

## A COMMUNITY BASED STUDY ON THE PREVALENCE OF BEHAVIORAL RISK FACTORS OF NON-COMMUNICABLE DISEASES IN DAVANGERE CITY, KARNATAKA

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**ABSTRACT: BACKGROUND:** As we slowly advance into the 21<sup>st</sup> Century, we find that the challenges posed by non-communicable diseases (NCDs) present an imminent threat to people worldwide. The rapidly growing epidemic of non-communicable diseases is clearly related to changes in life styles. **OBJECTIVES:** 1) To study the socio-demographic factors of the region. 2) To assess the prevalence of behavioral risk factors for non-communicable diseases. **METHODS: Study Design:** A Community-based cross-sectional descriptive study. **Study Participants:** 2000 urban people of Davangere city, belonging to the age group 15-64 years. **Study Period:** 1<sup>st</sup> December 2008 and 30<sup>th</sup> November 2009 (1 year). **METHODOLOGY:** A multi-stage sampling method with households as sampling unit. Information on behavioral risk factors was obtained through standardized methods as recommended by the STEPS 1 survey guideline of the World Health Organization after modifying to suit the local requirement. **Statistical Analysis:** Proportion and Chi-square test. **RESULTS:** Total participants in the study were 2000, comprised of 1000 males' and 1000 females. High burden of NCD risk factors was observed among urban population: current smoking- 15.2% (Male-30.1%, Female-0.2%); current smokeless tobacco use -17.8% (Male-28.8%, Female-6.8%); current alcohol use -17.5% (Male-32.8%, Female-1.3%); physical inactivity-30.4% (Male-17.6%, Female-43.3). **INTERPRETATION AND CONCLUSIONS:** Substantially high levels of the various behavioral risk factors in this urban population suggest an urgent need for adopting healthy life style modifications among the population in general. The increased risk observed among the younger generation for risk factors such as smoking, alcohol consumption calls for urgent corrective steps and measures for long-term monitoring of all major risk factors as well as the major chronic disease conditions. **KEYWORDS:** Non-Communicable Diseases, Smoking, Alcohol, WHO STEPS, Behavioral Risk Factors.

**INTRODUCTION:** As we slowly advance into the 21<sup>st</sup> Century, we find that the challenges posed by non-communicable diseases (NCDs) present an imminent threat to people worldwide. Globalization delivers the uniform cause for the spread of chronic diseases to every corner of the World .<sup>1</sup> Chronic non-communicable diseases (CNCDs) are reaching epidemic proportions worldwide. These diseases - which include cardiovascular conditions (mainly heart disease and stroke), some cancers, and chronic respiratory conditions and type 2 diabetes mellitus - affect people of all ages, nationalities and classes.<sup>1</sup>

Chronic non-communicable diseases (CNCDs) are the leading cause of death in the World.<sup>1</sup> Accounting for around 60% of all deaths and 44% of premature deaths worldwide.<sup>2</sup> The rapidly growing epidemic of non-communicable diseases is clearly related to changes in life styles.<sup>3</sup>

India too illustrates the phenomenon of "health transition" which positions NCDs as a major public health challenge of growing magnitude in the 21<sup>st</sup> century. The incidence of Cardio vascular

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diseases (CVDs) and other NCDs are greater in urban areas when compare to rural areas in India.<sup>4</sup> NCDs account for 53 and 44% of all deaths and disability-adjusted life years (DALYs) respectively in India.<sup>5</sup> According to World Health Report 2002, cardiovascular diseases (CVDs) will be the largest cause of death and disability by 2020 in India.<sup>6</sup> Currently Indians experience CVDs deaths at least a decade earlier than their counterparts in countries with established market economies (EME).<sup>7</sup>

Since the underlying risk factors for all the NCDs are common, therefore primordial prevention of occurrence of risk factors along with their early identification and management can help delay the progress to non-communicable diseases.<sup>4</sup> With this scenario of the health situation, it is important to study the burden of non-communicable diseases risk factors using Indian data to know the real dimensions of the problem and work towards preventive measures.<sup>3</sup> Hence a community based study on prevalence of behavioral risk factors for non-communicable diseases in Davangere city among 15-64 years of population was undertaken, with the intention that the results of this study will provide necessary inputs for effective non communicable disease control in this region.

### OBJECTIVES:

- To study the socio-demographic factors of the region.
- To assess the prevalence of behavioral risk factors for non-communicable diseases.

### METHODOLOGY:

**Study Design:** A Community-based cross-sectional descriptive study.

**Study Period:** 1<sup>st</sup> December 2008 and 30<sup>th</sup> November 2009 (1 year).

**Study Area:** Davangere City.

**Study Population:** Data was collected from house hold members aged 15-64 years, who were residents of Davangere city.

**Sample Size:** Based on previous nationwide household survey, lowest prevalence of non-communicable diseases, about 5% was considered for the study.

Using Formula,

$$2\sqrt{\frac{pq}{n}}$$

Substituting values we got sample size of 1900. (Approximately 2000).

**ETHICAL CLEARANCE:** Taken from ethical committee of J.J.M. Medical College, Davangere.

**COLLECTION OF DATA:** Multistage sampling was used. The study included males and females in the age group of 15-64 years and this age group was further stratified in to five age and sex categories, each stratum with 10 years interval. There were 400 individuals in each of these strata, with this the total effective sample size of the study became 2000. In Davangere urban there are 40 wards, 20% of wards were selected for the study by simple random sampling method and which came to about 8 wards. In each of these wards, houses were selected by systematic random sampling procedure by visiting every "k" the house (data on number of houses in each ward was obtained from records of

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Municipal Corporation of Davangere City). From each house one person was interviewed according to need.

All subjects in the sample were informed about the purpose of the study. After obtaining the informed consent they were interviewed using a pre-structured and pretested questionnaire adopted from WHO STEPS 1 approaches for non-communicable diseases risk factors surveillance, after modifying to suit the local requirements.<sup>8</sup> Data was collected for following,

**STEP 1:** Information on socio-demographic variables and behavioral NCD risk factors including smoking tobacco, smokeless tobacco, alcohol consumption, physical activity (Job, Leisure time and Travel related physical activities). All the standard parameters and definitions were used according to WHO-STEPs recommendations.<sup>8</sup>

**DATA ANALYSIS STATISTICAL TESTS:** Data was analyzed by using Percentage proportions, Pearson's Chi-square ( $X^2$ ) tests.

### RESULTS:

Of the total 2000 participants, 1000 were males & 1000 were females. All participants were in the age group of 15- 64 years. The age group was divided in to five categories of 10 years age interval, in each category there were 400 participants with equal number of males and females (Male-200, Female-200). (Table: 1).

Majority (78.5%) of the subjects were belonging to Hindu religion, followed by Muslims (20.6%) and Christians (0.9%). Majority of the participants were literate (83.7%), while few were illiterate (16.3%). (Table: 2).

Most of the participants were home makers (32.5%), followed by unskilled workers (21.5%) and semiskilled (1.8%) workers. (Table: 3).

The prevalence of current smoking was 15.3%; among them almost all subjects were daily smokers (prevalence-15.2%). The prevalence of daily smoking habit was 30.1% among males, but the same was 0.2% among females. The mean age of initiation of smoking among men was 23.4 years. Among daily smokers the mean duration of smoking was 23.1 + 14.9 years. (Table: 4).

Prevalence of smoking was found to be highest in the age group of 55-64 years (33.7%), followed by 26.7% in 45-54 years and 22.4% in 35-44years. Prevalence of smoking was least in the age group of 25-34 years (7.9%). Increase in the prevalence of smoking as age increased among participants was found highly significant ( $P < 0.001$ ). (Table 5) Regarding type of smoking, the data revealed that the habit of using cigarette (70.2%) was more than beedi (27%) and pipe (2.6%). Average frequency of smoking among daily smoking men was 13.8/ day. (Not shown in table).

The study revealed that 17.7% of the subjects were current oral tobacco users, while few were used it in the past (0.4%). Prevalence of daily smokeless tobacco use was 17.8%, it was noticed that the prevalence was found more in males (28.8%) than females (6.8%). (Table: 6).

(Table 7). The most common form of smokeless form of tobacco used was chewing tobacco (66.2%), followed by gutka (33.8%). The mean age of initiation of the same was 24.2 ± 7.9 years. Among daily users the mean duration of using smokeless tobacco was 24.8 + 14.9 years among participants. Average frequency of using oral tobacco was 7 per day.

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Overall, the prevalence of consumption of smokeless tobacco increased with the age. Prevalence of smokeless tobacco use was more in the age group of 45-54 years (23.6%), while it was found to be least in the age group of 15-24 years (17.7%). (Fig. 1).

Alcohol consumption was defined as ever used alcohol in the lifetime, it was 23.1%. Consumption was more prevalent among men (44.6%), compared to women (1.6%). This difference was found statistically significant ( $P < 0.001$ ). Among total alcohol users, current alcohol use (within 12 months) was observed in 73.8% of participants. (Table: 8).

Prevalence of current alcohol use was 17.5% and prevalence was more among men (32.8%) than women (1.3%). This difference was found statistically highly significant ( $P < 0.001$ ). (Table: 9).

Leisure time sedentary activities were more prevalent among all the age groups, which is followed by job related and travel related sedentary activities in that order. Job related (69.3%) and travel (44.3%) related sedentary activities were more prevalent among the age group of 55-64 years as compared to other age groups, while leisure time physical activities were more prevalent in the age group of 35-44 years (88.7%). Overall prevalence physical inactivity (includes work, leisure time and while going and coming from market) was found 30.4%. (Fig. 2).

**DISCUSSION:** The risk factors of today are the diseases of tomorrow. Identifying these risk factors in populations occupies a central place in the surveillance system. Prevalence of smoking in our study was 15.2%. This finding is supported by the multi centric study conducted in Chandigarh, Delhi, Kanpur, and Bangalore (15.6%).<sup>9</sup> Prevalence of smokeless tobacco was 17.9 % in our study. Study conducted by Joshi et al<sup>10</sup> reported more prevalence (32.7%) compared to our study. Present study revealed that prevalence of chewing form of tobacco was more seen in older age group of 45-64 years and this finding is supported by the studies conducted by Joshi et al and Sen U et al.<sup>10, 11</sup>

Usage of smoking tobacco (Male – 30.4% and Women – 0.2%) and smokeless tobacco (Male – 29% and Women – 6.8%) were high in males, in the present study. This can be attributed to the fact that in the Indian population mostly men indulge in this unhealthy practice. This is also reported in other studies by Joshi et al, Meenakshi BM et al, Gupta OP et al, Thankappan KR, Suguthan T N et al and Nath et al.<sup>10, 12-16</sup>

The prevalence of current alcohol use in the present study was 17.5%. Prevalence was more among males (32.8%) compared to females (1.3%). A multi centric study conducted by Bela shah et al reported that prevalence of alcohol use was 40 – 50% in men, is slightly more than our study finding.<sup>17</sup> As noted above, women had a very low prevalence of alcohol intake, suggesting potentially beneficial influences of social mores.

In the present study, 66% of the subjects performed sedentary activities during working hours; similarly, 38.9% used motorized vehicle for travel and 84.5% were sedentary at leisure time. This could be attributable to poor awareness and high use of paid labor by housewives and use of mechanized means in kitchen preparations by females, leading to sedentary life style. Similarly, in men also, higher use of motorized vehicles and mechanization at workplaces lead to inactivity. The prevalence of overall physical inactivity among the free living urban population, in the present study was found to be 30.4%. The result of the present study is comparable with figures (31-51%) given by the WHO, and findings are also in accordance with studies conducted by Suguthan TN et al in Kerala and Nath et al.<sup>14, 15, 18</sup> Studies conducted by Meenakshi BM et al, Gupta R et al reported much high prevalence (> 70%) of overall sedentary activities in urban population as compared to our study.<sup>19</sup>

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### RECOMMENDATIONS:

- Strengthening the evidence for NCD prevention and control by assessing its burden and risk factors through NCD risk factors surveillance.
- A nationwide initiative to create awareness among the people regarding the harmful effects of tobacco and alcohol, with main focus on children, adolescents and adults, so as to deter early initiation of smoking and alcohol.
- Effective implementation of COTPA (Cigarette Other Tobacco Product Act), to prevent the advertisement of tobacco products and to prevent use of cigarette in public places, as well as legislation to reduce alcohol intake.

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Age groups (Yrs.)	Males	Females	Total	Percentage
15-24	200	200	400	20
25-34	200	200	400	20
35-44	200	200	400	20
45-54	200	200	400	20
55-64	200	200	400	20
<b>Total</b>	<b>1000</b>	<b>1000</b>	<b>2000</b>	<b>100</b>

**Table 1: Age & sex wise distribution of participants**

Variable	Variable categories	Number (%)N=2000
Religion	Hindu	1570 (78.5)
	Muslim	412 (20.6)
	Christian	18 (0.9)
Education level	Illiterate	326 (16.3)
	Literate	1674 (83.7)

**Table 2: Religion & education of participants**



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Occupation	Number	Percentage
Professional	38	1.9
Semi professional	80	4
Clerical/ Shop/ Farm	281	14.1
Skilled Worker	195	9.8
Semi-skilled worker	37	1.8
Unskilled Worker	430	21.5
Home maker	650	32.5
Students	289	14.4
<b>Total</b>	2000	100

**Table 3: Occupation of participants**

Smoking Status	Men Number (%)	Women Number (%)	Total Number (%)
Daily	301 (30.1)	2 (0.2)	303 (15.2)
Occasionally	4 (0.4)	0	4 (0.2)
Never	683 (68.3)	998 (99.8)	1681 (84.1)
Past Smokers	12 (1.2)	0	12 (0.6)
<b>Total</b>	1000 (100)	1000 (100)	2000 (100)

**Table 4: Current Smoking Status in men and women**

Age group	Smoking Tobacco	
	Yes Number (%)	No Number (%)
15-24	28 (9.2)	372 (21.9)
25-34	24 (7.9)	376 (22.1)
35-44	68 (22.4)	332 (19.5)
45-54	81 (26.7)	319 (18.7)
55-64	102 (33.7)	298 (17.5)
<b>Total</b>	303 (100)	1697 (100)

**$\chi^2 = 108.4, P < 0.001$  HS**

**Table 5: Relation between age and smoking tobacco**

Smoking Status	Men Number (%)	Women Number (%)	Total Number (%)
Daily	288 (28.8)	68 (6.8)	356 (17.8)
Occasionally	2 (0.2)	0	2 (0.1)
Never	704 (70.4)	930 (93)	1634 (81.7)
Past users	6 (0.6)	2 (0.2)	8 (0.4)
<b>Total</b>	1000 (100)	1000 (100)	2000(100)

**Table 6: Current Smokeless Tobacco use in Men and Women**

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Types	Men Number (%)	Women Number (%)	Total Number (%)
Gutka	119 (41.7)	0	119 (33.8)
Chew Tobacco	169 (58.3)	68 (100)	237 (66.2)
<b>Total</b>	<b>288 (100)</b>	<b>68 (100)</b>	<b>356 (100)</b>

**Table 7: Types of Smokeless Tobacco**

Consumption	Men Number (%)	Women Number (%)	Total Number (%)
Ever	446 (44.6)	16 (1.6)	462 (23.1)
Never	554 (55.4)	984 (98.4)	1538 (76.9)
<b>Total</b>	<b>1000 (100)</b>	<b>1000 (100)</b>	<b>2000 (100)</b>

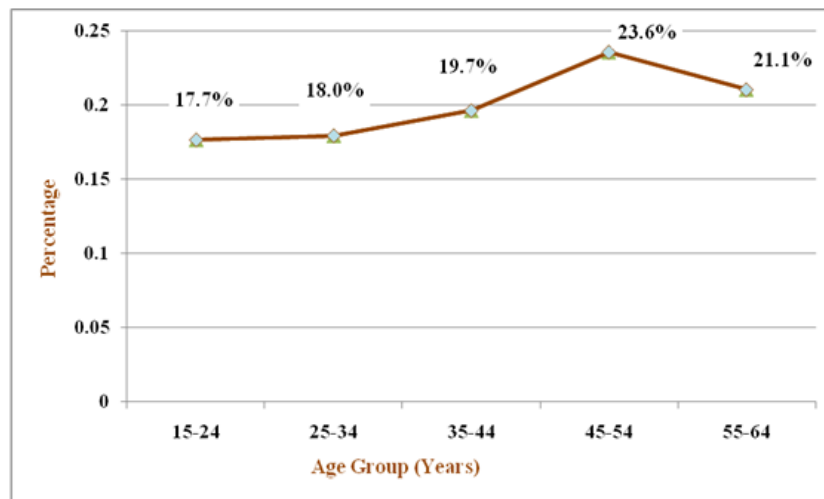
**$X^2= 520.4, P< 0.001$  HS**

**Table 8: Alcohol Consumption in Men and Women**

Consumers	Men Number (%)	Women Number (%)	Total Number (%)
Yes	328 (32.8%)	13 (1.3%)	341 (17.5%)
No	672 (67.2%)	987 (98.7%)	1659 (83%)
<b>Total</b>	<b>1000 (100%)</b>	<b>1000 (100%)</b>	<b>2000 (100%)</b>

**$X^2= 350, P< 0.001$  Highly Significant**

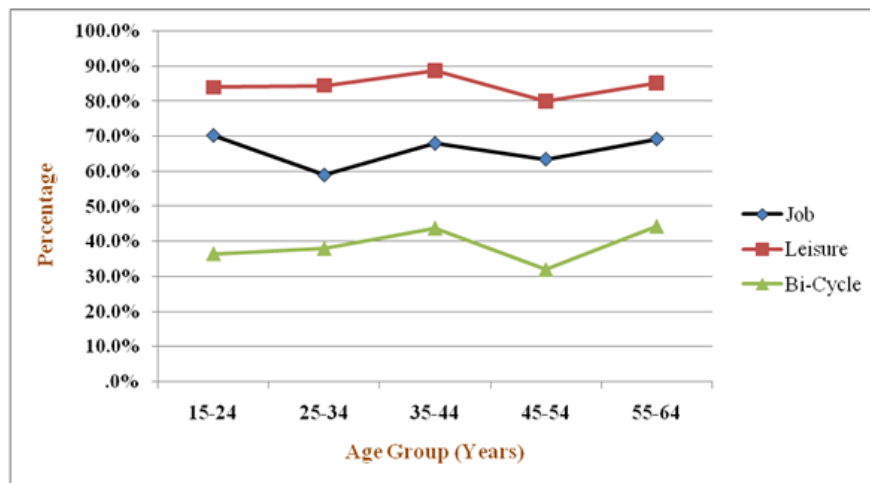
**Table 9: Current Alcohol Use**



**Figure 1: Age- wise distribution of smokeless tobacco**



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**Figure 2: Age-wise distribution of physical in-activities**

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