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Behavioral Risk Factors for Coronary Artery Disease among Adults Residing in Rural Area of Belagavi District, Karnataka

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Abstract:

Background: Cardiovascular Diseases including Coronary Artery Disease (CAD) account for two-thirds of mortality; progressively increasing in rural population. Individuals experiencing coronary events have one or more behavioral risk factors. Most of these events are preventable if meaningful intervention is initiated. *Aim and Objective:* To assess the behavioral risk factors for CAD among adults residing in rural area of Belagavi District. *Material and Methods:* A community based cross sectional study, conducted among rural adults aged between 20-60 years. After obtaining the ethical clearance, pilot study was conducted. Data were collected by home visits using a pretested, structured questionnaire, which included socio-demographic variables and behavioral risk factors such as tobacco and alcohol use, fruits and vegetable consumption, extra salt intake and physical inactivity. Chi-square test was used for statistical analysis and P<0.05 was considered significant. *Results:* Among 980 participants, 48.8% were men and 51.2% were women. The prevalence of the risk factors was as follows; smoking tobacco (10.9%), smokeless tobacco (35.7%), alcohol consumption (21.4%); non-consumption of fruits (8.0%); work, leisure time and travel related sedentary activity among 18.3%, 50.4% and 22.8% of the participants respectively. Men had higher proportion of these risk factors (P<0.0001). Advancing age, lower level of education, sedentary lifestyle and lower socio-economic status were significantly associated with majority of behavioral risk factors (P < 0.001). *Conclusion:* Our study demonstrated a higher prevalence of behavioral risk factors for CAD in a rural population of Belagavi district, with a significant gender difference. Burden of CAD risk factors in this population reflects epidemiological transition which requires immediate attention.

Keywords: Coronary Artery Disease, Behavioral Risk Factors, Rural Area, Adults.

Introduction:

Non-communicable Diseases (NCDs) are ascribed as a major public health challenge of 21st century. In spite of its slow progression over few decades, a rapid epidemiological transition is evident; contributing to 71% of all deaths globally, which are predominantly 'premature' (30-69 years) in nature [1]. Cardiovascular Diseases (CVDs) which include Coronary Artery Disease (CAD) and stroke account for the large proportion of all deaths and disability worldwide and a major barrier to sustainable human development [2]. An estimated 17.9 million people died from CVDs in 2016; 85% are due to heart attack and stroke occurring in Low and Middle Income Countries (LMICs) [2].

Estimates suggests, 2% reduction in chronic diseases death rates per year globally could result in saving about 36 million premature deaths [3].

The special features of CVD epidemiology in India are high mortality rates and increasing burden. Currently Indians experience CVD deaths at least a decade earlier than their counterparts in countries with established market economies [4].

Demographic projections indicate a major increase in CAD mortality in India due to epidemiological transition, with increase in life expectancy combined with increased lifestyle related risk factors [5]. People in the rural area constitute the majority of the population and CAD is progressively increasing in terms of absolute numbers [6]. The occurrence of CAD is at younger age in rural subjects as compared to urban population and deserves special attention [6]. Thus rural area residents constitute 'vulnerable population' for the development of CAD having worse outcomes due to harmful behaviors and lack of immediate health care access.

'Risk factor' refers to an attribute or characteristic of an individual whose presence raises the probability of an adverse outcome [7]. Majority of the individuals who develop CAD have one or more behavioural cardiovascular risk factors and most of these being preventable, if meaningful action is taken against them [7]. Many studies have proposed a close association of CAD in rural subjects with risk factors of faulty diet, tobacco consumption and sedentary lifestyle [6]. Early detection of CAD risk factors and appropriate intervention reduces the mortality by 35–60% [8]. The impact of the reduction in the burden of many of these risk factors will accrue within a decade and even modest changes in risk factor levels could bring about large benefits in terms of mortality reduction [3].

Validation study of the Framingham cardiovascular risk score in a multi-ethnic Asian population predicted the development of CAD based on estimates of major risk factors [9]. The basis of CAD prevention is the identification of the major behavioral risk factors and their control. The risk factors of today are the diseases of tomorrow [10]. The behavioral risk factors are not amenable for an easy alteration and requires meticulous tailor made intensified preventive interventions especially in the resource limited settings. Having such vital data is imperative to plan culturally appropriate interventions to minimize modifiable behavioral risk factors and hence combat the problem of CAD mortality and morbidity. Thus, this study was formulated to assess the behavioural risk factors for CAD among adults residing in the rural area of Belagavi district.

Material and Methods:

This community based cross sectional study was conducted at the villages under Primary Health Centre (PHC), Vantamuri, Belagavi District, Karnataka state, South India. The study was approved by the Institutional Ethics Committee for Human Subjects' Research affiliated to Jawaharlal Nehru Medical College, Belagavi. Adults aged between 20 to 60 years and residing in the the study area for at least past one year were included. Persons already diagnosed with CAD viz. myocardial infarction, angina, etc., in the past were excluded.

The sample size (N) was calculated using the formula $N=4PQ/d^2$, where 'P' is the prevalence of sedentary work behaviour in the National Risk Factor surveillance study as 11% [11] and 'd' absolute error as 2% the sample size obtained was

980. The total population under the randomly selected 4 villages under the PHC, Vantamuri was 8072. Recent voters' list was used to identify all the adults aged between 20 years to 60 years. Total numbers of adults satisfying the inclusion criteria were approximately 3800. Sampling frame was prepared. The studyparticipants were selected by simple random sampling using standard random number table.

Written informed consent was obtained from all the study participants, before enrollment. Questionnaire was prepared based on World Health Organization (WHO) – STEP approach for CAD Surveillance manual [10]. Pilot study was conducted using the pretested, structured questionnaire and required modifications were made as per the local requirements. Data was collected by individual home visits and personal interview of the participant by trained personnel. Data included personal and socio demographic variables viz. age, gender, education, main work status and Socio-economic Status (SES) classified as per the modified BG Prasad Classification.

The behavioral risk factor assessment included details of harmful health behaviors viz. tobacco use – both smoking and smokeless tobacco and alcohol consumption. The period of recall was considered for the past one year [10]. Dietary assessment included fruits and vegetables consumption, type of oil used and extra salted food intake. Fruit and vegetable consumption pattern was studied based on the days consumption on a typical week and were stratified as subjects based on the frequency of consumption [10, 12]. Physical activity was assessed by three domains: At work i.e., job related, leisure time and travel related physical activity and were classified as sedentary, moderate and vigorous activities at each domain. The operational definitions were based on the WHO-STEPS Manual [10]. Other risk factors included family history of CAD, Diabetes Mellitus (DM) and Hypertension among the parents and/or siblings of the participants.

Data analysis was performed using Statistical Package for Social Sciences (SPSS), version 20.0 and the prevalence of each risk factor was expressed in terms of percentages. Statistical analysis was done using Pearson's Chi-square test to find out the association between demographic variables and risk factors of CAD. Probability value (P) of less than 0.05 was considered as significant.

Results:

A total of 980 participants were included in the study. Among them, 51.2 % were women with mean age 40.4±11.3 years and 48.8 % were men with mean age 38.2±10.7 years. Majority of the study participants were self-employed (38.6%) followed by 36.2% homemakers, 12.1% non-government employees, 6.6% government employees and 2.2% students, 1.7% had retired and 2.6% were unemployed. Socio-economic status of the participants was assessed as per modified B.G. Prasad's classification (for the year 2016); 37.6% belonged to class 4 SES; followed by 30.1% in class 3, 15.6% in class 2, 13.5% in class 5 and 3.2% in class 1 SES. Assessment of educational level of the study participants revealed that 28.8% had studied up to high school level, 28.5% did not have any formal education, 14.0% up to primary school level, 13.7% up to higher primary level and 15.1% have completed collegiate level. One in ten of the participants did have a family history of CAD in either of the parent or both.

Prevalence of use of smoking and smokeless tobacco was 10.9% and 35.7% respectively with a definite male predominance (p<0.0001). (Table 1)
The mean age of initiation of smoking among smokers was 22.15 ± 5.9 years with the youngest age being 14 years. With a similar mean age of use of smokeless tobacco (22.4 ± 7.01 years), the youngest age of initiation was 7 years. The average duration of smoking among smokers was 18.4 ± 10.31 years with a range of 1 to 42 years. Nine out of ten of the smokers were daily users (p<0.0001) with Beedi (mini-cigar filled with tobacco) being the predominant (53.3%) form consumed followed by cigarette use (46.7%). Among the users of smokeless tobacco, 92.8% of men and 78.0% of women used it daily. Two-thirds of them used 'chewing tobacco' followed by 'Gutka' (p<0.0001). Overall prevalence of alcohol use was 21.4%; with significant difference among the gender (p<0.0001) (Table 1). Among alcoholics 60.0% of them consumed any form of alcohol at least 1 to 4 days a week.
The dietary risk factor categories and the differences across the gender have been described in the Table 1. In our study, 56.8% participants used groundnut oil as their predominant oil for cooking, followed by sunflower oil (16.5%) and soya bean oil (14.3%). One in five participants (20.4%) consumed extra salt other than that added to the cooked food. The proportion of the participants who reported consuming salted food items was 62.6% and 'pickle' was the commonest salted food (87.2%) consumed. Physical activity assessment revealed, the proportion of the participants who were sedentary or minimal physical activity were 18.3% at work; 50.4% of them during leisure time and 22.8% were found to be sedentary during travel to work. Men were more sedentary at work and during leisure as compared to women (p<0.0001) (Table 1).
The behavioral risk factors were compared with different age groups. The prevalence of tobacco use (smoking and smokeless) was more among participants in the age group ⩾ 50 years and least among age group 20-29 years. Current alcohol consumption was more prevalent among middle age viz. 30-49 years (51.2%). Participants of extreme age were more sedentary at work and during leisure. Association of age with smokeless tobacco use, alcohol use and sedentary activities at leisure time and travel were statistically significant with p<0.0001 (Table 2).
The smokeless form of tobacco was consumed more by participants who did not have any formal education and the prevalence decreased with higher education levels (p< 0.0001). Participants who had their education up to college level and above were in sedentary at their work place (p<0.05) (Table 3).
High use of tobacco in any form, alcohol use was found among participants who were retired from work or unemployed and lowest rates were observed among students and home makers. Higher prevalence of physical inactivity was observed among retired personnel. All these behavioral risk factors were significantly associated with work status (p<0.0001) (Table 4).
Table 5 depicts the association of behavioral risk factors and SES. Sedentary at leisure was more prevalent among all the SES groups as compared to job and travel related sedentary activities. Higher prevalence of work related, leisure time and travel related sedentary activities were more in the SES class 1.

Table 1: Gender Wise Distribution of the Participants according to Various Categories of Behavioral Risk Factors (N = 980)

Harmful Risk Behaviors	Categories	Men (%)	Women (%)	Total (%)	χ^2 P
Smoking Tobacco Use	Yes	105 (22.0)	02 (0.4)	107 (10.9)	117.10 **<0.0001**
	No	373 (78.0)	500 (99.6)	873 (89.1)	
Smokeless Tobacco Use	Yes	223 (46.7)	127 (25.3)	350 (35.7)	48.63 **<0.0001**
	No	255 (53.3)	375 (74.7)	630 (64.3)	
Alcohol Use	Yes	200 (41.8)	10 (2.0)	210 (21.4)	230.93 **<0.0001**
	No	278 (58.2)	492 (98.0)	770 (78.6)	
Fruits consumption	Never	40 (8.4)	39 (7.8)	79 (8.0)	7.972 **0.047**
	1 – 3 days / week	276 (57.7)	323 (64.3)	599 (61.1)	
	4 – 6 days / week	126 (26.4)	96 (19.1)	222 (22.7)	
	On all days	36 (7.5)	44 (8.8)	80 (8.2)	
Vegetable consumption	1 – 3 days / week	8 (1.7)	11 (2.2)	19 (1.9)	0.399 0.819
	4 – 6 days / week	74 (15.5)	80 (15.9)	154 (15.7)	
	On all days	396 (82.8)	411 (81.9)	807 (82.3)	
Extra salt consumption	Yes	81 (16.1)	200 (20.4)	119 (24.9)	11.56 **0.001**
	No	421 (83.9)	780 (79.6)	359 (75.1)	
Occupation related physical activity	Sedentary	110 (23.0)	69 (13.7)	179 (18.3)	85.99 **<0.0001**
	Moderate	196 (41.0)	352 (70.1)	548 (55.9)	
	Vigorous	172 (36.0)	81 (16.2)	253 (25.8)	
Leisure time physical activity	Sedentary	261 (54.6)	233 (46.4)	494 (50.4)	32.87 **<0.0001**
	Moderate	192 (40.2)	267 (53.2)	459 (46.8)	
	Vigorous	25 (5.2)	2 (0.4)	27 (2.8)	
Travel related physical activity	Sedentary	111 (23.2)	112 (22.3)	223 (22.8)	0.116 0.734
	Non-sedentary	367 (76.8)	390 (77.7)	757 (77.7)	
Total		**478 (100)**	**502 (100)**	**980 (100)**	

Table 2: Association between Age Group and Behavioral Risk Factors for CAD (N = 980)

Age group in years	Number	Smoking Tobacco Use (%)	Smokeless Tobacco use (%)	Alcohol use (%)	Sedentary at work (%)	Sedentary during Leisure (%)	Sedentary during Travel (%)
20 – 29	234	22 (9.4)	54 (23.1)	37 (15.8)	45 (19.2)	140 (59.8)	86 (36.8)
30 – 39	250	24 (9.6)	87 (34.8)	63 (25.2)	41(16.4)	105 (42.0)	47 (18.8)
40 – 49	262	28 (10.7)	105 (40.1)	68 (26.0)	46 (17.6)	110 (42.0)	50 (19.1)
⩾ 50	234	33 (14.1)	104 (44.4)	42 (17.9)	47 (20.1)	139 (59.4)	40 (17.1)
Total	**980**	**107 (10.7)**	**350 (35.7)**	**210 (21.4)**	**179 (18.3)**	**494 (50.4)**	**223 (22.8)**
χ^2 **P**		3.454 0.327	26.307 **< 0.0001**	11.366 **0.010**	1.336 0.721	30.386 **< 0.0001**	34.582 **< 0.0001**

Table 3: Association between Educational Status and Behavioral Risk Factors for CAD (N = 980)

Educational status	Number	Smoking tobacco use (%)	Smokeless tobacco use (%)	Alcohol (%)	Sedentary at work (%)	Sedentary during Leisure (%)	Sedentary during Travel (%)
No formal education	279	25 (9.0)	141(50.5)	48 (17.2)	30 (10.8)	132 (47.3)	42 (15.1)
Primary	137	21 (15.3)	58 (42.3)	35 (25.5)	20 (14.6)	68 (49.6)	37 (27.0)
Higher primary	134	17 (12.7)	44 (32.8)	34 (25.4)	18 (13.4)	62 (46.3)	27 (20.1)
High school	282	28 (9.9)	69 (24.5)	61 (21.6)	52 (18.4)	155 (55.0)	72 (25.5)
College / graduate	148	16 (10.8)	38 (25.7)	32 (21.6)	59 (39.9)	77 (52.0)	45 (30.4)
Total	**980**	**107 (10.9)**	**350 (35.7)**	**210 (21.4)**	**179 (18.3)**	**494 (50.4)**	**223 (22.8)**
χ^2 **P**		4.555 0.336	51.832 **< 0.0001**	5.586 0.232	60.134 **< 0.0001**	4.518 0.340	17.056 **0.002**

Table 4: Association between Main Work Status and Behavioral Risk Factors for CAD (N = 980)

Main work status	Number	Smoking (%)	Tobacco use (%)	Alcohol (%)	Sedentary at work (%)	Sedentary during Leisure (%)	Sedentary during Travel (%)
Govt. employee	65	06 (9.2)	14 (21.5)	16 (24.6)	27 (41.5)	19 (29.2)	07 (10.8)
Non-govt. employee	119	14 (11.8)	49 (41.2)	48 (40.3)	25 (21.0)	58 (48.7)	23 (19.3)
Self-employee	378	71 (18.8)	168 (44.4)	119 (31.5)	59 (15.6)	154 (40.7)	67 (17.7)
Homemaker	355	01(0.3)	90 (25.4)	06 (1.7)	31 (8.7)	219 (61.7)	109 (30.7)
Student	21	01 (4.8)	05 (23.8)	01 (4.8)	14 (66.7)	10 (47.6)	05 (23.8)
Retired	17	06 (35.3)	13 (76.5)	08 (47.1)	11 (64.7)	16 (94.1)	07 (41.2)
Unemployed	25	08 (32.0)	11 (44.0)	12 (48.0)	12 (48.0)	18 (72.0)	05 (20.0)
Total	**980**	**107(01.9)**	**350 (35.7)**	**210 (21.4)**	**179 (18.3)**	**494 (50.4)**	**223 (22.8)**
χ^2 **P**		88.239 **< 0.0001**	50.729 **< 0.0001**	151.077 **< 0.0001**	119.897 **< 0.0001**	61.721 **< 0.0001**	27.715 **< 0.0001**

Table 5: Association between Socio-economic Status and Behavioral Risk Factors for CAD (N = 980)

Socio-economic status	Number	Smoking (%)	Tobacco use (%)	Alcohol (%)	Sedentary at work (%)	Sedentary during Leisure (%)	Sedentary during Travel (%)
Class 1	31	03 (9.7)	05 (16.1)	08 (25.8)	09 (29.0)	19 (61.3)	13 (41.9)
Class 2	153	23 (15.0)	49 (32.0)	43 (29.4)	43 (28.1)	77 (50.3)	42 (27.5)
Class 3	295	33 (11.2)	107 (36.3)	71 (24.1)	51 (17.3)	151 (51.2)	69 (23.4)
Class 4	369	37 (10.0)	137 (37.1)	58 (15.7)	49 (13.3)	178 (48.2)	71 (19.2)
Class 5	132	11 (8.3)	52 (39.4)	28 (21.2)	27 (20.5)	69 (52.3)	28 (21.2)
Total	**980**	**107 (10.9)**	**350 (35.7)**	**210 (21.4)**	**179 (18.3)**	**494 (50.4)**	**223 (22.8)**
χ^2 **P**	3.942 0.414	7.225 0.124	14.515 **0.006**	19.086 **0.001**	2.419 0.659	11.246 **0.024**	

Discussion:

This study assessed various behavioral risk factors for CAD among the adult residents in the rural area. The gender proportion in our study was comparable with two studies conducted by Krishnan *et al*. and Laskar *et al*. [13-14]. Study by Krishnan *et al*. showed that majority of them (56.6%) never attended school, 38% of them had studied up to high school, while only 10% had studied beyond primary level; [13] whereas in our study, 15.1% had studied up to graduate level and 28.5% did not have any formal education. This difference was due to regional cultural differences. Studies conducted by Laskar *et al*. and Kaur *et al*. had relatively lesser proportion of family history of CAD i.e.,7.4% and 5.1% respectively [14-15]. However study done by Kalra *et al*, revealed higher prevalence of family history of CAD i.e., 19.3% [16]. This result could be due to smaller sample size of the study.

The overall prevalence of smoking tobacco was 10.9% which was relatively lower when compared with other studies conducted by Laskar *et al*. and Kaur *et al*. i.e., 17.6% and 29.4% respectively and the mean age of onset and average duration of smoking was comparable with our study [14-15] Although a higher proportion of smoking was observed among men, it was well below the national average according to National Family Health Survey (NFHS) – IV estimate for rural area i.e., 31.2% and 8.1% among men and women respectively [17]. High use of smokeless tobacco among both men (46.7%) and women (25.3%) was due to social acceptance and belief regarding role in minor ailments like tooth ache. The NFHS – IV report documented a similar rate of smokeless tobacco use among men (48.0%) and women (28.2%) [17]. The prevalence among men was two times that of women; on the contrary a study conducted by Agarwal *et al*., the proportion among men (25.7%) was five times that of women (4.8%) [18]. The International Tobacco Control Study conducted in Bangladesh reported an overall tobacco use went down from 42.4% to 36.3%. The prevalence of exclusive cigarette smoking went up from 7.2% to 10.6% which was comparable with our study. Exclusive smokeless tobacco use went down from 20.2% to 16.9% and the prevalence of tobacco use was higher among men and is higher among poorer people [19].

Alcohol consumption among men was higher (41.8%) as compared to that of women (2.0%). A study by Kaur *et al*. showed a similar trend – men 69.8% and women 1.3% [15]. The NFHS – IV reported a higher prevalence of alcohol consumption among men (28.5%) as compared with women (1.5%) [17]. Daily consumption of alcohol was noted in 19.5% of participants in our study which was much higher than recorded in a study conducted by Aggarwal *et al*. (9.4%) and Pham *et al*. (9.9%) [18, 20]. However, alcohol consumption was observed among 16.9% and 13.9% of the rural residents in a study conducted by Srivastav *et al*. and Singh *et al*. respectively [21-22].

Consumption of fruits was relatively less in quantity as well as in frequency. This may be attributed to the lower SES. Our results were comparable to a similar observation by Nath *et al*. in a resettlement area of Delhi [23]. Men, however, consumed lesser fruits compared to women.

A contrary observation was documented in a multicenter study conducted by Kinra *et al*. in 18 states of India [24]. Our study reported a higher vegetable consumption rate as compared to a study conducted in rural Vietnamese population revealed a lower vegetable consumption rate i.e., 28.4% [20]. A low consumption of fruits and vegetables was reported in 89.6% of males and 90.0% of females in a study conducted in rural area of Uttar Pradesh state of India [21]. Most of the study participants preferred groundnut oil, reason being ease of availability. Kaur *et al*. reported palm oil as the predominant type (39.8%) [15]. Extra salt consumption was observed in 20.4% with a higher proportion among men. Study conducted by Aggarwal *et al*. showed a higher proportion of extra salt consumption (34.2%) especially among women [18].

Sedentary at work place was observed among 18.3% with higher proportion among men (61.4%). A similar prevalence (18.5%) was noted in a study by Aggarwal *et al*. [18] on the contrary a very high prevalence (57.2%) were seen in a study by Krishnan *et al*. [13]. Study done in rural Maharashtra by Singh *et al*. reported 31.6% of physical inactivity with a higher proportion among women (34.4%) which was attributed to the socio-cultural influences [22]. One in every 2 individuals residing in rural area reported in the ICMR-INDIAB study was considered physically inactive and <10% of the studied population engaged in leisure time physical activity [25]. Low physical activity was seen among 43% of the rural area residents of Tamil Nadu in a study conducted by Oommen *et al*. [26].

Age and various risk factors assessment was statistically significant for; smokeless tobacco and alcohol use, leisure and travel related physical inactivity. The prevalence of these risk factors increased with advancing age. The rising trend of smoking even in younger age group could be the reason. Similar study by Nargis *et al*. observed an increase in the tobacco use from younger to older age groups [19]. Work related physical inactivity did not show any significant trend with increasing age; possible reason was that the similar prevalence at the extreme age groups. The younger age group consisting of students and unemployed participants and older age group consisting of retired individuals were more sedentary during leisure. Similar findings were reported by a study conducted by Ejim *et al.* [27].

An inverse relationship with highest educational level was observed for; smokeless tobacco use. A significant increase in work and travel related physical inactivity was observed with increasing education. More educated persons opting for a sedentary job with travel comforts may be a possibility. Study conducted by Reddy *et al*. demonstrated higher tobacco use and leisure time physical inactivity among less educated [28]. Gupta *et al*. in their multi-centric study, did not find any difference in physical activity levels across different levels of education [29].

The main works status of the study participants was significant associated with tobacco and alcohol use and all categories of physical inactivity. Davis-Lameloise *et al*. demonstrated that self-employed agricultural workers had higher occupational physical activity levels, healthier traditional diet, lower alcohol consumption and lowest tobacco smoking [30].

Socio-economic status significantly influenced alcohol use, work and travel related physical inactivity. Tobacco use did not differ with the SES of the participants. Study by Nargis *et al*. showed prevalence of smoking was higher among the rural residents with lower SES; the rich-poor differences were more observed among the smokeless tobacco [19]. Individuals belonging to class 1 were more sedentary. Several studies conducted to understand the relationship between SES and behavioral risk factors for CAD in India are well summarized in the review by Subramanian *et al*. [31]. Multi-center study conducted in 18 states of India revealed tobacco and alcohol use, low intake of fruit and vegetables, and underweight were more common in lower socioeconomic positions [24]. The CAD is no longer a disease of the rich; it equally impacts the poor, with a higher CAD risk factors resulting in mortality among men of lower SES [32]. Suboptimal social characteristics such as low educational, occupational, and SES status were associated with a clustering of $\geqslant 3$ cardiovascular risk factors [33].

Implications:

Rural residents lack health infrastructure and CAD management facilities due to a variety of constraints. Strengthening the surveillance for behavioural risk factors by creating national and regional data base is imperative, especially in the rural area which will enable targeted interventions.

Limitations:

Memory bias could have occurred while assessing some of the behavioral risk factors for CAD. Exact quantity of salt intake was not assessed, only extra salt intake was considered. Invisible fat was not taken into consideration while assessing consumption of fat.

Conclusion:

Behavioral risk factors for CAD were observed in a significantly higher proportion among men among adults residing in a rural population of Belagavi district. Prevalence of these risk behaviors increased with advancing age; lesser and/or no formal education. Occupation involving lesser physical activity was associated with higher prevalence of tobacco use in any form, alcohol use and physical inactivity. The rising behavioral risk factors for CAD in rural population reflect epidemiological transition requiring an immediate attention for primary prevention

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