Prevalence Of Risk Factors For Non- Communicable Diseases Among Adult Population Of Vijayapur District Karnataka, India.

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ABSTRACT
Background: *The rise of non communicable diseases has challenged the foundation of public health among all the new threats which have emerged. People of all age groups, regions and countries are affected by NCDs. These conditions are often associated with older age groups, but evidence shows that 17 million NCD deaths occur before the age of 70 years.*
Methods*: The community based Cross-Sectional Study was conducted in the Urban Health filed practice area of Al Ameen Medical College Badi Kaman Vijayapur District – Karnataka. All adult population (18–60 years) residing at Urban Health Centre Badi Kaman Vijayapur District were included in the study .Pre-tested structured interview schedule was used to collect data.*
Results: *Among the total 400 participants, 10.5% were current tobacco users, 17.2% were current alcohol users and majority (93.8%) were having unhealthy diet.*
36.3% of the participants were in pre hypertension stage.
Conclusions: *study revealed that the burden of risk factors for NCDs is quite high. Since these risk factors can be modified, appropriate measures such as health promotion and disease prevention strategies should be adopted for better health related outcome.*
Keywords: *Risk Factors, Non-communicable disease, WHO STEP Approach.*

I.   Introduction:

The rise of non communicable diseases has challenged the foundation of public health among all the new threats which have emerged. After 19th century, there was improvement in health status and life expectancy due to changes in living condition, hygiene and nutrition. These changes have resulted in reduction of infectious diseases but increase in chronic diseases.[1]Non communicable diseases also known as chronic diseases tend to be of long duration and genetic, behavioural, environmental, physiological factors are the main contributing factors. The main types of NCD's are cardiovascular diseases, chronic respiratory diseases, cancer, stroke and diabetes. Globally 41 million deaths are due to NCD's, which is about 71% of all the deaths.[2] It is projected that deaths due to NCD's will reach around 55 million by 2030.[3] Most of the burden is seen in middle and low income countries. More than two third of deaths due to NCD's in South East Asia region is shared by India and around 60% of all deaths in India is due to NCD's. Compared to rest of the world, NCD's claim lives at younger age in South East Asia region.[4]

Adulthood is the most pivotal period of life, yet one of the most vulnerable times for physical ailments. It is a condition of being fully grown or mature which is characterized by age-related changes based on many factors such as molecular and cellular changes, lack of physical exercise and poor diet. Adult is a person who has attained the age of majority and is therefore regarded as independent, self-sufficient, and responsible.[5] Approximately 65.9% percent of the world's population are within the age group of 15-64 years. An overall adult population constitutes nearly 64.3 percent of the total population of India (Population census, 2011).[6]

An important way to control NCDs is to focus on reducing the risk factors associated with these diseases. Low-cost solutions exist for governments and other stakeholders to reduce the common modifiable risk factors. Hence this study focused to assess the prevalence of risk factors of non-communicable diseases and

their associated factors amongst the adult population urban filed practice area Badi Kaman of Vijayapur district Karnataka, India.

II. Material and methods:

The community based Cross-Sectional Study was conducted in the Urban Health filed practice area of Al Ameen Medical College Badi Kaman Vijayapur District – Karnataka . All adult population (18–60 years) residing at Urban Health Centre Badi Kaman Vijayapur District were included in the study , where as conditions like pregnancy , breastfeeding and already diagnosed of diabetes (type I and II), cancer, cardiovascular diseases , chronic respiratory diseases. , psychiatric patients, who are severely ill and those who rejected to participate in the study were excluded.

The sample size for the study was calculated based on a previous study done by Ghildiyal, et al [7], which showed a prevalence of alcohol consumption 24.5% which is one of the risk factor for non-communicable disease.

Using the formula 4PQ/L², the sample size was calculated with an absolute precision of 4.5%. Adding 5% refusal rate, the sample size was calculated to be 395 which were rounded off to 400. The urban filed practice area is divided in 4 blocks and from each block 100 adult population is selected. From every block, Each household was selected through systematic random sampling and one member of higher age between 20-40 years was taken from each household.

The study was carried out after obtaining approval from the Institutional Ethical Committee. The participants were briefed about the purpose of the study and informed consent was obtained prior to the data collection.

Data collection: Data was collected using the standardized pretested structured interview schedule using the WHO STEPS approach 1 and 2.Step 1 (Interview): Study protocol was based on the WHO STEPS   approach.   Information   on   socio-demographic variables and behavioural risk factors, such as tobacco-use, alcohol-use, physical exercise, and diet. Step 2 (Physical measurements): Height, weight, waist-circumference, and blood pressure were measured. Physical measurement, such as height and weight, was recorded to calculate BMI (kg/m2).[8]

III. Results

The table no1- showed that among 400 participants, 226(56.5%) were males and 174(43.5%) were females. Majority of them belonged toHindu religion (88.5%) and 6% to Muslim religion and 5.5% belonged to Christianity. Majority (79.5%) belonged tonuclear family whereas only 20.5% were in joint family. Most of our responded were married 51.2% whereas mixed diet was followed by 79.5% of the participants and 20.5% followed vegetarian diet. About 34% were illiterates and only 5% completed the .Among the participants 26.8% belonged to class 3, 24.7% belonged toclass 2 and 23.7% belonged to class 1 followed by 22.5% belonging to class 4 and 2.3% belonged to class 5 according to modified BG Prasad classification of socioeconomic class.

The four behavioral risk factors studied were tobacco use, alcohol use, low intake of fruits and vegetables and physical inactivity. The proportion of each risk factor among the study participants is shown in table 2. Among the total 400 participants, 10.5% were current tobacco users, 17.2% were current alcohol users and majority (93.8%) were having unhealthy diet which is consuming less than 5 combined servings of fruits and vegetables per day and 48.5% were physically inactive i.e. having less than 600 MET-minutes of activity per week.

Table-3 revealed that the pattern of tobacco use among males and females is. Amongthe 42 current tobacco users, 32 (76.2%) were males and 10 (23.8%) females. Among the 42 tobacco users, majority of them (71.4%) used smoking type and only 21.4% of the participants used smokeless type of tobacco products. Only 7.2% of the current tobacco users used both the type of products and none of the females used both typesof products. Among current tobacco users, 42.9% used the tobacco products once in aweek followed by 33.3% using 2-4 days in a week and 9.5% using 5-6 days in a week and 14.3% were daily tobacco users. Among the tobacco users 66.7% had intention toquit the habit of using tobacco products.

Table-4 showed that 69 were current alcohol users. Among them 50 (72.5%) were males and 19 (27.5%) were female alcohol users. Among 69 current alcohol users, 84.1% consumed alcohol with the frequency of less than once a month followed by 11.6% who consumed alcohol one to three days in a month, 2.9% consuming 5-7 days in a week and 1.4% consuming 1-4 days in a week. None of them were daily users. About39.1% of current alcohol users, consumed one standard drink per occasion followed by 31.9% consuming two standard drinks per occasion, 14.5% having three standarddrinks per occasion, 13% having less than one standard drink per occasion and only 1.5% having four standard drinks per occasion. About 55.1% of current alcohol usersdid not have the intention to quit alcohol use whereas 44.9% had intention to quit alcohol use. Majority (73.1%) of alcohol users stated that main reason for initiation of

alcohol use was curiosity, followed by peer pressure (17.9%), stress (5.2%) and pleasure (3.8%).

Table-5 shows majority (60.5%) were having normal BMI where as 31.7% were either overweight or obese and 7.8% were in the category underweight. About 79.5% were having normal waist circumference and 20.5% had waist circumference measurement above normal cut off. Only 0.5% of them had systolic hypertension whereas 36.3% of the participants were in pre hypertension stage.

Table-6 shows the association between socio demographic variables and current tobacco use. Among the 42 tobacco users, 14.2% males and 5.7% females used tobacco products and this difference was statistically significant. Other socio demographic variables such as religion (p=0.303), type of family (p=0.515), diet(p=0.063) and socioeconomic class (p=0.318) were not associated with tobacco use.

The association of socio demographic variables with inadequate physical activity is shown in table -7. The association of other variables such as gender (p=0.258), religion (p=0.829), native (p=0.082), type of family (p=0.661), diet (p=0.054) and socioeconomic class (p=0.463) with inadequate physical activity was statistically not significant

Table -7 shows that about 33% of study subjects who consume junk food more than three times a week were overweight and 27.7% of subjects who consume junk food less frequently were overweight or obese and this difference was statistically significant(p=0.023). The association between other socio demographic variables like gender (p=0.718), religion (p=0.565), , type of family (p=0.382), diet (p=0.573), socioeconomic status (p=0.093), physical activity (p=0.146) with BMI was not statistically significant.

IV.   Discussion:

Our study showed that 56.5% were male and 43.5% were female, similar findings were shown in Bista B et al. [9]. In a study conducted by Banerjee S et al [10], 40% were males, 60% were females, and similarly, 49.1% were male and 50.9% were female findings were seen in Jain S et al. [11].

The present study showed that 88.5% were Muslim and 79.5% had a mixed diet, and the majority fell under class III. Similar findings were seen in studies done by Bhagyalaxmi et al [12] and Tondare MB et al [13]. On the other hand, opposite results were found, where 83% were literate and 42% of the study population were from middle-class socioeconomic status, according to Banerjee S et al [10].

Our study showed that tobacco consumption was 10.5%. According to the 2016 GATS report, there is an overall decline in tobacco consumption from 34.6% to 28.6% in India from 2010. The most obvious decline in tobacco use was found among young users aged from 21.4% (in 2010) to 15.4% (in 2016) among the 18-24 years old age group [14]. The prevalence of current tobacco consumption was 22.5% and tobacco and alcohol use were found to be higher among males as compared to females in Pune [7], which is similar to the data provided by NFHS 5 [15] and the study by Bhagyalaxmi et al. [12]. However, tobacco consumption in our study was less than the one reported in a study done in North India (at 48.3% and 11.9%) [16].

Alcohol consumption was 24% among the study population. 45.5% of males and 0.5% of females were current alcohol users, giving a total prevalence of 22.6% [11]. The overall prevalence in Kerala, i.e., 23.1% (45.4% among men and 1% among women), was brought out by Thankappan et al in their study [17]. The IDSP non-communicable diseases risk factor survey in Madhya Pradesh reports that the prevalence of alcohol consumption was 32.6% in men and 4.3% in women, giving a total prevalence of 19.1% [18]. Gupta et al reported the prevalence of alcohol consumption to be 15% in men and 2% in women in the urban population, and 19% in men and 2% in women in another study.[19,20]

The prevalence of current smoking in the study by Ahmed et al [21] was found to be 20.2% , which is comparably less than our study findings. Another study showed the prevalence of smoking tobacco in any form to be 31.9%, with 64.6% in males and 0.3% in females [11]. Chennai showed that the prevalence of smoking was 55.8% among males and 0.2% among females in urban slums [22]. The prevalence of smoking tobacco in any form was found to be 31.9%, with 64.6% in males and 0.3% in females [11]. Gupta et al reported a total prevalence of 32% of smoking in the urban population of Rajasthan .[23]

Our study showed that 48.5% had inadequate physical activity, and a similar finding of 51% of the participants having a low level of physical activity was found in Sandu S et al. [24]. Almost 12% practiced vigorous physical activity, and 21.8% of subjects reported doing moderate physical activity .[25] In another study, 33.5% and 57.8% reported vigorous and moderate physical activity, respectively .[26] Low physical activity was observed among urban men (55.7%) and women (22.3%) in a study [12], which is consistent with other urban surveys. [27,28]

Overall, 69.3% of study participants were either overweight (38.1%) or obese (31.2%). Being overweight and obese was slightly more prevalent in women compared to men. Furthermore, 57.8% were centrally obese using waist circumference. 33%, 48.5%, and 18.5% were hypertensive, pre-hypertensive, respectively .[29] 33.1% of the participants were overweight, and 6% were obese .[24] The prevalence of overweight was as high as 30.4%, and 60.2% had abdominal obesity, which was significantly higher in women .[30] More

than half (52.2%) of the participants were overweight or obese [31], which is on the higher side compared to our study.

A study showed a high prevalence of hypertension among males (37.8%) compared to females (18.6%).[24] Similar findings were found in a study in Kerala, which showed that 34.9% of the population were hypertensive, with 36.2% being males and 33.6% being females .[32] This study revealed a hypertension prevalence of 5.7%, which was almost similar to our study.[33] The reason for this might be the dissimilarity in the study population, as disease prevalence is higher among the elderly population compared to young adults.

The most common behavioral risk factor for non-communicable diseases (NCDs) present in our study was insufficient intake of vegetables and fruits, with a prevalence of 93.8%. Similar findings were corroborated by Ahmed R S et al.[21] where the proportion of individuals with insufficient intake of fruits and vegetables was 76% for males and 72% for females . Sugathan et al.[33] reported that nearly 87% of the study population did not have the habit of consuming fruits adequately (at least once daily). Both men and women had low consumption of fruits and vegetables .[34]

Significant associations were found between different NCD risk factors and demographic characteristics. A statistically significant association was found between education and tobacco use, physical activity, and fruit and vegetable intake (P value: <0.05) .[35] Similar to the findings of other studies, tobacco use, alcohol consumption, and low physical activity were significantly higher in men than women. A significant association was found between the level of education and tobacco and alcohol consumption (P value: <0.01). The lower social group had a significant association between tobacco consumption and low physical activity (P value: <0.05) .[36] While they are not statistically significant in terms of other variables available (diet, low fruit and vegetable intake, smoke status, physical inactivity) .[37]

V.   Conclusion:

Among the various socio-demographic and risk factors checked for association with Non Communicable diseases   risk category; age, gender, marital status, type of family, insomnia, average consumption of fruits and vegetable, work related activity, smoking, alcohol, diabetes and hypertension were found to be significantly associated . Study revealed that the burden of risk factors for NCDs is quite high. Since these risk factors can be modified, appropriate measures such as health promotion and disease prevention strategies should be adopted for better health related outcome.

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Tables
Table-1: Distribution of study subjects according to sociodemographic characteristics

Sl.No.	Variable	Categories	Frequency	Percentage
1	Gender	Male	226	56.5
		Female	174	43.5
2	Religion	Hindu	354	88.5
		Muslim	24	6
		Christian	22	5.5
3	Marital status	Single	148	37
		Married	205	51.2
		Widow	47	11.8
4	Type of family	Nuclear	318	79.5
		Joint	82	20.5
5	Diet	Mixed	318	79.5
		Vegetarians	82	20.5
6	Education	Illiterate	136	34
		Primary school	107	26.75
		Middle school	18	4.5
		SSLC	86	21.5
		PUC	32	8
		Graduate and above	21	5.25
7	Socio Economic Status Class Modified BG Prasad	I	95	23.7
		II	99	24.7
		III	107	26.8
		IV	90	22.5
		V	9	2.3
		Total	**400**	**100**

Table -2: Prevalence of behavioral risk factors among study participants

Behavioral risk factors	Frequency (%)	
	Yes	No
Tobacco use (N=400)	42 (10.5%)	358 (89.5%)
Alcohol use (N=400)	69 (17.2%)	331 (82.8%)
Low intake of fruits and vegetables (N=400)	375 (93.8%)	25 (6.2%)
Inadequate physical activity (N=400)	194 (48.5%)	206 (51.5%)

Table-3: Pattern of tobacco use among study participants

Variable	Males (%)N=32	Females (%)N= 10	Total (%)N= 42
Type of product used			
Smoking	23(71.9%)	7(70%)	30 (71.4%)
Smokeless	6(18.8%)	3(30%)	9 (21.4%)
Both	3(9.3%)	0(0%)	3 (7.2%)
Frequency of tobacco use			
Everyday	5(15.6%)	1(10%)	6 (14.3%)
5-6 days	4(12.5%)	0(0%)	4 (9.5%)
2-4 days	12(37.5%)	2(20%)	14 (33.3%)
Once a week	11(34.4%)	7(70%)	18 (42.9%)
Intention to quit			
Yes	20(62.5%)	8(80%)	28 (66.7%)
No	12(37.5%)	2(20%)	14 (33.3%)

Table-4: Pattern of alcohol use among study participants

Variable	Males(%)N=50	Females(%)N=19	Total (%)N=69
Frequency of alcohol use			
5-7 days in a week	2(4%)	0(0%)	2 (2.9%)
1-4 days in a week	1(2%)	0(0%)	1 (1.4%)
1-3 days in a month	6(12%)	2(10.5%)	8 (11.6%)
Less than once in a month	41(82%)	17(89.5%)	58 (84.1%)
Number of standard drinks per occasiontaken by participants			
<1	5(10%)	4(21%)	9 (13%)
1	15(30%)	12(63.2%)	27 (39.1%)
2	19(38%)	3(15.8%)	22 (31.9%)
3	10(20%)	0(0%)	10 (14.5%)
4	1(2%)	0(0%)	1 (1.5%)
Intention to quit			
Yes	23(46%)	8(42.1%)	31 (44.9%)
No	27(54%)	11(57.9%)	38 (55.1%)

Table-5: Anthropometric measurements among study participants

Variable	Males (%)N=226	Females (%)N=174	Total (%)N=400
BMI			
Underweight	18(7.9%)	13(7.5%)	31(7.8%)
Normal	140(61.9%)	102(58.6%)	242(60.5%)
Overweight/obese	68(30.2%)	59(33.9%)	127(31.7%)

Waist circumference			
Normal	201(88.9%)	117(67.2%)	318(79.5%)
High	25(11.1%)	57(32.8%)	82(20.5%)
Blood pressure			
Normal	134(59.3%)	119(68.4%)	253(63.2%)
Pre hypertension	90(39.8%)	55(31.6%)	145(36.3%)
Hypertension	2(0.9%)	0(0%)	2(0.5%)

Table -6: Association between socio-demographic factors and current tobaccouse

Sl.No	Socio-demographicVariable		Frequency	Tobacco use		Chi-square	df	p-value
				Yes (%)	No (%)			
1	**Gender**	Male	226	32(14.2)	194(85.8)	7.403	1	**0.007****
		Female	174	10(5.7)	164(94.3)			
2	**Religion**	Hindu	354	35(9.9)	319(90.1)	1.231	1	0.303*
		Others	46	7(15.2)	39(84.8)			
4	**Type offamily**	Nuclear	318	35(11.0)	283(89.0)	0.423	1	0.515
		Joint	82	7(8.5)	75(91.5)			
5	**Diet**	Mixed	318	38(11.9)	280(88.1)	3.469	1	0.063
		Vegetarians	82	4(4.9)	78(95.1)			
6	**Socioeconomic status class**	Upper	194	25(12.9)	169(87.1)	2.289	2	0.318
		Middle	107	9(8.4)	98(91.6)			
		Lower	99	8(8.1)	91(91.9)			

*Fisher exact test. **significant at p value 0.05

Table-7: Association between socio-demographic factors and inadequatephysical activity

Sl. No.	Socio-demographic Variable		Frequency	Inadequate physicalactivity		Chi-square	df	p-value
				Yes (%)	No (%)			
1	**Gender**	Male	226	104(46.0)	122(54.0)	1.282	1	0.258
		Female	174	90(51.7)	84(48.3)			
2	**Religion**	Hindu	354	171(48.3)	183(51.7)	0.047	1	0.829
		Others	46	23(50.0)	23(50.0)			
3	**Type of family**	Nuclear	318	156(49.1)	162(50.9)	0.192	1	0.661
		Joint	82	38(46.3)	44(53.7)			
4	**Diet**	Mixed	318	162(50.9)	156(49.1)	3.708	1	0.054
		Vegetarians	82	32(39.0)	50(61.0)			
5	**Socioeconomicstatus class**	Upper	194	89(45.9)	105(54.1)	1.540	2	0.463
		Middle	107	52(48.6)	55(51.4)			
		Lower	99	53(53.5)	46(46.5)			