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## **Original Research Article**

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# Prevalence of risk factors for non-communicable diseases in Aligarh: a community based study

Riyaz Ahmed S.1\*, Mohd Haroon Khan2, M. Athar Ansari3

Department of Community Medicine, <sup>1</sup>Koppal Institute of Medical Sciences, Koppal, Karnataka, <sup>2</sup>S.H.K.M., Govt. Medical College, Nalhar (Mewat), Haryana, <sup>3</sup>J. N. Medical College AMU, Aligarh, Uttar Pradesh, India

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\*Correspondence: Dr. Riyaz Ahmed S.,

E-mail: drriyazahamed@gmail.com

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#### **ABSTRACT**

**Background:** Non-communicable diseases (NCD) are now recognized as major cause of morbidity and mortality. All countries, irrespective of their stage of economic development or demographic and epidemiological transition, face an increasing burden of non-communicable diseases (NCDs). The objective of the study was to estimate the prevalence of risk factors associated with non-communicable diseases.

**Methods:** This is a community based cross sectional study conducted at field practice areas of the urban and rural health training centers, Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh. 640 study subject's age group 18-65 years. Systematic random sampling and proportionate to population size method (PPS). SPSS version 13 and Chi-square was used to analyse the data.

**Results:** The age group for the present study was chosen to be 18-65 years of age. The study population consisted of 340 females and 300 males. 27.1% belong to younger age group (18-25 years), whereas in urban areas majority (27.3%) belongs to 26-35 years age group. Also, the study group comprised of higher percentage of females (53%) compared to males (47%).129 (20.2%) subjects were found to be current smokers. Only 4 (1.3%) women were smokers. The prevalence of smokeless tobacco use which was found to be 21.6% (28.3% in males and 15.6% in females). The prevalence of current alcohol use in our study to be 10.3% in males and 0.6% in females. The overall prevalence of alcohol use was 5.2%. Alcohol use showed inverse relation with socioeconomic class, About 87% of the respondents did not have sufficient intake of fruits and vegetables. The physical inactivity during work was more in males (30.7%) compared to females (15.5%. Mean body weight, BMI and waist circumference showed significant changes with age in both sexes.

**Conclusions:** It can be concluded from our study that the burden of risk factors for non-communicable diseases (NCDs) among the rural and urban areas of Aligarh is quite high.

Keywords: Umbilical cord, Untrained dais, Institutional deliveries

## INTRODUCTION

Non-communicable diseases (NCD) are now recognized as major cause of morbidity and mortality. All countries, irrespective of their stage of economic development or demographic and epidemiological transition, face an increasing burden of non-communicable diseases (NCDs). This increasing burden of non-communicable

diseases particularly in developing countries including India, threaten to overwhelm already stretched health services.

Non-communicable diseases are emerging as major cause of morbidity and mortality worldwide. The prevalence of chronic diseases is showing an upward trend in most countries.

The global prevalence of all the leading chronic diseases is increasing, with the majority occurring in developing

countries and projected to increase substantially over the next 2 decades.<sup>2</sup> Cardiovascular disease is already the leading cause of mortality in developing countries.

India too illustrates the phenomenon of 'health transition', which positions non communicable diseases as a major public health challenge of growing magnitude in 21<sup>st</sup> century.<sup>3</sup> Cardiovascular diseases, cancers, type – 2 diabetes mellitus account for 53% and 44% of all deaths and disability adjusted life years (DALY's) respectively in India.<sup>4</sup> Smoking prevalence and obesity levels among adolescents in developing countries have risen over the past decade and portend rapid increases in chronic diseases.<sup>5</sup>

These risk factors are interrelated to each other so much that appearance or occurrence of one factor paves the way for the other, there by leading to the development of noncommunicable diseases. Risk operates in continuation with adverse events in person with modest elevation of many risk factors, having multiplicative effect. Since the underlying risk factors of all the non-communicable diseases are common, identifying and modifying these risk factors have been recommended as a strategy for their prevention and control in various settings. This study was conducted to estimate the prevalence of risk factors associated with non-communicable diseases

## **METHODS**

The present community based cross sectional study entitled was conducted in the field practice areas of the urban and rural health training centers, Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh.

The study subjects age group 18-65 years included in the study were residents of four registered areas of the urban health training center (total population 12288) and seven registered villages of rural health training centre (total population 14,600). The study period was one year i.e. from September 2009 to August 2010. Systematic random sampling and proportionate to population size method (PPS) were used. The sample size of 640 was reached through the following considerations:

- Single person will carry out data collection from September 2009 to August 2010, on three working days in a week, it was estimated that approximately 700 respondents could be interviewed in the given time.
- Considering available studies and according to World Health Survey 2003, Uttar Pradesh, the prevalence of tobacco uses both smoking and smokeless tobacco was found to be 34%.

Using Formula =  $z^2pq/l^2$ , p = Prevalence = 34%, 1 (error) = 4, q = 100 - p = 66.

Substituting the values:

$$= \frac{(1.96)^2 \times 34 \times 66}{4 \times 4} + 20\% \text{ non response} = 530 + 106$$

= 639 = 640 (approximately).

### Plan of study

- Out of sample size of 640, nearly 384 (60%) was drawn from rural areas and 256 (40%) were drawn from urban areas.
- Informed consent was taken from all the respondents.

#### **Proforma**

- The WHO STEPS instrument for NCD Risk Factors was used for data collection. It is structured, semiopen ended interview based tool to be administered to one person at a time. It was pretested and modified suitably.
- The proforma contained questions regarding sociodemographic profile, smoking, smokeless tobacco and alcohol patterns, physical activity and nutrition.
- The proforma includes three parts as per the WHO STEPS approach.

Section 1: Baseline information was collected which included age, sex, religion, educational status and occupation, type of family, social class (modified Prasad classification)

Section 2: Included three parts.

- Step 1: Questions based on tobacco and alcohol use, Physical inactivity and nutrition.
- Step 2: Physical measurements of blood pressure, height, weight, and waist measurement.
- Step 3: Biochemical measurements.

#### Data collection

- Step 1 and step 2 of the STEPS approach were administered to all the individuals.
- Regarding step 3, all the respondents were asked to provide reports of recent fasting blood sugar level and serum cholesterol tests if any present and have been conducted during last 12 months. In Step 3 only those respondents were included who gave consent for blood tests.

#### Data analysis

Data was analyzed using the SPSS version 13. Chi-square was applied wherever applicable.

#### **RESULTS**

The age group for the present study was chosen to be 18-

65 years of age. The study population consisted of 340 females and 300 males. Table 1 shows the age sex composition of the subjects depending upon the locality. As seen from the table in rural areas, 27.1% belong to younger age group (18-25 years), whereas in urban areas

majority (27.3%) belongs to 26-35 years age group. Also, the study group comprised of higher percentage of

females (53%) compared to males (47%).

As shown in Table 2, 129 (20.2%) subjects were found to be current smokers. Only 4 (1.3%) women were smokers. The highest prevalence of smoking was found in 56-65 years age group, majority of the subjects (52.1%) were smoking about 6-10 items/day.

Table 1: Age – sex composition of the study subjects.

Age group	Rural			Urban	Urban			
(years)	Males (%)	Females (%)	Total (%)	Males (%)	Females (%)	Total (%)		
18-25	47 (24.0)	57 (30.3)	104 (27.1)	18 (17.3)	16 (10.5)	34 (13.3)		
26-35	31 (15.8)	37 (19.7)	68 (17.7)	32 (30.8)	38 (25.0)	70 (27.3)		
36-45	33 (16.8)	25 (13.3)	58 (15.1)	24 (23.1)	44 (28.9)	68 (26.6)		
46-55	23 (11.7)	29 (15.4)	52 (13.5)	14 (13.5)	44 (28.9)	58 (22.7)		
56-65	62 (31.6)	40 (21.3)	102 (26.0)	16 (15.4)	10 (6.6)	26 (10.2)		
Total	196 (51.0)	188 (49.0)	384 (100)	104 (40.7)	152 (59.3)	256 (100)		

Table 2: Patterns of smoking among study subjects in different age groups.

	Age groups							
Category	18-25 (n =138)	26-35 (n =138)	36-45 (n =126)	46-55 (n =110)	56-65 (n =128)	<b>Total</b> (640)	P	
Current smokers	10 (7.2)	19 (13.8)	32 (25.4)	20 (18.2)	48 (37.5)	129 (20.2)	0.001	
Never smokers	128 (92.8)	119 (86.2)	94 (74.6)	90 (81.8)	80 (62.5)	511 (79.8)	0.001	
Mean age of starting smoking	19.1±2.2	19.6±3.6	20.3±3.7	25.4±9.5	26.0±8.7	23.2±7.5	0.001	
Items smoked/day (%)								
≤5	1 (10.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.6)		
6-10	6 (60.0)	13 (72.2)	6 (20.0)	6 (33.3)	25 (52.1)	56 (45.2)		
11-15	3 (30.2)	0 (0.0)	5 (16.7)	1 (5.6)	9 (18.8)	18 (14.3)	0.011	
16-20	0 (0.0)	2 (11.1)	8 (26.7)	9 (50.0)	4 (8.3)	23 (18.5)		
≥20	0 (0.0)	2 (11.1)	11 (36.7)	2 (11.1)	10 (20.8)	25 (20.2)		

Table 3: Distribution of mean intake of fruits and vegetables by sex.

Intake	Mean intake (g/day)	Adequeer	
тпаке	Male	Female	Adequacy
Vegetables	310.2±23.2	286.6±25.8	Imadaquata
Fruits	48.0±7.6	40.5±8.4	Inadequate
Total	358.2±30.8	327.1±34.2	Inadequate

The prevalence of smokeless tobacco use which was found to be 21.6% (28.3% in males and 15.6% in females). In male users commonly consumed smokeless form of tobacco was gutkha in 68.8% subjects, whereas in female users it was chewing tobacco of about 67.9%. The prevalence was significantly lower in females. Our study reported only 4 (1.2%) women smokers out of 340 female respondents.

The prevalence of current alcohol use in our study to be 10.3% in males and 0.6% in females. The overall prevalence of alcohol use was 5.2%.

The prevalence of alcohol was more in rural areas (7.5%) compared to (2.0%) in urban areas. In our study no significant association was seen with education. However there was significant association with occupation and alcohol use. High prevalence was seen in unemployed (16.4%) followed by clerical/shop keepers (11.6%). It was more in Hindu (11.7%) than Muslim (1.3%) respondents. Alcohol use showed inverse relation with socioeconomic class, i.e., more in lower SES (6.9%) and almost nil in upper SES.

About 87% of the respondents did not have sufficient intake of fruits and vegetables. The proportion with insufficient intake of fruits and vegetables was 86% for males and 88% for females. The respondents were asked

about the number of days of vegetable and fruit intake in a week and number of servings of vegetable and fruit intake on a typical day. The most common type of oil used for cooking was mustard oil Table 3.

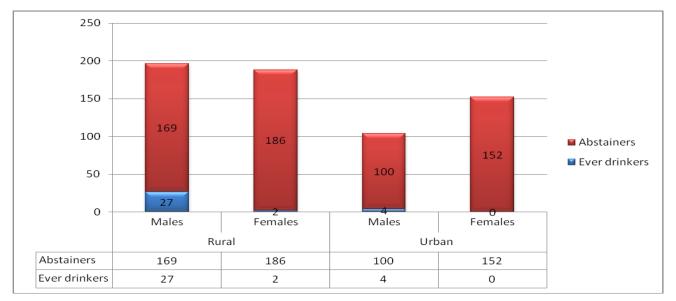


Figure 1: Distribution of ever drinkers by sex and locality.

The prevalence of physical inactivity (sedentary) showed a significantly increasing trend with increasing age in males and females which was significant. The physical inactivity during work was more in males (30.7%) compared to females (15.5%), whereas physical inactivity during leisure time was noted to be more in females (90.5%) compared to males (66.0%).

Mean body weight, BMI and waist circumference showed significant changes with age in both sexes and the high measurements of these parameters were found in 36-45 years age group.

## **DISCUSSION**

The age group for the present study was chosen to be 18-65 years of age. Most of the previous studies on the risk factors of CVD or DM have been conducted on adult population primarily international studies like Framingham study and North Karelia project were done with 30-59 years of age. Whereas MRFIT had included subjects in 35-57 years of age group. Other international studies have also been done in subjects aged 25 years and above. In India, Reddy et al conducted a study of risk factors of CVD, taking subjects belonging to 35-54 years age group.

The prevalence of current smoking in the present study was found to be 20.2%. Most of the studies reported higher prevalence compared to our study. It may be because of the inclusion of younger age group of 18-25 years. It is shown that the prevalence of tobacco use in younger age groups is comparatively lower. To give an example, Gupta et al reported 32% total prevalence of

smoking in urban population of Rajasthan. But the study was done in subjects aged 25-64 years and both past and current smoking was combined while reporting the prevalence.

Smoking prevalence was found to be comparatively high in rural areas, found to be 46.4% in males and 2.1% in females whereas in urban areas it was 32.7% in males. The prevalence of smoking habit was almost nil in females in urban areas. Our study reported only 4 (1.2%) women smokers out of 340 female respondents. This was in corroboration with the findings of smoking being far more prevalent in men than women. <sup>10</sup>

Prevalence of alcohol use in this study is in corroboration with the findings of the other studies. In Delhi, Mohan et al reported the prevalence of 12.6% and 9.6% in 2 separate studies. <sup>11</sup> Gupta et al reported the prevalence of alcohol consumption to be 15% in men and 2% in women in urban population and 19% in men and 2% in women in another study. <sup>12,13</sup>

According to World Health Survey, 2006 Uttar Pradesh, proportions of males who had never had alcohol were 87%, whereas in our study it was 94.8% of the respondents. He This difference may be because of the reason that majority of the Muslims do not consume alcohol. Two separate studies, carried out in Kerala found the high prevalence of 34% and 41% in men compared to our study. This difference may be because of the geographic variations, as the prevalence is high is southern parts of India. Similar prevalence (5%) to our study has been reported by Mehan et al in a study

conducted in middle income urban population in Gujarat.<sup>4</sup>

The prevalence of alcohol use in women was 0.6% which is significantly lower than men. The prevalence was found to be significantly lower in most other studies for example by Gupta et al. 12

The relationship of alcohol with education follows an inverse relation as seen in a study done by Crum et al.<sup>17</sup> However in our study there was no significant correlation of alcohol intake with education. There was significant difference in the prevalence of alcohol use in different SES. It was high in lower SES (6.9%) and almost nil in high SES.

Insufficient intake of vegetables and fruits was the most common behavior risk factor for NCDs present in our study. These findings are corroborated by the some studies conducted in India. The proportion with insufficient intake of fruits and vegetables was 76% for males and 72% for females. Sugathan et al reported nearly 87% of the study population of 6579 individuals was not in the habit of taking fruits adequately (at least once daily). <sup>16</sup>

It was observed in our study that prevalence of inactivity predominantly increased with age in both men and women. In a study by Gupta et al also, it was found to increase with age between 20-59 years and decline thereafter. 12

#### **CONCLUSION**

It can be concluded from our study that the burden of risk factors for non-communicable diseases (NCDs) among the rural and urban areas of Aligarh is quite high. Its prevalence even in the younger age groups that is 18-25 years is a pointer to the fact that the burden of NCDs is going to rise in near future. Therefore it is pertinent to recommend effective and sound measures for prevention and control of risk factors in the given community.

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