(International Print/Online Journal)

SJIF IMPACT FACTOR: 4.617
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume2, Issue 4, Page No: 241-247
July-August 2019

Assessing risk factors of Non-Communicable Diseases using STEPS Survey in a rural area of Thrissur District, Kerala

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

ABSTRACT

Background: One of the global targets for non-communicable diseases is to halt its progress by 2025. Cardiovascular diseases, cancer, diabetes and chronic respiratory diseases are the leading global cause of death and are responsible for 70% death worldwide. They share key modifiable behavioural risk factors like tobacco use, unhealthy diet, lack of physical activity and harmful use of alcohol which in turn results in development of risk factors like obesity, increased blood pressure, and increased cholesterol and ultimately disease.

Objectives: 1) To assess the prevalence of risk factors of non- communicable diseases in a rural area of Thrissur district, Kerala.
2) To find associations between the risk factors and socio-demographic factors of non-communicable diseases in a rural area of Thrissur district, Kerala.

Methods: A cross-sectional study was conducted in a rural area of Thrissur district. House to house survey was done and 3381 household members were interviewed during one year. Survey was done using interview schedule using 'STEPS' questionnaire for NCD risk factors.

Results: The prevalence of history of hypertension in the study population was 888 (26.3%) and history of diabetes was 647 (19.1%). Of all 460 (13.6%) people gave history of smoking any form of tobacco. There were 537 (15.9%) people who had vigorous physical activity at work.

Conclusion: STEPS surveys are needed periodically to strengthen NCD programme and policy making. As NCDs are life threatening and impair the quality of life, it is high time to take necessary actions to bring down the rising morbidity and mortality.

Keywords: Non-communicable diseases, Obesity, Physical activity, Risk factors, STEPS survey, Smoking.

INTRODUCTION

In low- and middle-income countries (LMICs) much attention and focus are on morbidity and mortality arising from infectious diseases. Currently the rising trend of non-communicable diseases is accounting for approximately 50% of deaths in high mortality regions of the world [(1)]. The burden of non-communicable diseases is posing an alarming threat to developing countries and is turning out to be a leading cause of mortality in India. The socioeconomic transition in India due to rapid urbanization, industrialization and globalization have influenced the health risk behaviour which has led to increasing burden of obesity, hypertension, diabetes and dyslipidemia [(2)].

Non communicable diseases (NCDs) such as cardiovascular diseases, cancer, diabetes and chronic respiratory diseases are the leading global cause of death and are responsible for 71% death worldwide [(3)]. These NCDs share key modifiable behavioural risk factors like tobacco use, unhealthy diet, lack of physical activity and harmful use of alcohol which in turn results in development of risk factors like obesity, increased blood pressure and increased cholesterol and ultimately disease [(4)]. NCDs also

known as chronic diseases tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors.

The World Health Organization (WHO) has agreed on a set of global voluntary targets linked to the Global Monitoring Framework to prevent and control NCDs by 2025, along with targets to reduce premature mortality from the main four NCDs by 25% [(5)]. In 2015, the 2030 Agenda for Sustainable Development recognizes the importance of addressing NCD issues and targets to reduce the number of premature deaths from NCDs by one-third by 2030 [(6)]. The key to control the global epidemic of NCD is by preventing primarily the risk factors based on community-wide comprehensive programmes. Few of the risk factors are common to all the NCDs and thus preventing those, results in prevention of a bulk of NCDs. Although low and middle income countries are affected mostly, NCDs still remain the leading cause of disability and death in developed countries [(7)].

In order to collect, analyze and monitor trends of risk factors in NCDs, STEPS approach has been recommended within and across countries by the WHO [(8)]. Very few studies have assessed the NCD risk factors comprehensively amongst the Indian population using standard methodology. Therefore, the present study was undertaken with the objective to measure the prevalence of major preventable risk factors for chronic non-communicable diseases and their association with socio-demographic characteristic of the adult population in a rural area of Thrissur District, Kerala using STEPS approach.

METHODOLOGY:

Study design and study setting:

A community based cross sectional study was conducted to achieve the aforementioned objectives. A rural area in Thrissur district was randomly chosen as study setting. The chosen village has a population of 18716 according to Population Census 2011. Majority of residents of the village are household workers and manual labourers. The study was conducted among men and women aged 15-54 yrs. House to house survey was conducted and one individual falling in the age group and with or without any risk factors studied in this study was randomly selected for interviewing.

Sample size calculation:

In the study NCD risk factor survey Phase I conducted by ICMR in 2009 in 7 different states of India, prevalence of current smokers was 10.5% for the state of Kerala. Using this P value, sample size was calculated with a precision at 90%. Calculated sample size was 3410. Out of the 3410 individuals there were 29 entries with incomplete data; hence 3381 individual data were included in the analysis process.

Study tool:

WHO STEPS questionnaire was used for interviewing the individuals. Questionnaire was translated into Malayalam which is the native language before administering it. Due to limitation of resources, biochemical analysis was not done. STEP 1 and STEP 2 parts of the questionnaire was used. STEP 1 included information on age, sex, education, occupation, marital status, tobacco use, smokeless tobacco use, alcohol use, consumption of fruits and vegetables and information on physical activity. In STEP 2, height, weight, blood pressure was calculated using weighing machine, measuring tape and sphygmomanometer.

Ethical clearance was obtained from Institution Ethics Committee. Confidentiality was maintained throughout the study. Written informed consent was obtained from all participants.

Statistical analysis:

Data was entered in MS Excel and coded. Analysis was done using SPSS 23 version licensed software. Proportions and percentages were calculated. Statistical associations were done using chi square and significance level was 5%.

RESULTS

A total of 3381 subjects were interviewed from the study population of which there were 1533(45.3%) females and 1848(54.7%) males. Mean age of the populations was 48.9±10.6 years. Majority of the study population belonged to the age group of 46-60yrs. Literacy rate of the study subjects was 100%. Table 1 is showing the socio-demographic details of study population.

Various behavioral risk factors accessed was use of smoking tobacco, smokeless tobacco, use of alcohol, inclusion of fruits and vegetables in diet, physical

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activity in work, mode of travel, type of recreational activity done and on the practice of yoga. Table 2 is showing addictions and exposure to smoke of the study population. Table 3 is showing other lifestyle habits like vigorous physical activity at work, walk/cycle use, leisure time activity and yoga practice of the study population.

Also history of hypertension and diabetes were also accessed. Out of the 3381 subjects, 250(7.4%) subjects had both diabetes and hypertension. Table 4 is showing history of doctor mentioning about hypertension and diabetes mellitus of the study population. Regarding dietary patterns of study subjects on fruits and vegetables, it was found that 112(3.3%) subjects never take fruits and 177(5.2%) subjects consume fruits three times a day and 121 (3.6%) subjects take fruits on all 7 days. Vegetables were taken thrice a day by 2318(58.6%) subjects and on all 7 days by 1616(47.9%).

When the association between gender and history of raised blood glucose and history of raised blood pressure was checked, there was no statistically significant association between the tested variables. Also there was no statistically significant association between alcohol consumption, diet, walking/cycling, sports/games, yoga practice and raised blood glucose and raised blood pressure. There was no statistically significant association between physical activity at work and raised blood glucose. There was statistically significant association between smoking habit and history of raised blood pressure with p value 0.02. There was statistically significant association between education, occupation and history of raised blood glucose and history of raised blood pressure which is depicted in table 5.

DISCUSSION

In a study conducted in Tanzania and Uganda habit of smoking was prevalent in 26% subjects compared to 13.6% in our study probably because people are aware of the ill effects of smoking. Also the prevalence of alcohol use in Tanzania and Uganda study was 21% and in this study it was 22.1% because although people have decreased use of smoking, they have not really stopped alcohol consumption. Also in the same study it was found that there was association between age and blood pressure and no association between smoking and raised blood pressure, the result is similar to what found in the current study [9].In a study conducted worldwide combining different countries of each continent it was found that collectively prevalence of raised blood glucose is 70%[10], in this study it was 19.1%which is lower.In this study, 26.3% subjects had history of raised blood pressure, but in a study conducted in Punjab prevalence was 39%[11]. In another study done in Punjab, physical activity at work was found in 31% of the study subjects, but in this study only 15.9% subjects had vigorous physical activity at work because unlike olden times there are equipment to do work. Also there were 95.8% subjects who never took fruits in a study conducted in Punjab compared to 3.2% subjects who don't take fruits at all in this study [12]. Better results in this study may be attributable to high literacy rate and availability of health facilities in this area.

In a similar study done in rural area of north Kerala, there were 10.1% subjects who walked or used bicycle to go for work, in this study 17.1% subjects walks or uses bicycle for work. But subjects who play a sport or games as recreation were 12.7% in the above mentioned study but in this study only 4.8% subjects play a sport or games as people have confined to smart phones and television [13]. Also there was no statistically significant association between physical activity at work and raised blood glucose and blood pressure in north Kerala study, but in this study there is association between physical activity at work and raised blood pressure but no association between physical activity at work and raised blood glucose [13].

Use of smokeless tobacco was found in 18% of subjects in a study conducted in Tamil Nadu, in this study there were 4.1% of subjects using smokeless tobacco which may be attributable to the health education and awareness programmes conducted in this state. Also there was association between alcohol and raised blood pressure but in the current study there was no association. And there was no association between intake of fruits and vegetables and history of raised blood glucose and blood pressure which is similar to this study results[14]. As per current scenario Kerala is in the state of health transition and non communicable diseases have started creating havoc and communicable diseases have not yet brought under control. The national programme for non communicable diseases is currently screening individuals, providing early

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diagnosis and is providing treatment and management for the same but these results are pointing to the fact that it's not adequate[15].

CONCLUSION

The highlighted point from the results is that there is decrease in physical activity, making use of sports and games for recreation activities by the subjects. People are slowly sliding into couch potato state and the efforts made through the national programmes are in vain. Public has to be motivated regarding better lifestyle and diet practice. Having hypertension and diabetes as companions for their lives has become a status symbol. These notions have to be changed. Also strengthening of awareness has to be made right from the grass root. Considering the current burden of NCDs in the community there is urgent need for planning and implementing community based interventions like health promotions and preventive measures. NCD control programmes can be made gender sensitive.

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TABLES USED IN THE MANUSCRIPT ARE GIVEN BELOW

Table 1: Table showing socio-demographic details of study population

Variables		Frequency	Percentage
Sex	Females	1533	45.3
	Males	1848	54.7
Age	15-25	139	4.2
	26-45	1047	30.9
	46-60	1776	52.5
	61-90	419	12.4
Education	Primary	2429	71.8
	Secondary	319	9.8
	Higher secondary	318	9.4
	Bachelor's degree	246	7.3
	Professional degree	59	1.7
Occupation	Professional	152	4.5
	Skilled	1787	52.9
	Unskilled	1169	34.5
	Unemployed	273	8.1

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Table 2: Table showing tobacco use and alcohol consumption of study population

Variables		Frequency	Percentage
Habit of smoking tobacco	Yes	460	13.6
	No	2921	86.4
Passive smoking	Yes	419	12.4
	No	2962	87.6
Habit of use of smokeless tobacco	Yes	138	4.1
	No	3243	95.9
Habit of use of alcohol	Yes	746	22.1
	No	2635	77.9

Table 3: Table showing vigorous physical activity at work, walk/cycle use, leisure time activity and yoga practice of the study population

Variables		Frequency	Percentage
Vigorous physical activity at work	Yes	537	15.9
	No	2849	84.1
Walk/cycle use to work	Yes	579	17.1
	No	2802	82.9
Sports/ games for recreation	Yes	161	4.8
	No	3220	95.2
Practice yoga	Yes	93	2.8
	No	3288	97.2

Table 4: Table showing history of doctor mentioning about hypertension and diabetes mellitus

Variables		Frequency	Percentage
History of hypertension	Yes	888	26.3
	No	2493	73.7

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History of diabetes mellitus	Yes	647	19.1
	No	2734	80.9

Table 5: Table showing association with history of diabetes and hypertension and other factors

SMOKING	History of hypertension		P VALUE
	YES	NO	
Yes	147(82.0%)	313(68.0%)	0.002
No	741(25.9%)	2180(74.6%)	
OCCUPATION	History of diabetes mellitus		
	YES	NO	
Professional	26(17.1%)	126(82.9%)	0.008
Skilled	320(17.9%)	1467(82.1%)	
Unskilled	224(19.2%)	945(80.8%)	
Unemployed	77(28.2%)	196(71.8%)	
EDUCATION	History of hypertension		
	YES	NO	
Primary	601(24.7%)	1828(75.3%)	0.027
Secondary	112(35.1%)	207(64.9%)	
Higher secondary	79(24.84%)	239(75.16)	
Bachelor's degree	75(30.5%)	171(69.5%)	
Professional degree	21(35.6%)	38(64.4%)	

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