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Original Research Article

A study of non-communicable diseases risk factors among the tribal population of Lefunga block, Tripura: cross sectional study

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ABSTRACT

Background: The burden of non-communicable diseases such as diabetes and coronary heart disease is increasing both globally and in India. The present study was conducted to estimate the prevalence of risk factors associated with non-communicable disease and to study the association of the risk factors with non-communicable disease among tribal population of Lefunga Block of Tripura.
Methods: A cross-sectional study was conducted in Lefunga block during April to June 2017 among 150 Indigenous tribal population of Tripura. Multistage random sampling was used. A predesigned, pretested, semi-structured modified WHO STEPs questionnaire was used. Chi square and Multiple Logistic Regression was done to see association.
Results: Mean age was 39.03±12.76 years. Majority (66.7%) were females and (44.7%) had studied up to secondary. (26%) were tobacco smokers and (68%) were tobacco chewing. (36%) were alcoholic. (89.3%) had exercising for <2.5 hrs. 68% were taking vegetables >10 times/ week and 88.7% were taking fruits <5 times/week. (26%) were overweight, (45.3%) had abdominal obesity and 31% were hypertensive. 93.3% were aware of the harmful effects of tobacco consumption. Multiple logistic regression analysis showing factors associated with male were more likely to had higher abdominal obesity and alcohol user >50 yrs, government employee. With smoking, male having more chances of smoking and Age group of 20-30 yrs and 31-40 yrs.
Conclusions: The mean age was 39.03±12.76 years. (26%) were overweight, (45.3%) had abdominal obesity and (31%) were hypertensive. NCD clinic, IEC should be increased.

Keywords: NCD, Tribal, Lifestyle risk factors, WHO STEPS questionnaire

INTRODUCTION

The burden of non-communicable diseases (NCDs) such as diabetes and coronary heart disease is increasing both globally and in India. In 2008, of the 57 million global deaths, 36 million or 63% were due to NCDs and out of which CVDs were responsible for 47.9% deaths which is the largest proportion of NCD related deaths.[1] It may be said that not only developed countries will be affected by NCD, the developing countries will also equally, even more, will be affected.[2] The rate of increase of NCD in developing countries is almost double in comparison to developed countries.[3] It seems reasonable to argue that people with changing lifestyles due to growing urbanization are associated with adverse NCD risk factors irrespective of their habitat.[4] From rural 6.7% of women and 58.9% of men consume alcohol. 12.8% women and 14.9% men are overweight and obese (BMI>25 kg/m^2) in rural area of 15-49 age group and same for men is 13.4%.[5]

However, there is paucity of information regarding the non-communicable diseases risk factors among tribal population of Tripura. Hence the present study has been conducted to estimate the prevalence of risk factors associated with non-communicable disease among tribal population of Lefunga block of Tripura and to study the association of the risk factors with non-communicable disease among tribal population of Lefunga block of Tripura.

METHODS

This was a cross-sectional study conducted in a rural community Lefunga block during April to June 2017 among 150 Indigenous tribal population of Tripura. Indigenous tribes viz. Debbarma, Koloi, Jamatias were populated in these areas. The study was conducted among 150 indigenous tribal residents of the area considering a Prevalence of risk factor for NCD to be 11% reported by Oommen from a cross sectional study among Rural and Urban area of Tamil Nadu, with an absolute precision of 5 per cent at 5% level of significance.[6]

Multistage random sampling technique was used in the present study. Lefunga block had 10 villages out of which 5 villages were selected by simple random sampling in 1st stage. Then in the 2nd stage, from each village, 30 families were selected (as per Panchayat family registers) by systematic random sampling method considering every 2nd house. Data were collected through house to house visit. A predesigned, pretested semi-structured modified version of WHO STEPS questionnaire was used. Due to limited resources, biochemical analysis (STEPS 3) was not conducted. STEPS 1 included information on age, sex, education, marital status, tobacco use, alcohol consumption, consumption of fruits, vegetables and physical activity. In STEPS 2 height, weight, waist circumference and blood pressure were measured. Weighing machine, constant tension tape and stadiometer were used to measure weight, waist circumference and height, respectively. Blood pressure was measured using Omron digital automatic blood pressure monitor three times. The average of the last two readings was taken as the final reading for that participant. All the measurements were taken according to the STEPS protocol. Re-calibration of equipment was done at regular intervals pregnant woman. Persons below 18 years, Bed ridden patients with debilitating illness and who did not give consent were excluded from the study. Individual data collections were kept anonymous and strict confidentiality was maintained.

Data analysis was done by SPSS V19.0. Descriptive statistics were expressed in frequencies and percentages. Chi square test was applied to assess the association of different variables. $P<0.05$ was considered statistically significant. Multiple logistic regression analysis was applied to identify the risk factor association with demographic profile. Those variables which were found to be significantly associated with NCD risk factor by using Chi square test and Fisher exact test were only used as predictor variable in multiple logistic regression analysis. The study was conducted after obtaining permission from institutional ethics committee of Agartala Govt. Medical College.

RESULTS

Table 1 showed that the total number of respondents was 150. The mean age of the respondents was 39.03±12.76 years with a range of 20-70 years. The sample had 66.7% females and 33.3% males. Majority of the study participants were married, studied upto secondary school (44.7%) and 52% were not involved in any occupation at the time of study.

Table 1: Demographic characteristics of respondents.

Characteristics	Respondents	Frequency (N)	%
Sex	Male	50	33.3
	Female	100	66.7
Age group (in years)	20-30	56	37.3
	31-40	38	25.3
	41-50	24	16
	>50	32	21.3
Marital status	Married	136	90.7
	Unmarried	6	4.0
	Widow	8	5.3
Religion	Hindu	128	85.3
	Christian	22	14.7
Literacy	Illiterate	23	15.3
	Literate	18	12.0
	Primary School	32	21.3
	Secondary School	67	44.7
	Higher Secondary & Above	10	6.6
Occupation	Homemaker	78	52.0
	Unskilled labourer	37	24.7
	Skilled labourer	14	9.3
	Govt. employee	8	5.3
	Self employed	13	8.7

Table 2 shows that the different behavioural risk factors association with demographic profile in which tobacco can be consumed either in the form of smoking or chewing. Here 26% of the respondents were found to consume tobacco in the form of smoking. Out of them 11% smoked <4 bidis/day and 33% started smoking in the early age group. Majority (68%) were taking tobacco in the form of chewing, 59.3% were fond of eating pan

masala and 48.7% respondents started chewing tobacco after the age of 19 yrs. 36% of respondents were engaged in the drinking activity where 31.3% drink country liquor. 89.3% respondents are doing exercise for <2.5 hrs, 68% people are taking vegetables more than 10 times per week and 88.7% people are taking fruits less than 5 times.

Table 2: Behavioural risk factors of non-communicable diseases.

	Characteristic	Frequency (N)	Percentage (%)
Tobacco smoking			
Smoking	Yes	39	26
	No	111	74
No of bidis per day	<4	16	10.7
	4-8	14	9.3
	>8	9	6
Age of starting (in years)	≤19	13	33.3
	>19	26	66.7
Tobacco chewing			
Chewing tobacco	Yes	102	68
	No	48	32
Age of starting of chewing tobacco (in years)	≤19	29	19.3
	>19	73	48.7
Tobacco Form	Pan masala	89	59.3
	Sambhu (khaini)	6	4.0
	Ghutkha	4	2.7
	Others	3	2.0
Alcohol			
Drinking alcohol by the respondents	Yes	54	36
	No	96	64
Age of starting alcohol (in years)	≤19	10	6.7
	>19	44	29.3
Alcohol form	Country	47	31.3
	Others	8	5.3
Exercise			
Exercise in hrs	≤2.5	134	89.3
	>2.5	16	10.7
Vegetable intake			
Vegetable intake per week	<5	19	12.7
	5-10	29	19.3
	>10	102	68
Fruits intake			
Fruit intake per week	<5	133	88.7
	5-10	17	11.3

Table 3: Clinical risk factors of non communicable diseases.

Characteristics		Frequency (N)	Percentage (%)
BMI	Underweight	14	9.3
	Normal	98	63.3
	Pre- obese	35	25.3
	Obese class I	2	1.3
	Obese class II	1	0.7
Waist- hip ratio	Normal	82	54.7
	High Risk	68	45.3
Blood pressure	Normal	50	33.3
	Pre hypertension	55	36.7
	Hypertension stage I	33	22.0
	Hypertension stage II	12	8.0

Table 3 shows that the overweight was seen in 26%, abdominal obesity in 45.3% and 31% were suffering from hypertension. Table 4: 93.3% of the respondents were aware of the harmful effects of tobacco consumption. 72.7% said they received this awareness from electronic media.

Table 4 showed that 93.3% of the participants were aware about the harmful effect of tobacco on health and 65.3% would advice someone to quit tobacco. 72.7% would get source of information from electronic media about the harmful effect of tobacco.

Table 4: Awareness on harmful effect of tobacco consumption.

Characteristics		Frequency (N)	Percentage (%)
Harmful effect of tobacco	Yes	140	93.3
On health	No	10	6.7
Source of information on	Electronic media	109	72.7
Harmful effect of tobacco	Health worker	6	4.0
	Printed media	6	4.0
	Relatives/friends	13	8.7
Would advice someone to quit tobacco	Yes	98	65.3
	No	52	34.7

Table 5: Multiple logistic regression analysis showing factors associated with body mass index.

Characteristics	Normal/underweight	Obese	Odds ratio (95% C.I.)	P value
Sex				
Male	32	18	0.642 (0.238-1.731)	3.81
Female	79	21	1	
Occupation				
Household	63	15	2.712 (0.678-10.843)	0.158
Unskilled labourer	28	9	2.579 (0.681-9.767)	0.163
Skilled labourer	10	4	2.178 (0.440-10.784)	0.340
Govt. employee	3	5	0.495(0.081- 3.033)	0.447
Self employed	7	6	1	

Table 6: Multiple logistic regression analysis showing factors associated with waist hip ratio.

Characteristics	Normal	High risk	Odds Ratio (95% C.I.)	P value
Sex				
Male	44	6	13.753 (4.254- 44.462)	0.000
Female	38	62	1	
Occupation				
Household	32	46	2.247 (0.448-11.269)	0.325
Unskilled labourer	24	13	1.739 (0.354-8.528)	0.495
Skilled labourer	12	2	5.654 (0.637- 50.211)	0.120
Govt. employee	6	2	3.107 (0.302- 31.973)	0.341
Self employed	8	5	1	

Table 5 showed that factors associated with body mass index in which body mass index is not significantly associated with sex and occupation in Multiple Logistic Regression analysis.

Table 6 showed that Multiple Logistic Regression analysis showing factors associated with waist hip ratio in which males had 13 times more chances of higher abdominal obesity [13.75(95% CI 4.254-44.462)] as compared to female.

Table 7 showed that multiple logistic regression analysis showing factors associated with alcohol in which alcohol consumption is significantly associated with males in which males had six times more chances of alcoholic [6.307(95% CI 2.241-17.749)] as compared to female. There were 74% less chance of consuming alcohol as compared to age group of more than 50 yrs [0.267(95% CI 0.084-0.842] with a p value of 0.024. government employee had 87% less chances of Alcohol consumption [0.128(95% CI 0.015-0.220)] as compared to self employed.

Table 7: Multiple logistic regression analysis showing factors associated with alcohol consumption.

Characteristics	Yes	No	Odds ratio (95% C.I.)	P value
Sex				
Male	35	15	6.307(2.241-17.749)	0.000
Female	20	80	1	
Age group (in years)				
20-30	11	45	0.267(0.084-0.842)	0.024
31-40	14	24	0.713(0.223-2.279)	0.568
41-50	15	9	1.840(0.505-6.706)	0.356
>50	15	17	1	
Occupation				
Household	14	63	0.371(0.076-1.821)	0.222
Unskilled labourer	22	15	0.815(0.179-3.708)	0.791
Skilled labourer	9	5	1.187(0.189-7.467)	0.855
Govt. employee	2	6	0.128(0.015-0.220)	0.043
Self employed	8	5	1	

Table 8: Multiple logistic regression analysis showing factors associated with hypertension.

Characteristics	Normal	Hypertension	Odds Ratio (95% C.I.)	P value
Sex				
Male	10	40	0.785 (0.277-2.223)	0.648
Female	40	60	1	
Occupation				
Household	36	42	2.454 (0.543-11.096)	0.244
Unskilled labourer	7	30	0.759 (0.163- 3.525)	0.725
Skilled labourer	3	11	0.914 (0.148-5.625)	0.923
Govt. employee	1	7	0.468 (0.040-5.497)	0.545
Self employed	3	10	1	

Table 9: Multiple logistic regression analysis showing factors associated with tobacco smoking.

Characteristics	Yes	No	Odds ratio (95% C.I.)	P value
Sex				
Male	24	26	7.282 (2.020-26.254)	0.002
Female	15	85	1	
Age group (in years)				
20-30	4	52	0.075 (0.016-0.356)	0.001
31-40	7	31	0.244 (0.062-0.965)	0.044
41-50	10	14	0.500 (0.136-1.833)	0.296
>50	18	14	1	
Literacy				
Illiterate	12	11	1.523 (0.145-16.010)	0.726
Literate	8	10	2.000 (0.206-19.391)	0.550
Primary school	7	25	0.886 (0.095-8.259)	0.916
Secondary school	10	57	0.607 (0.078-4.722)	0.633
Higher secondary & above	2	8	1	
Occupation				
Household	13	65	0.995 (0.154-6.441)	0.996
Unskilled labourer	17	20	1.327 (0.252-6.994)	0.739
Skilled labourer	4	10	0.744 (0.098-5.672)	0.775
Govt. Employee	1	7	0.166 (0.011-2.596)	0.200
Self employed	4	9	1	

Table 8 showed that factors associated with hypertension in which hypertension is not significantly associated with sex and occupation in multiple logistic regression analysis.

Table 9 showed that Multiple Logistic Regression analysis in which Tobacco smoking is significantly associated with male having 7 times more chances of smoking [7.282(95% CI 2.020-26.254)] as compared to female, Age group of 20-30 yrs had 93% less chances [0.075(95% CI 0.016-0.356)] as compared to >50 years of age and 31-40 yrs had 76% less chances [0.244(95% CI 0.062-0.965)] as compared to >50 years of age.

DISCUSSION

The study was conducted by Kandpal on a tribal population in which 36% were males and 64% females.[7] In our present study, all the individuals are equal to or above 20 years of age, of which 33.3% are males and rest 66.7% are females. Bhagyalaxmi conducted on the prevalence of risk factors of NCD in a district of Gujarat, it was found that 10% of the study subjects were skilled labour.[8] In our study, it was found that 14% were skilled labour. Kandpal on Rang Bhotias which showed that 37.5% consumed alcohol, among this 78.8% of males and 14.1% of females were found to consume alcohol.[7] Our present study, showed that 36% of the study subjects consumed alcohol. Among which 70% of males and 20% of females were found to consume alcohol. Bhagyalaxmi conducted on prevalence of risk factors of NCDs in a district of Gujarat, it was observed that 23.8% were smokers.[8] In our study, it was found that among the study subjects 26% were smokers. In a study conducted by Prabhakaran on the employees of a large industry area near Delhi, they found that 70% were hypertensive.[9] Similar study, by Gupta on the urban population of Delhi reported that 73.9% were hypertensive.[10] In our study, it was observed that 66.7% of the study subjects were hypertensive. Misra conducted on Mishing tribe, showed 26% had BMI >25 Kg/m^2.[11] Another study, was conducted by Chadha in Delhi, showed 27.8% were having BMI >25 Kg/m^2.[12] In our study, it was observed that 25.3% had BMI>25 Kg/m^2. Kanniyappan conducted in south India showed 47.8% had waist-hip ratio above normal.[13] In our study, the proportion of men and women having waist-hip ratio >1.0 and >0.85 respectively was significantly higher of about 45.3%. Our study showed high prevalence of hypertension among the study subjects. Similarly, Prabhakaran and Gupta in their studies that hypertension was the most prevalent risk factor for development of CVDs.[9,10] The overall prevalence of hypertension was higher in individuals who consumed alcohol. In our study, the prevalence of CVD risk factors was found higher among those who consumed alcohol. Kandpal in which it was also reported that there was higher risk of developing CVD with alcohol consumption.[7] Bhagyalaxmi in her study reported that smoking tobacco was also a risk factor for development of NCDs, which in our study was also found to be a significant risk factor for developing NCDs.[8] A study by Mishra and Kanniyappan also reported BMI and waist-hip ratio as equally significant risk factor for development of CVDs.[11,13]

CONCLUSION

The tobacco and alcohol use, two of the major NCD risk factors were high in this population. A strong negative behaviour was the low level of physical activity among this population which could be the reason for low level of overweight and abdominal obesity, hypertension. Unhealthy diet was more prevalent among the illiterates which could be resolved by better education. Awareness on harmful effect of tobacco of health was higher and treatment and control of hypertension was lower probably due to inadequate access to health care.

Recommendations

Increase in number of NCD clinic. Enforcement of laws against use of tobacco and alcohol should be made more stringent. More information, education and communication activity regarding promotion of physical activity and balanced diet.

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