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Original Research Article

Prevalence of risk factors for non-communicable diseases among adult population in district Amritsar of Punjab

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ABSTRACT

Background: The burden of chronic non-communicable diseases (NCDs) is rising rapidly all over the world. World Health Organization recommends surveillance of risk factors in different countries so that appropriate intervention is implemented to cut down the morbidity and mortality from NCDs. Hence, the presented study was planned with the objective of assessing the prevalence of common modifiable risk factors for NCDs in district Amritsar of Punjab.
Methods: The study was conducted in Urban Health Training Centre of Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar. Sample size of 400 was calculated by adopting WHO Stepwise approach to surveillance guidelines. Behavioural risk factors, physical measurements and biochemical measurements were studied. Data was collected, compiled and analyzed by using SPSS 19.0 for windows evaluation version.
Results: Majority of study subjects (98.75%) were taking inadequate vegetable and fruit servings irrespective of their age, gender, place of residence and educational status. The prevalence of physical exercise was also very low with only 86 (21.5%) of study subjects doing minimum recommended physical exercise. Among men, 27% of them were drinking alcohol, but among women, there was only one. Prevalence of smoking was very low (1.5%). Nearly one third (30.7%) of study subjects were overweight, 13.3% were obese, 35.3% were hyperglycemic and 36.7% were hypertensive. The prevalence of all these risk factors was found to be higher in higher age group.
Conclusions: Low physical activity coupled with poor fruits and vegetables intake and alcohol consumption along with high prevalence of obesity, diabetes and hypertension is worrisome and needs to be addressed effectively.

Keywords: Risk factor, Non-communicable, Diseases, Population

INTRODUCTION

The burden of chronic non-communicable diseases (NCDs) is rising rapidly all over the world. About 63% of all annual deaths globally are contributed by non-communicable diseases and it is expected that it will increase to 73% by 2020.[1] Most of these deaths occur in low income and middle income countries leading to significant social, economic and health consequences. In India too, prevalence of non-communicable diseases is very high. In cities like Channai and Delhi, six out of ten adults are either diabetic or prediabetic.[2] The rise of NCDs is driven primarily by four major risk factors i.e. tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets. Tobacco accounts for 7.2 million deaths every year. This figure is inclusive of mortality arising from the effects of exposure to second-hand smoke. Also, 6 million deaths annually can be attributed to insufficient physical activity. More than half of the 3.3 million annual deaths attributable to alcohol use are from NCDs, including cancer.[3] So, NCDs can be prevented through effective interventions that tackle these

shared risk factors like tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. According to World Health Organization if major risk factors for NCDs are eliminated, three quarter of heart diseases, stroke and type 2 diabetes would be prevented.[4] Therefore surveillance of risk factors is recommended in different countries so that appropriate intervention is implemented to cut down the deaths from NCDs. Hence, the presented study was planned with the objective of assessing common modifiable risk factors for NCDs in district Amritsar of Punjab.

METHODS

The study was conducted in Urban Health Training Centre of Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar from January 2017 to March 2017. The Centre is being run by Department of Community Medicine. The attendants of the children coming for vaccination ranging from 24 years of age to 64 years were enrolled in the study. Sample size of 400 was calculated by adopting WHO Stepwise approach to surveillance guidelines.[5]

Inclusion and exclusion criteria

Adults in the age group of 24 to 64 years who were willing to participate were considered eligible for the study. The purpose of study was explained to them and verbal consent was taken. But those who were too sick to give valid answers or who were not willing to participate were excluded from the study.

Each study subject was subjected to interview (Behaviour risk factor), physical measurements and biochemical measurements.

- *Behaviour risk factors*: It included ever use of alcohol, current smoking/ smokeless tobacco (daily or less than that), low physical activity (less than 150 minutes of exercise per week) and less than five servings of fruits and vegetables with one serving equal to 80gms translated into different units of standard cups depending on the fruit and vegetable.[5] A smoker is a person who at the time of study smokes any tobacco product either daily or occasionally.[6]

- *Physical measurements*: It included overweight (BMI 25-29.9 kg/m^2), obesity (BMI ≥30 kg/m^2)[7] and hypertension (blood pressure ≥140/90 mm of hg or on medication).[8]

- *Biochemical measurements*: Random blood sugar ≥180 mg/dl or on medication was considered as diabetic.

Weight was measured using digital weighing machine with 0.01 kg accuracy. It was standardized periodically with standard weights. Height was measured by using a stadiometer. Data was collected, compiled and analyzed by using SPSS windows evaluation version 19.0. Pilot testing was done before starting the study and required changes were made.

RESULTS

It was observed that 60.2% of study subjects were in the age group of 45- 64 years and rests were in age group of 24-44 years. Also 63% of study subjects were females. Large majority (68.5%) of study subjects were residing in urban areas. Literacy level of study subjects showed that only 28% of them had studied up to matriculation or higher (Table 1).

Table 1: Selected socio-demographic characteristics of study subjects.

Characteristics	No. (n=400)	Percentage (%)
Age		
24- 44	159	39.8
45-64	241	60.2
Sex		
Male	148	37.0
Female	252	63.0
Residence		
Urban	274	68.5
Rural	126	31.5
Education		
<10	288	72.0
10 or higher	112	28.0

Table 2 depicted that majority (98.7%) of study subjects were taking inadequate vegetable and fruit servings irrespective of their age, gender, place of residence and educational status. The prevalence of recommended physical exercise was also very low among study subjects with only 86 (21.5%) of them doing minimum recommended physical exercise. In age group 24-44 years, 29.6% study subjects were doing adequate physical exercise whereas the number decreased to 16.2% for the age group 45-65 years (OR-0.5, CI- 0.3 to 0.7). The percentage of study subjects doing recommended physical exercise was found to be less in rural areas (19%) in comparison to urban areas (22.6%) (OR- 1.7 CI- 1.0 to 2.7). Regarding alcohol intake, percentage of study subjects taking alcohol was low in 45-64 years of age group in comparison to 24-44 years of age (OR-1.6, CI- 0.8 to 3.0), but the difference was not statistically significant. Among men, 27% of them were drinking alcohol, but among women, there was only one. Prevalence of drinking alcohol was found to be higher in rural areas. Prevalence of smoking was very low with only 1.5% of study subjects smoking and all of them were men in the age group of 24-44 years (Table 2).

Table 2: Life style risk factors for NCDs in relation to age, sex, residence and education.

Characteristics	Inadequate fruits/vegetables serving per day	Crude *OR (CI)	Low physical exercise	Crude *OR (CI)	Alcohol intake	Crude *OR (CI)	Smoking	Crude OR (CI)
Age								
24-44 (159)	155 (97.5)	0.16 (0.02-1.5)	112 (70.4)	0.5 (0.3-0.7)	20 (12.6)	1.6 (0.8-3.0)	06(12.6)	20.5 (1.2-365.6)
45-64 (241)	240 (99.6)		202 (83.8)		20 (8.3)		00 (0)	
Sex								
Male (148)	145 (98.0)	0.6 (0.08-4.16)	116 (78.4)	0.9 (0.6-1.6)	39 (27.0)	89 (12.2-662.0)	06 (4.05)	23.0n (1.3-411.9)
Female (252)	250 (99.2)		198(78.6)		01 (0.4)		00 (0)	
Residence								
Urban (274)	271 (98.9)	0.9 (0.15 -5.58)	223 (81.3)	1.7 (1.0-2.7)	06 (2.2)	0.06 (0.02-0.14)	02 (0.7)	0.22(0.04-1.24)
Rural (126)	124 (98.4)		91 (73.4)		34 (27.0)		04 (3.2)	
Education								
<10 yrs (288)	286 (98.5)	3.9 (0.6-23.9)	214 (74.3)	0.35 (0.2-0.7)	31 (10.8)	1.4 (0.6-3.0)	06 (2.1)	5.2 (0.3-92.7)
10/ >10 yrs (112)	109 (97.2)		100 (89.3)		09 (08.0)		00 (0)	

* OR- Odds ratio, CI - Confidence interval.

Table 3: Physical and biochemical risk factors (overweight, obesity, diabetes and hypertension) for NCDs in relation to age, sex, residence and education.

	Overweight	Crude *OR (CI)	Obese	Crude *OR (CI)	Hyperglycemia	Crude *OR (CI)	Hypertension	Crude *OR (CI)
Age								
25-44 (159)	62 (39.0)	0.32 (0.2-0.48)	18 (11.3)	0.75 (0.40-1.37)	45 (28.3)	0.59 (0.38-0.91)	40 (25.2)	0.42 (0.27-0.65)
45-64 (241)	161 (66.8)		35 (14.5)		96 (39.8)		107 (44.4)	
Sex								
Male (148)	34 (22.9)	0.55 (0.34- 0.86)	20 (12.2)	1.07 (0.58 – 1.94)	50 (33.8)	0.90 (0.58- 1.38)	52 (35.1)	0.89 (0.59-1.37)
Female (252)	89 (35.3)		33 (13.9)		91 (36.1)		95 (37.6)	
Education								
Below matriculation (288)	83 (28.8)	0.73 (0.46- 1.16)	24 (8.3)	0.26 (0.14- 0.47)	77 (26.7)	0.27 (0.17-0.43)	95 (33.0)	0.57 (0.36-0.89)
Matriculation or higher (112)	40 (35.7)		29 (25.9)		64 (57.1)		52 (46.4)	
Residence								
Urban (274)	87 (31.7)	1.16 (0.73- 1.84)	41 (15.0)	1.67 (0.85 – 3.30)	95 (34.7)	0.92 (0.59- 1.43)	116 (42.3)	2.25 (1.40- 3.6)
Rural (126)	36 (28.5)		12 (9.5)		46 (36.5)		31 (24.6)	

* OR- Odds ratio, CI - Confidence interval.

Table 3 depicted physical measurements and biochemical risk factors. It was observed that 123 (30.7%) study subjects were overweight, 53 (13.3%) were obese, 141 (35.3%) were hyperglycemic and 147 (36.7%) were hypertensive. The prevalence of all these risk factors was found to be higher in higher age group. In the age group of 25-44 years only 39% were obese and 11.3% were overweight but these figures rose in the age group of 45-64 years to 66.8% and 14.5% for overweight (OR-0.32, CI=0.2-0.48) and obesity (0.75 (0.40-1.37) respectively. Similarly in the age group of 25-44 years, 28.3% were suffering from hyperglycemia and 25.2% were hypertensive, but with the advancement of age to 45-64 years, the prevalence of hyperglycemia and hypertension increased to 39.8% (OR-0.59, CI=0.38-0.91) and 44.4% (OR-0.42, CI=0.27- 0.65) respectively. Among all the study subjects, females had higher probability of being overweight in comparison to males (OR-0.55 CI=0.34-0.86). There was no significant difference among men and women in relation to diabetes and hypertension. It was also depicted that the prevalence of risk factors i.e. obesity, diabetes and hypertension, was higher among study subjects who had studied higher than matriculation and who were residing in urban areas and the difference was statistically significant. The prevalence of hypertension was higher among urban residents (OR-2.25, CI-1.40 to 3.6) (Table 3).

DISCUSSION

In the present study, it was observed that 39.8% study subjects were in the age group of 24-44 years while rests (60. 2%) were in the age group of 45-64 years. Also, 63% of study subjects were females. Large majority (68.5%) of study subjects were residing in urban areas. Literacy level of study subjects showed that only 28% of them had studied up to matriculation or higher.

Though in Punjab, availability of food is not a problem, in the current study it was observed that majority of study subjects were taking inadequate vegetable and fruit servings irrespective of their age, gender, residence and education status. Similar findings were observed in another study conducted in Tamil Nadu which indicates that habit of fruits and vegetables consumption needs to be inculcated.[9] Similar observations were depicted regarding exercise which is one of the important factors for non-communicable diseases. Only 21% of study subjects were doing minimum recommended physical exercise and there was no difference among men and women. In age group 24-44 years, 29.6% study subjects are doing adequate exercise whereas the number decreased to 16.2% for the age group 45-64 years (OR-0.5, CI=0.3-0.7) though the prevalence of NCDs increases with age. The percentage of study subjects doing adequate physical exercise was found to be less in rural areas (19%) in comparison to urban areas (22.6%) (OR-1.7, CI=1.0-2.7). Similar findings were observed in a state wide study conducted in Punjab.[10] Regarding alcohol intake, 20% (40) study subjects were taking alcohol and only one among them was female. Percentage of study subjects taking alcohol decreased with age, but the difference was not statistically significant. Prevalence of drinking alcohol was found to be lower in urban areas but education had no significant impact on drinking alcohol. Prevalence of smoking was found to be very less among study subjects. These findings are similar to another study conducted in Gujarat.[11]

It was observed that 30.7% study subjects were overweight and 13.5% were obese. In the age group of 25-44 years, only 39% were obese and 11.3% were overweight but these figures rose to 66.8% and 14.5% for overweight and obesity respectively in the age group of 45-64 years. In a study conducted in Punjab it was observed that 29.3% study subjects were overweight and 18% were obese.[12] These findings are in consistent with the current study. Females among study subjects had higher probability of being overweight in comparison to males and the difference was statistically significant (0.55 (0.34-0.86). Also, the prevalence of overweight and obesity was higher among urban residents than their rural counterparts but the difference was not statistically significant (OR-1.67, CI=0.85–3.30). Prevalence of obesity and overweight in the current study is though comparable to other studied conducted in Punjab, it is very high in comparison to studies conducted in South India states.[13,10]

In the current study, 35.2% were found to be diabetic and 36.7% were hypertensive. In the age group of 25-44 years, 28.3% were diabetic and 25.2% were hypertensive, but with the advancement of age to 45-64 years, the prevalence of diabetes and hypertension increased to 39.8% and 44.4% respectively. The prevalence of diabetes and hypertension was also higher among those who had studied up to matriculation or higher which might be because of life style differences and economic conditions. Prevalence of hypertension was also found to be higher in urban areas (42.3%) than their counterparts in rural areas (24.6%). These findings are in congruence with other studies, indicating that effective measures need to be adopted.[14,9]

CONCLUSION

In the present study, low physical activity coupled with poor fruits and vegetables intake was observed which poses threat to health and wellbeing of individuals. At the same time, alcohol consumption along with high prevalence of obesity, diabetes and hypertension is worrisome and needs to be addressed effectively by public health professionals.

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