated to be 267.

Informed consent

Participant, were explained about the significance of the study.

STEP 1 and STEP 2 questionnaire was administered to those meeting the inclusion criteria and volunteer to participate.

Data collection

Steps questionnaire (STEP 1 and STEP 2) administered to all the participant after obtaining informed consent.

Step questionnaire

The tool used to collect data and measure non communicable disease (NCD) risk factors within the WHO stepwise approach to surveillance is called the STEPS Instrument. The STEPS instrument covers three different levels or 'steps' of risk factor assessment: step 1 (questionnaire) and step 2 (physical measurements).

The generic STEPS Instrument (version 3.2), which countries use to develop their own Instrument, contains: CORE items (unshaded boxes), EXPANDED items of demographic data (shaded boxes), response options for step 1 and step 2. STEP 1 questionnaire was used to collect data on demographic and behavioral aspect (determinants) of the participants.

Statistical analysis

Data was entered into MS excel spreadsheet, coded and analysis was done with SPSS 24 version.

RESULTS

Out of the 267 study population, only 253 gave consent and one of the respondents did not reply the questionnaire

completely. Hence data analysis was done for 253 respondents and missing data was obtained for one participant.

Table 1 depicts the age and anthropometry measurement (height, weight, body mass index and waist hip ratio) of male subjects.

Table 1: Descriptive anthropometry male.

	N	Minimum	Maximum	Mean	SD
Age	140	30	60	43.04	7.029
Height (cm)	139	150.0	177.0	169.460	4.5149
Weight (kg)	139	50.0	94.0	74.914	7.7914
BMI	139	18.37	33.91	26.0632	2.35222
Waist circumference (cm)	138	70.0	107.0	90.051	5.5330
Hip circumference (cm)	138	81.0	114.0	97.656	6.3653
Waist hip ratio	138	0.85	0.98	0.9229	0.02564

Table 2: Descriptive anthropometry female.

	N	Minimum	Maximum	Mean	SD
Age	113	30	60	42.38	7.638
Height (cm)	113	137.5	174.0	162.850	6.2571
Weight (kg)	113	43.0	92.0	69.504	9.4114
BMI	113	18.99	38.29	26.1802	3.17723
Waist circumference (cm)	113	65.0	105.0	86.544	6.7399
Hip circumference (cm)	113	76.0	128.0	97.159	9.3461
Waist hip ratio	113	0.77	0.98	0.8929	0.03849

Table 2 shows age and anthropometric measurement of females. The mean waist hip ratio amongst 113 voluntary participants was 0.89.

Table 3 shows prevalence of smoking among males. 22.3% males were smokers in the study population.

Table 3: Smoking in males.

	Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	31	22.1	22.3
	No	108	77.1	77.7
	Total	139	99.3	100.0
Missing	System	1	0.7	
Total	140	100.0		

Table 4: Smoking among females.

	Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	2	1.8	1.8
	No	111	98.2	98.2
	Total	113	100.0	100.0

Table 4 shows smoking among female respondents. In our study about 1.8% of the females were smokers. $\chi^2 (1) = 4.704, p < 0.05$.

Table 5 depicts that there was an association between cigarette smoking and raised blood pressure.

Table 5: Tobacco smoking and raised blood pressure.

Chi-Square Tests					
	Value	df	Asymptotic significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson chi-square	4.704a	1	0.030		
Continuity correction	3.775	1	0.052		
Likelihood ratio	4.242	1	0.039		
Fisher's exact test				0.041	0.030
Linear-by-linear association	4.685	1	0.030		
N of valid cases	252				

DISCUSSION

Questionnaire was given to 267 participants. 14 subjects refused to give consent, so no further interview was done for them. Total 253 respondents were in the study, out of which 140 were males. The mean waist hip ratio amongst male was 0.92 cm.

The relationship between measures of body anthropometry and its contribution to the development of cardio vascular diseases has been established through various studies.^{5,6} Body mass index (BMI of less than 18.5 underweight, a BMI of 18.5-24.9 indicate healthy weight, a BMI of 25-29.9 indicates slightly overweight and a BMI of over 30 indicates heavily overweight). In our study, mean BMI of males was 26 and that of females was also 26. Connolly et al, and Chouraki et al in their study concluded that the association between diabetes mellitus, which is a risk factor for cardiovascular disease and higher BMI was statistically significant.⁷ Waist circumference and the waist hip ratio is a measurement of central obesity. Waist circumference and waist hip ratio are better predictor of cardiovascular disease. This was demonstrated by Wei et al; Welborn and Dhaliwal.⁸ Our study area, it was observed for males the waist hip ratio, mean was 0.92 and that of female was 0.89. Cigarette smoking acutely exerts a hypertensive effect, mainly through the stimulation of the sympathetic nervous system. In our study, the association between smoking and prevalence of hypertension was significant.

Limitation of study was NCD risk factors requires, community level health worker to educate and create awareness regarding tobacco, alcohol intake, sedentary life etc. Self-motivation to modify lifestyle and lead a healthy way of life lacks amongst individual. A great political will power and investment in health care is required, which is not under our purview.

CONCLUSION

To reduce the burden of NCDs, comprehensive approaches across the entire disease spectrum are needed, from health promotion, primary prevention, high-risk group screening, and early diagnosis to better treatment and rehabilitation. Among these comprehensive approaches, risk factor modification is an efficient and proven strategy in reducing NCD burden. Tobacco smoking use in any form was seen in 22.1% males of the study population and 1.8% of females, the mean waist hip ratio amongst male is 0.92 cm. The mean, waist hip ratio, amongst 113 voluntary participants was 0.89. The study showed higher prevalence of risk factors for NCDs. This alarms the heavy future burden of NCDs in the urban slum that requires appropriate early actions to prevent risk factors, reducing the disease burden. Health education among households through behavior change,

formulation and implementation of health policy for urban slums will go a long way in lessening the burden.

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