# **Original Research Article**

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20173116

# Prevalence of risk factors of non-communicable diseases among rural population of Bidar

Mahesh B. Tondare, Naveenkumar G. Havale\*, Rahul C. Bedre, Pallavi Kesari

Department of Community Medicine, Bidar Institute of Medical Sciences, Bidar, Karnataka, India

Received: 14 June 2017 Revised: 25 June 2017 Accepted: 29 June 2017

#### \*Correspondence:

Dr. Naveenkumar G. Havale, E-mail: gnghavale@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

#### **ABSTRACT**

**Background:** The World Health Organization (WHO) global status report on NCDs in 2010 showed that NCDs are the highest leading cause of death over the developed and developing countries. More than 36 million people died from NCDs in 2008 from cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%), and diabetes (3%).

**Methods:** The present study carried out among 2957 rural population in rural field practice area of department of community medicine. Using the WHO STEPS approach, information on risk factors of non-communicable diseases (NCD) like socio demographic, behavioural, physiological and physical measurements were obtained through standardized protocol.

**Results:** Among the 2957 people studied 48.6% were in age group of 15–35 years. 68.1% were having education below secondary/higher secondary. 47.2% belonged to lower middle and 39.6% belonged to lower socioeconomic class. 44.8% of them were either farmers or labour/ unskilled workers. In the studied population 29.93% were currently using tobacco either in the form of chewing or smoking, among these 98.42% were males. 27.29% were currently consuming alcohol, of these males comprised 97.77%. Among the studied population 13.3% were hypertensive and 3.42% were diabetics.

**Conclusions:** In this study majority belonged to lower middle or lower socioeconomic class, with occupation as either farmer or labour/ unskilled workers. Among those who consumed tobacco and alcohol as risk factors for NCD, majority were males. The prevalence of hypertension was more compared to diabetes.

**Keywords:** WHO steps, Non-communicable diseases (NCDs), Risk factors, Tobacco, Alcohol, Hypertension, Diabetes, BMI

### INTRODUCTION

Non Communicable diseases (NCDs) once considered "diseases of affluence", are now very common even in developing countries. The burden of NCDs has an impact not only on the quality of life of the affected individuals and their families, but also on the socioeconomic status of the country. The World Health Organization (WHO)

Global Status Report on NCD's in 2010 showed that NCDs are the highest leading cause of death over the developed and developing countries. More than 36 million people died from NCDs in 2008 from cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%), and diabetes (3%)/ NCDs contributed 60% of deaths and 43% of global burden of disease in the year 2002, and by 2020, are projected to account for 73% of deaths and 60% of disease burden.<sup>2-5</sup>

Majority of these deaths occurred before the age of 60 and that could be prevented. Premature deaths from NCDs range from 22% among men to 35% among women in developing countries.<sup>3</sup> In India, impact of NCDs on younger age groups is causing premature loss of life. It is estimated that NCDs accounted for 53% of the total mortality and 44% of disability-adjusted life-years (DALYs) lost, in 2005, which may increase to 67% of the total mortality by 2030.<sup>3</sup> Industrialization, urbanization, economic development has accelerated over the past decade which is lead to changes in diet and lifestyle of rural population. Effective preventive measures, including control risk factors like tobacco, alcohol, obesity, blood pressure, diet and physical inactivity are much needed.<sup>1</sup>

As there are no studies in this part of rural Bidar about risk factors of NCDs using WHO STEPS approach among rural population keeping this point in mind this study is being under taken.

#### **METHODS**

The present study will be carried out to find out the prevalence of risk factors of NCDs. It is a Community Based Cross Sectional Study conducted in Dhannura (S) of Bidar district which is Rural field practice area of department of community medicine Bidar Institute of Medical Sciences, Bidar. People who are aged 15and above were enrolled for the study. As per the WHO STEPS approach sample size was calculated using the formula n=Z 2 P(1-P)/e2 =384, with design effect of 1.5, 4 age-sex estimates desired for the study and 1.8 to adjust for the anticipated 20% non-response rate the final sample size came as 2880. Hence we studied a total of 2957 subjects. The study was carried out from December 2016 through May 2017.

Data collection procedure: Multistage sampling was used for the selection of study participants. WHO STEPS tool was used for the collecting the information from each participants. The purpose of study was explained to the study participants and written consent was obtained individually.

The pre-tested proforma included essential details of socio demographic and risk factors for NCDs like tobacco use and alcohol consumption. Updated B.G. Prasad's socio economic status scale was used to classify study subjects based on per-capita monthly income. Blood pressure was measured using inflatable mercury sphygmomanometer in supine position. Two readings were taken at an interval of five minutes, and the average value of the measurements was used for the analysis. JNC VII criteria were used to classify the blood pressure. Stadiometer was used to measure height and weight was measured with digital weighting machine. Weight and height was measured to calculate BMI by using the formula: weight (kg)/height (m2). Classification was

done according to The International Classification of adult underweight, overweight and obesity according to BMI to define the obesity. <sup>10</sup> The data was analyzed by using MS excel and Epi-info 3.5.1 version software and appropriate statistical tests were employed.

#### RESULTS

A total of 2975 persons were interviewed of which 1596 were males and 1361 were females. The socio demographic characters among the study population, maximum (48.6%) belong to the age group of 15 – 35 years. 68.1% were having educational qualification below secondary/higher secondary. Hindus constituted 92%. 47.2% belonged to lower middle and 39.6% belonged to lower socioeconomic class. Majority (44.8%) of them were either farmers or labour/ unskilled workers (Table 1).

Table 1: Socio demographic profile of study population.

	Male	Female	Total	
Variable	n=1596	n=1361	n=2957	
Variable	(%)	(%)	(%)	
Age group	(70)	(70)	(70)	
15-25	417 (26.1)	321 (23.6)	738 (25.0)	
25-35	366 (22.9)	332 (24.4)	698 (23.6)	
35-45	251 (15.7)	238 (17.5)	489 (16.5)	
45-55	206 (12.9)	191 (14.0)	397 (13.4)	
55-65	180 (11.3)	153 (11.2)	333 (11.3)	
>65	176 (11.0)	126 (9.3)	302 (10.2)	
Education				
Illiterate	343 (21.5)	455 (33.4)	798 (27.0)	
Primary	592 (37.1)	494 (36.3)	1086 (36.7)	
Secondary				
& higher	565 (35.4)	363 (26.7)	928 (31.4)	
secondary				
Graduate	94 (5.9)	49 (3.6)	143 (4.8)	
Post graduate	2 (0.1)	0 (0)	2 (0.1)	
Occupation				
Unemployed /student	319 (16.3)	698 (51.3)	1017 (34.4)	
Farmer	632 (32.3)	19 (1.4)	651 (22.0)	
Labour/unsk illed worker	431 (22.0)	243 (17.9)	674 (22.8)	
Skilled worker	191 (9.8)	42 (3.1)	233 (7.9)	
Household work	23 (1.2)	359 (26.4)	382 (12.9)	
Religion				
Hindu	1462 (91.6)	1257 (92.4)	2719 (92.0)	
Muslim	113 (7.1)	91 (6.7)	204 (6.9)	
Christian	15 (0.9)	8 (0.6)	23 (0.8)	
Others	6 (0.4)	5 (0.4)	11 (0.4)	

Socioeconomic classification				
Upper	3 (0.2)	1 (0.1)	4 (0.1)	
Upper middle	8 (0.5)	5 (0.4)	13 (0.4)	
Middle	227 (14.2)	146 (10.7)	373 (12.6)	
Lowe middle	785 (49.2)	612 (45.0)	1397 (47.2)	
Lower	573 (35.9)	597 (43.9)	1170 (39.6)	

In regard to tobacco consumption as risk factor for NCDs, 29.93% were using tobacco or tobacco products, of these majorities were males (98.42%). Among the tobacco products consumed most common was gutka followed by bidi and cigarette (Table 2). Alcohol

consumption as risk factor for NCD 27.29% were currently consuming alcohol, of these males comprised 97.77%, of them 47.7% consumed hooch followed by whisky and brandy. Among these only 0.9% consumed daily, whereas 93.8% consumed weekly once or twice. 50.9% consumed average of 90-180 ml of alcohol (Table 3).

The classification of blood pressure among the study population is 13.3% and 9.4% were in pre- hypertensive stage (Table 4). In the study population 3.42% were diabetic, of which 52.5% were males. Among males with diabetes 41.5% had BMI>25 and 69.81% had a family member with diabetes (Table 5).

Table 2: Prevalence of tobacco consumption as risk factor of NCD (n=885).

Gender	Gutka n=487		Bidi n=362		Cigarette n= 36		Total N=885 (%)
	<10	>10	<10	>10	<10	>10	N-005 (70)
Male	452	24	347	12	34	2	871 (98.42)
Female	9	2	3	0	0	0	14 (1.58)
Total	461	26	350	12	34	2	885 (100)

Table 3: Prevalence of alcohol consumption as risk factor (n=807).

Alcohol	Male n=89 (%)	Female n=18 (%)	Total n=807 (%)
Туре			
Beer	68 (8.6)	2 (11.1)	70 (8.7)
Brandy	87 (11.0)	0 (0)	87 (10.8)
Rum	9 (1.1)	0 (0)	9 (1.1)
Vodka	0 (0)	0 (0)	0 (0)
Whisky	251 (31.8)	5 (27.8)	256 (31.7)
Hooch	374 (47.4)	11 (61.1)	385 (47.7)
Frequency			
Monthly once	641 (81.2)	2 (11.1)	643 (79.7)
Monthly twice	114 (14.4)	0 (0)	114 (14.1)
Weekly once	11 (1.4)	7 (38.9)	18 (2.2)
Weekly twice	16 (2.0)	9 (50.0)	25 (3.1)
Daily	7 (0.9)	0 (0)	7 (0.9)
Quantity			
<90 ml	321 (40.7)	3 (16.7)	324 (40.1)
90-180ml	397 (50.3)	14 (77.8)	411 (50.9)
180-360ml	71 (9.0)	1 (5.6)	72 (8.9)

Table 4: Classification of blood pressure among the study population.<sup>9</sup>

Blood Pressure	Male n=1596 (%)	Female n=1361 (%)	Total n=2957 (%)
Normal	1205 (75.5)	1082 (79.5)	2287 (77.3)
Pre hypertension	172 (10.8)	105 (7.7)	277 (9.4)
Stage 1 hypertension	198 (12.4)	156 (11.5)	354 (12.0)
Stage 2 hypertension	21 (1.3)	18 (1.3)	39 (1.3)

Table 5: History of diabetes self and diabetes in family member among study population.

Gender	Diabetes self n=101 (%)	Body mass index>25 n=38 (%)	Diabetes in family member n=58 (%)
Male	53 (52.5)	22 (41.50)	37 (69.81)
Female	48 (47.5)	16 (33.34)	21 (43.75)

#### **DISCUSSION**

Globally, non-communicable diseases (NCDs) are the major cause of morbidity and mortality. According to WHO Report 2004, they account for almost 60% of deaths and 47% of the global burden of disease. In India, estimated deaths due to non-communicable diseases were double than those from communicable diseases. A progressive rise in the disease pattern of NCD foretells a serious public health issue. The major risk factors for non-communicable diseases are tobacco and alcohol abuse, a sedentary lifestyle, and an unhealthy diet.<sup>8</sup>

The socio demographic characters like the age group, maximum belong to the age group of 15-35 years, majority were having educational qualification below secondary/higher secondary. Nearly two third belonged to lower middle or lower socioeconomic class and majority of them were either farmers or labour/ unskilled workers. Similar finding were seen in study done by Bhagyalaxmi et al. 11 In this study the 29.93% were using tobacco or tobacco products, of these majority were males (98.42%). Among the tobacco products consumed most common was gutka followed by bidi and cigarette. In similar study done by Bhagyalaxmi et al showed prevalence of tobacco use as 22.8% among rural population. 11 In The non-communicable diseases risk factor survey 2007-08 by IDSP, Ministry of Health & Family Welfare Government of India showed that tobacco use ranged from 9%-42%.8 Studies done by Chadha et al, Gupta et al and Thankappan et al showed prevalence of smoking among rural population as 54.45%, 44.6% and 24.3% respectively and in all three studies use of smokeless tobacco like gutka was most common which is similar to the present study. 12-14 The recently conducted NFHS-4 state facts sheet Karnataka reports that the proportion of respondents consuming any form of tobacco as 38.5% and males outnumbered females.15

Alcohol consumption as risk factor for NCD, 27.29% was currently consuming alcohol. In similar study by Thankappan et al showed alcohol use among rural population as 10.1%. <sup>14</sup> The Non Communicable diseases risk factor survey 2007-08 by IDSP, Ministry of Health & Family Welfare Government of India and NFHS-4 state facts sheet Karnataka showed alcohol consumption as 11-20% and 30.3% respectively. <sup>8,15</sup>

The prevalence of hypertension among the study population is 13.3% and 9.4% were in pre- hypertensive stage. Among the hypertensive people 55.73% were

males and 44.27% were females. In similar study done by Bhagyalaxmi et al showed prevalence of tobacco use as 12-17% among rural population. The Non Communicable diseases risk factor survey 2007-08 by IDSP, Ministry of Health & Family Welfare Government of India showed that tobacco use ranged from 2–9%. NFHS-4 state facts sheet Karnataka showed prevalence of hypertension as 25.1% but present study showed much less prevalence of hypertension among the study population. Similar studies done by Chadha et al, Allender et al and Thankappan et al showed prevalence of hypertension among rural population as 7.4%, 19.1% and 35.7% respectively. 12,16,14

In the study population 3.42% were aware of their diabetic status, of which 52.5% were males. The Non Communicable diseases risk factor survey 2007-08 by IDSP, Ministry of Health & Family Welfare Government of India showed that tobacco use ranged from 1-6%. NFHS-4 state facts sheet Karnataka showed prevalence of diabetes as 14.7%. Similar study done by Thankappan KR et al showed prevalence of diabetes among rural population as 63.7% which is very high compared to present study. Among those who were aware of their diabetic status 57.43% had one of their family member also having diabetes. Among the study population with diabetes 41.5% had BMI>25 and its was more in males compared to females. Similar observations were found in studies by Thankappan et al and Allender et al. 14.16

## **CONCLUSION**

In this community based cross sectional study carried in rural part of Bidar district Karnataka, high burden of non-communicable risk factors were observed and some thought-provoking patterns of association of socio-demographic and behavioural risk factors were also seen which tells to create more awareness related to non-communicable diseases and its risk factors.

#### **ACKNOWLEDGEMENTS**

Authors thank Director Bidar Institute of Medical Sciences, Department of Community Medicine, interns Bidar Institute of Medical Sciences, MOH and staff of rural health training centre Dhannura (S) for their full support in carrying out this study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

#### REFERENCES

- Deepa M, Pradeepa R. Noncommunicable Diseases Risk Factor Surveillance: Experience and Challenge from India. Indian J Public Health. 2011;36:s50-6.
- 2. World Health Organization. Noncommunicable Diseases Country Profiles. 2011.
- 3. Dobe M. Health Promotion for Prevention and Control of Noncommunicable Diseases: Unfinished Agenda. Indian J Public Health. 2012;56:180-6.
- 4. WHO. The World Health Report 2002- Reducing risks, promoting healthy life. Geneva. WHO, 2002.
- Krishnan A, Shah B. Prevalence of Risk Factors for Non-Communicable Disease in a Rural Area of Faridabad District of Haryana. Indian J Public Health. 2008;52:117-24.
- 6. World Health Organization STEPS approach. Available at: www.who.int/chp/steps/en/. Accessed on 10 November 2016.
- 7. Mangal A, Kumar V, Panesar S, Talwar R, Raut D, Singh S. Updated BG Prasad socioeconomic classification, 2014: A commentary. Indian J Public Health. 2015;59:42-4
- 8. National Institute of Medical Statistics, Indian Council of Medical Research (ICMR), 2009, IDSP Non-Communicable Disease Risk Factors Survey, Phase-I States of India, 2007-08. National Institute of Medical Statistics and Division of Non-Communicable Diseases, Indian Council of Medical Research, New Delhi, India.
- Reference Card From the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) Available at: https://www.nhlbi.nih.gov/ files/docs/resources/heart/phycard.pdf Accessed on 10 February 2017.
- 10. The International Classification of adult underweight, overweight and obesity according to

- BMI. Available at: http://apps.who.int/bmi/index.jsp?introPage=intro\_3.html Accessed on 10 November 2016.
- Bhagyalaxmi A, Trivedi A, Jain S. Prevalence of Risk Factors of Non-communicable Diseases in a District of Gujarat, India. J Health Popul Nutr. 2013;31(1):78-85.
- 12. Chadha SL, Gopinath N, Shekhawat S. Urban-rural differences in the prevalence of coronary heart disease and its risk factors in Delhi. Bull World Health Organ. 1997;75:31-8.
- 13. Gupta V, Yadav K, Anand K. Patterns of tobacco use across rural, urban, and urban-slum populations in a north Indian community. Indian J Community Med. 2010;35:245-51.
- 14. Thankappan KR, Shah B, Mathur P, Sarma PS, Srinivas G, Mini GK et al. Risk factor profile for chronic non-communicable diseases: results of a community- based study in Kerala, India. Indian J Med Res. 2010;131:53-63.
- National Family Health Survey (NFHS-4) 2015-16, fact sheets for key indicators based on final data, Karnataka, International Institute for Population Sciences (IIPS), India. Available at: http://rchiips.org/NFHS/factsheet\_NFHS-4.shtml Accessed on 14 March 2017.
- Allender S, Lacey B, Webster P, Rayner M, Deepa M, Scarborough P, et al. Level of urbanization and non-communicable disease risk factors in Tamil Nadu, India. Bull World Health Organ. 2010;88:297-304.

Cite this article as: Tondare MB, Havale NG, Bedre RC, Kesari P. Prevalence of risk factors of non-communicable diseases among rural population of Bidar. Int J Community Med Public Health 2017;4:2681-5.