

Original Research Article

A STUDY ON PREVALENCE OF RISK FACTORS FOR NON-COMMUNICABLE DISEASES AMONG ADULTS AGED BETWEEN 30-50 YEARS IN URBAN FIELD PRACTICE AREA GUNTUR

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ABSTRACT

Background: India is the most populous country and one of the developing countries and many people in various states are migrating towards urban areas for improvement of life style and economic status. Epidemic transition of the diseases occurred from communicable diseases to Non-communicable diseases. Non- Communicable Diseases have similar risk factors which include insufficient physical activity and fad diet which leads to obesity. These behavioural and biological risk factors, with a predisposition to the development of NCDs, are use of tobacco and alcohol, physical inactivity, overweight and obesity, increased fat and sodium intake, low fruit and vegetable intake, raised blood-pressure (BP), blood glucose and cholesterol levels.

Materials and Methods: A Cross-Sectional Descriptive Study was conducted among 500 people. WHO STEPS questionnaire was used. Statistical tests like chi-square were done to know the significance of results wherever they are appropriate.

Results: The mean SBP in males 129.2 ± 2.6 where as in females 129.1 ± 17.7 . In the present study mean DBP is 80.82 ± 9.2 in males where as in females 80.8 ± 10.6 . In the present study hypertensives are higher among 46-50 years age group compared to other age groups. This shows with increasing age, BP increasing and this shows statistical significance.

Conclusion: Prevalence of risk factors for NCDs such as smoking and alcohol were higher among males compared to females. Prevalence of high BMI and abnormal WHR were higher among females compared to males in the present study.

Keywords: Non-communicable diseases, risk factors, obesity, BMI etc.

INTRODUCTION

India is the most populous country and one of the developing countries and many people in various states are migrating towards urban areas for improvement of life style and economic status. Due to this, financial condition of persons shown a great change, which resulted in the changes in lifestyle. Due to the economic change of the population, epidemic transition of the diseases occurred from communicable diseases to Non-communicable diseases.^[1] NCDs such as diabetes mellitus,

hypertension, obesity have emerged as major public health issues in India.

Non- Communicable Diseases have similar risk factors which include insufficient physical activity and fad diet which leads to obesity.^[2] These factors concentrated more in urban population. The WHO initiated one new strategy called STEPS survey for NCDs risk factors. It was initiated to know patterns of NCDs across various countries throughout the globe.

Risk factor can be best explained as a characteristic of an Individuals behaviour or lifestyle or an

environmental exposure, or a genetic predisposition that causes an elevation in the appearance of a specific disease.

These behavioural and biological risk factors, with a predisposition to the development of NCDs, are use of tobacco and alcohol, physical inactivity, overweight and obesity, increased fat and sodium intake, low fruit and vegetable intake, raised blood-pressure (BP), blood glucose and cholesterol levels. Due to the life style modifications Non communicable diseases trend started in the younger age group people also. Early onset of the NCDs result in various complications which effect various organs of the body and reduces life span and also it results in morbidity. Especially younger age group people are more attracted towards various risk factors and they adopt those factors which in turn causes occurrence of these diseases at early age.

Problem Statement

41 million population dies every year because of Non-communicable diseases. 17 million population were killed prior they attain the age of 70 years because of Non-Communicable diseases.^[3]

Modifiable behaviours, such as tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol, all increase the risk of NCDs.

Tobacco causes 8 million deaths annually (including from the effects of exposure to second-hand smoke). 1.8 million deaths occurred due to increased sodium intake. More than half of the 3 million annual deaths attributable to alcohol use are from NCDs, including cancer. 830000 deaths yearly can be occurred due to low physical activity.

Rationale of The Study

In this background it can be said that Guntur is one of the rapidly urbanising and Industrialising districts in the state of Andhra Pradesh. With the tremendous growth in the Industrial sector as well as Urbanisation in and around the proposed capital city, a shift in lifestyle is being observed. The change in lifestyle or individual's behaviour results an epidemiological shift with increased noncommunicable diseases in the community. In this changed scenario of behavioural and environmental risk factors the present study was conducted to know the prevalence of risk factors for non – communicable diseases in Urban field practice area of Department of Community medicine, Guntur medical college, Guntur.

Aims and Objectives

1. To Estimate the prevalence of various risk factors (modifiable & non- modifiable) for non-communicable diseases among study population.
2. To know the association between risk factors for non- communicable diseases & socio-demographic characteristics.

MATERIALS AND METHODS

Study Design: A Cross-sectional descriptive study

Study Setting: Urban field practice area of department of community medicine, Guntur medical college, Guntur.

Study Population: Adults aged between 30-50 years in Urban field practice area of Department of Community medicine, Guntur medical college, Guntur.

Study Period: October 2022 to March 2024

Sample Size: Assuming prevalence of risk factors for Noncommunicable diseases as 50% and absolute precision l as 5%, the sample size was calculated by using the formula $n=4pq/l^2$ (where $p=50\%$, $q=100-p$ i.e. 50%)

- On substituting the values the sample size came to be 400.
- Taking 10% as nonresponsive rate, the sample size came to be 440 and it was rounded off to 500.
- Urban field practice area of Guntur medical college Guntur consists of 7 wards. For good representation of the study, it was decided to consider all 7 wards for collecting sample.
- A Detailed comprehensive list of individuals aged 30-50 years was obtained from each of the ward secretariat.
- The individuals aged between 30-50 years in these wards were 7684.
- The total sample 500 will be divided by Probability Proportion to Size (PPS) in which the ward with more population requires more sample and the ward with less population requires less sample
- All the individuals aged between 30-50 years will be assigned codes depending on the ward in which they reside.
- Then by using simple random sampling method by computer generated lists the study population will be identified in each ward.
- Depending on the sample size assigned to each ward house visits were done for data collection.

Inclusion Criteria: All the participants who are in the age group of 30-50 years & willing to participate

Exclusion Criteria: Those who are not willing to participate

- Pregnant women
- terminally ill patients
- Persons who are unable to communicate in Telugu, English or Hindi
- Persons who are unable to communicate because of complete deafness
- WHO STEPS Questionnaire was used
- STEPS Questionnaire includes Socio-demographic and behavioural measurements Physical measurements and Bio-chemical measurements.

Study Tools: include a pre designed, semi structured and pre tested questionnaire was used for collection of data. A pilot study was conducted among 30 participants to test the feasibility and validity of the questionnaire. Mercury

sphygmomanometer, stethoscope, weighing machine, measuring tape was used.

- The data was collected, entered and tabulated in MS Excel and analysed using SPSS 25 software

- Prior approval has taken from institutional ethics committee
- Informed consent was taken from the participants; confidentiality was maintained.

RESULTS

Table 1: Sociodemographic details of study population

Sociodemographic details	Percentage
Age group	
30-35	132 (26.4%)
36-40	81 (16.2%)
41-45	111 (22.2%)
46-50	176 (35.2%)
Sex	
Male	212 (42.4%)
Female	288 (57.6%)
Education	
Primary	25 (5%)
Middle	55 (11%)
High	102 (20.4%)
Intermediate	52 (10.4%)
Graduate	154 (30.8%)
Professional	42 (8.4%)
Illiterate	70 (14%)
Family type	
Nuclear	406 (81.2%)
Joint	85 (17%)
Three generation	9 (1.8%)
Socio-economic status	
Upper class	80 (16%)
Upper middle class	203 (40.6%)
Middle class	174 (34.8%)
Lower middle class	41 (8.2%)
Lower class	2 (0.4%)
Marital Status	
Married	479 (95.8%)
Divorced/Separated	3 (0.6%)
Single	13 (2.6%)
Widowed	5 (1%)
Family H/O NCD	
Yes	213 (42.6%)
No	287 (57.4%)

In the present study 57.6% are females and 42.4% are males. Most of the study population belong to 46-50 years age group. 40.6% of study population belong to upper middle class. 42.6% of study population had family history of NCD.

Table 2: Prevalence of risk factors among study population

Tobacco and usage of alcohol in past 30 days and one year was taken as current use.

Systolic Blood Pressure > or equal to 140 mm of hg, Diastolic Blood Pressure > or equal to 90 mm hg and presently on Antihypertensive drugs considered as increased BP

Fasting blood glucose > or equal to 126 mg/dl or presently using diabetes lowering drugs considered as increased blood glucose

Cholesterol range > or equal to 200 mg/dl or at present using cholesterol lowering drugs considered as raised cholesterol level.

<5 Servings of fruits and vegetables / day considered as low intake.

Waist-hip-ratio of >0.8 for females and >0.90 for males considered as abnormal.

Physical activity was assessed using the Global physical activity questionnaire (GPAQ)

Moderate Physical activity <150 minutes/week then it is considered as low physical activity.

Table 2: Prevalence of risk factors among study population

Risk factors	Prevalence
Waist hip ratio (WHR)	
Abnormal WHR >0.8 in women, WHR >0.9 in men	349 (69.8%)
Normal WHR <0.8 in women, WHR <0.9 in men	151 (30.2%)
BMI	
> 25	336 (67.2%)

<25	164 (32.8%)
Fruit & vegetable intake	
<5 servings/day	287 (57.4%)
>5 servings/day	213 (42.6%)
Amount of salt consumption	
<5 gms/day	303 (60.6%)
>5gms/day	197 (39.4%)
Oil consumption	
>1/2 litre/month	283 (56.6%)
<1/2 litre/month	217 (43.4%)
Blood pressure	
Hypertensive	156 (31.2%)
Normotensive	344 (68.8%)
Blood sugar	
Raised	86 (17.2%)
Normal	414 (82.8%)
Cholesterol	
Raised	19 (3.8%)
Normal	481 (96.2%)
Current Smoking	
Yes	26 (5%)
No	474 (95%)
Current alcoholism	
Yes	111 (22.4%)
No	389 (77.6%)
Physical activity	
<150 min/week	385 (77%)
>150 min/week	115 (23%)

349 study participants have abnormal WHR and 67.2% of study participants have BMI >25. 287 study participants have fruit and vegetable intake <5 servings per day. 17.2% of study participants have raised blood sugar and 31.2% are hypertensives. 5% of study population are current smokers. 385 people have physical activity <150 min/week.

Table 3: Prevalence of risk factors according to gender

Gender	Smoking (n=26)	Alcoholic (n=111)	Low fruit & vegetable intake (n=287)	Physical inactivity (n=385)	Raised blood sugar (n=86)	Raised cholesterol (n=19)	Raised BP (n=156)	High W/H ratio (n=349)	High BMI (n=336)
Male	26	85	129	156	35	7	69	124	130
Female	-	26	158	229	51	12	87	225	206

Majority of the alcoholics in the present study are males. All of the smokers in the present study are males. Remaining risk factors are high among females compared to males in the present study.

Table 4: Risk factors stratified according to gender and age

		SBP	DBP	Raised BP	BMI	WHR
Age Years (Male)						
		129.2 ± 2.6	80.82 ± 9.2	145.8 ± 4.6	26.2 ± 3.4	0.58 ± 0.43
30-35		127.6	80.7	140.9	25.5	0.59
36-40		124.3	79.6	140.2	25.6	0.52
41-45		125.5	78.6	141.3	26.0	0.53
46-50		134.4	82.5	149.9	26.9	0.64
Age in years (Female)						
		129.1±17.7	80.8±10.6	151.1± 17.9	27.7±4.8	0.7±0.3
30-35		125.6	78.4	156.3	26.9	0.73
36-40		122.9	78.2	145.7	28.2	0.53
41-45		127.1	79.09	149.5	26.9	0.81
46-50		136.9	85.7	150.6	28.9	0.90

The mean SBP in males 129.2 ± 2.6 where as in females 129.1± 17.7. In the present study mean DBP is 80.82 ± 9.2 in males where as in females 80.8 ± 10.6. The mean BMI in males 26.2± 3.4 where as in

females 27.7 ± 4.8. The mean value of raised BP in males is 145.8±4.6 whereas in females 151.1± 17.9. The mean WHR in males is 0.58± 0.43 whereas in females 0.7±0.3.

Table 5: Association between age and Blood pressure

Age of the person	Blood pressure measurement		Total
	Normotensive	Hypertensive	
30-35 years	106	27	133
36-40 years	68	13	81
41-45 years	80	31	111
46-50 years	90	85	175
Total	344	156	500

Chi square =41.1, df=3, p<0.05

In the present study hypertensives are higher among 46-50 years age group compared to other age groups. This shows with increasing age, BP increasing and this shows statistical significance.

Table 6: Association between age and raised blood sugar

		Diagnosis of raised blood sugar		Total
		No	Yes	
Age of the person	30-35 years	130	3	133
	36-40 years	68	13	81
	41-45 years	93	18	111
	46-50 years	123	52	175
Total		414	86	500

Chi-square=40.25, df=3, p<0.05

In the present study raised blood sugar is seen with increasing age and high among 46-50 years age group and this shows statistical significance.

Table 7: Association between Gender and BMI

Gender	BMI		Total
	<25	>25	
Female	83	206	289
Male	81	130	211
Total	164	336	500

Chi-square=5.1, df=1, p<0.05

In the present study females have higher BMI compared to males and this shows statistical significance.

Table 8: Association between Physical activity and BMI

Physical activity	BMI		Total
	<25	>25	
No	139	246	385
Yes	25	90	115
Total	164	336	500

Chi-square=8.2, df=1, p<0.05

In the present study people who have no physical activity has BMI>25 when compared with the people having physical activity and this shows statistical significance.

Table 9: Association between fruit and vegetable intake and raised cholesterol

Intake of fruits and vegetables	Diagnosis of raised total cholesterol		Total
	Normal	Raised	
< 5 servings/day	272	15	287
> 5 servings/day	209	4	213
Total	481	19	500

Chi-square=3.7, df=1, p<0.05

In the present study people who have low intake of fruits and vegetables have raised cholesterol when compared with people who have more intake of fruits and vegetables and this shows statistical significance.

Table 10: Multinomial Regression Analysis

NCD were the well-researched area where they were established with well described risk factors for

developing disease in individuals. In the present study we tried to estimate the relationship between the risk factors as an outcome to several independent factors like age, gender, educational status, personal habits, physical activity, vegetable/fruit servings per week, family history of NCDs and their socio-economic status.

Table 10: Multinomial Regression Analysis

	BMI	Raised Sugar	Raised BP	Raised Cholesterol	W/H ratio
Age (Ref= 46-50 years)	-1.819 (-)	0.417	-0.181 (-)	17.73 (-)	-1.966 (-)
30-35 years	0.481 (0.954-2.746)	3.062 (6.34-72.004)*	1.056 (1.648-5.012)*	2.217 (1.035-81.491)*	0.183 (0.671-2.149)
36-40 years	0.383 (0.803-2.68)	0.97 (1.296-5.366)*	1.468 (2.156-8.74)*	0.214 (0.282-5.439)	0.882 (1.292-4.513)*

41-45 years	0.286 (0.771-2.301)	0.92 (1.333-4.721)*	0.697 (1.168-3.453)*	0.051 (0.317-3.497)	0.181 (0.654-2.195)
Gender (Ref= Male)					
Female	-0.415 (0.429-1.015)	-0.423 (0.363-1.184)	0.255 (0.802-2.075)	-0.876 (0.111-1.561)	-0.806 (0.282-0.708)*
Highest Edu (Ref= Matriculation)					
Above Matriculation	0.897 (1.523-3.953)*	0.202 (0.687-2.179)	0.967 (1.601-4.321)*	0.282 (0.391-4.499)	1.366 (2.328-6.601)*
Illiterate	0.555 (0.897-3.384)	0.467 (0.724-3.513)	0.133 (0.613-2.125)	-0.513 (0.12-2.992)	-0.25 (0.329-1.846)
Tobacco (Ref= yes)					
Tobacco No	0.345 (0.825-2.419)	-0.064 (0.49-1.794)	0.418 (0.896-2.575)	-	-0.009 (0.557-1.761)
Alcohol (Ref= yes)					
Alcohol No	-0.022 (0.585-1.636)	0.119 (0.566-2.242)	0.215 (0.704-2.183)	0.297 (0.336-5.395)	-0.338 (0.413-1.231)
Physical Activity (Ref= yes)					
Physical Activity moderate	-0.093 (0.283-2.939)	-0.178 (0.202-3.465)	-0.16 (0.229-3.176)	2.954 (1.214-302.991)*	-0.127 (0.215-3.612)
Physical Activity No	-0.107 (0.329-2.454)	0.287 (0.381-4.666)	-0.539 (0.195-1.746)	2.111 (1.183-57.647)*	0.799 (0.643-7.679)
servings on one of these days (Ref: >5)					
servings on one of these days <5	0.423 (1.008-2.314)*	0.445 (0.909-2.679)	-0.286 (0.485-1.165)	1.3 (1.069-12.603)*	0.172 (0.751-1.878)
Family History (Ref: yes)					
No family history	0.156 (0.78-1.75)	0.704 (1.209-3.382)*	0.255 (0.84-1.982)	1.42 (1.372-12.482)*	-0.229 (0.514-1.23)
socio-economic (Ref= Upper middle)					
Lower middle	-0.137 (0.373-2.037)	0.18 (0.388-3.692)	-0.542 (0.265-1.276)	17.4 (0-c)	0.765 (0.887-5.208)
Middle class	0.32 (0.86-2.203)	-0.512 (0.329-1.093)	-0.42 (0.403-1.07)	-0.474 (0.185-2.089)	0.029 (0.61-1.738)
Upper class	-0.16 (0.477-1.522)	-0.344 (0.329-1.526)	-0.383 (0.351-1.326)	0.051 (0.23-4.813)	0.622 (0.025-3.386)

*Indicates Significant association ($p < 0.05$)

We found that when compared with 46-50 years age group, 30-35 years age group has 3 times less risk of having higher blood sugars.

People with education above matriculation had 0.8 times less chance of having high BMI when compared with individuals with matriculation. People with fruits/vegetable servings on one of these days <5 had 0.4 times higher chances of having high BMI when compared with individuals with servings on one of these days >5

We found that when compared with the 46-50 years age group, 30-35, 36-40, 41-45 years age group has 1.5, 1.4, 0.6 times less risk of having higher BP which indicates getting older makes people to have higher blood pressure.

When compared with the 46-50 years age group, 30-35 years age group has 2.2 times higher risk of having raised cholesterol. When compared with the individuals with physical activity, individual with no physical activity has 2.9 times higher risk of having raised cholesterol. When compared with individuals with fruits/vegetable servings on one of these days >5, individuals with servings on one of these days <5 has 1.3 times higher risk of having raised cholesterol.

People with education above matriculation had 1.3 times less chances of having high W/H ratio when compared with individuals with matriculation.

DISCUSSION

Prevalence of smoking in the present study is 5.2% (26). Prevalence of alcoholism is 22.4% (111). Prevalence of physical inactivity is 77% (385). Prevalence of low intake of fruits and vegetables is 57.4% (287). Prevalence of raised BMI (>25) is 67.2% whereas prevalence of abnormal WHR 69.8%. Prevalence of raised BP is 31.2% (156), raised blood glucose is 17.2% (86), raised cholesterol 3.8% (19).

Study conducted by Prashant Mathur et al,^[4] shows prevalence of smoking as 32.8% which was higher than prevalence in the present study (5.2%), prevalence of alcohol intake was 15.9% which was lower than prevalence in the present study (22.4%). Physical inactivity in the study conducted by Prasanth Mathur et al was 41.3% which was lower than prevalence in the present study (77%).

Study conducted by Thilagavathi Ramamoorthy et al,^[5] shows prevalence of smoking as 45.7% which was higher than prevalence in the present study. Prevalence of physical inactivity in the present study was 77% whereas proportion of physical inactivity in the study conducted by rammooorthy et al was 49.6% which was lower than present study.

Study conducted by J.S. Thakur et al,^[6] shows prevalence of smoking as 11.3% which was higher

than prevalence in the present study. Prevalence of raised blood pressure in the study conducted by J S Thakur was 40% which was higher than prevalence in the present study.

Reporting differences in the prevalence from various studies might be due to cultural factors, dietary factors, genetic factors and environmental factors.

Mean BMI in a study conducted by Bhagyalaxmi A et al,^[7] was 23.2±4.6 which was lower than mean BMI in the present study which is 26.2±3.4.

Study conducted by Frederick M Wekesah et al,^[8] shows prevalence of physical inactivity was 79.4% in males, 81.2% in females where as in the present study 40.5% of male population and 59.5% of female population are physically inactive.

Current study's observed proportion of diabetes was 17.2%, which is more than the estimated values for the nation (9%),^[9] the neighbourhood states,^[10] and a number of SEAR countries.^[9]

Males proportion more likely than females in present study to smoke tobacco, drink alcohol, and have raised blood pressure, similar with results from multiple other STEPS survey.^[11,12,13]

CONCLUSION

Present study is a community based cross sectional study conducted in urban field practice area of Guntur medical college, Guntur. Prevalence of risk factors for NCDs such as smoking and alcohol were higher among males compared to females. Prevalence of high BMI and abnormal WHR were higher among females compared to males in the present study.

Significant association is seen between age and blood pressure, age and blood sugar, gender and BMI, physical activity and BMI, low intake of fruits and vegetables and raised cholesterol.

Biochemical measurements are not done in the study, which is a limitation of this study.

Life style modifications such as eating fruits and vegetables, physical activity and cessation of smoking and alcohol plays a beneficial role. All the above said are modifiable risk factors which can be modified by the people themselves.

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