Original Research Article

Prevalence of non-cancer chronic morbidity in tobacco users among adults in Kolar district: community-based study

Harish S.[1]*, K. N. Prasad[2]

[1]Department of Community Medicine, East Point College of Medical Sciences and Research Centre, Bangalore, Karnataka, India

[2]Department of Community Medicine, Sambhram Institute of Medical Sciences and Research Centre, Trivandrum, Kerala, India

*Correspondence:
Dr. Harish S.,
E-mail: drharryhari@gmail.com

ABSTRACT

Background: Tobacco contains many chemicals which causes cancer and chronic morbidities as evidenced from number of studies. Information regarding the chronic morbidities resulting from tobacco use was lacking in Indian setting. This study was conducted with the objective to find the prevalence of chronic morbidities other than cancer and oral conditions in tobacco users among adults in Kolar district.

Methods: This is a community based, cross sectional study conducted in Kolar district among selected sample size of 1534 from six taluks during December 2018 to March 2019. The structured questionnaire was used to collect information at different geographical and social meeting places to represent the sample. The questionnaire contained information about sociodemographic, tobacco use and self-declared morbidity conditions.

Results: Study subjects were aged between 18 to 80 years and the mean age was 53.7±18.2 years. The prevalence of chronic morbidity was 14.4% in 1534 subjects and 24.2% in 521 tobacco users. Diabetes mellitus and cardiovascular diseases accounted for 80 percent of morbidities followed by respiratory and other systems. The odd ratio (OR) was 3.4 for tobacco users and chronic morbidities, OR for diabetes mellitus and cardiovascular diseases was 5-19 and 5-22 respectively.

Conclusions: The prevalence of diabetes mellitus, cardiovascular diseases and other conditions are high among any form of tobacco use or consumption, illiterates, aged above 51 years and agriculture related workers compared to no tobacco users. There is a need of awareness about early detection of chronic morbidities to reduce the premature deaths and economic loss to the community.

Keywords: Morbidity prevalence, Tobacco, Non-smoking, Smoking, Beedi, Cigarette

INTRODUCTION

Tobacco is one of the leading causes and risk factor for non-communicable conditions and premature deaths in the world. Tobacco contains more than 4000 chemicals that harm the health of the person either direct or indirect ways. The incidence of chronic morbidities apart from cancers are alarmingly high in most of the countries where tobacco usage is highly prevalent.[1-3] The non-carcinogenic chronic conditions quite commonly observed among the tobacco users are cardio vascular diseases (CVD), diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD), stroke etc., results in tremendous health care costs and premature deaths.[3-5]

Worldwide seven million are estimated to be dying from tobacco use related conditions and half of the number of tobacco users are accounting for premature deaths and its

impact is most profound in low and middle income countries.[1,3,5] The deaths attributed to the usage of tobacco either in smoking or non-smoking (smokeless) forms is to the extent of 80%.[1] The global efforts to reduce the deaths from tobacco is showing slow decline in the consumption of tobacco from strict laws and creating awareness about ill effects of tobacco in the developing countries.[1-4,6]

The morbidities are irreversible and leads to premature deaths even among passive smokers. The prevalence of tobacco use is 20% at global level and 28.6% in India among subjects aged 15 years and above.[1,5-8,9] With such high prevalence of use, the morbidity conditions are likely to be high in the next two or three decades even with the current best efforts in reducing the tobacco use in the world.

Decreasing the tobacco use is essential to achieve the reduction in premature death rates especially below the age of 50 years to achieve the sustainable development goals.[1,6] The National Tobacco Control Programme launched by Government of India is actively implementing to reduce the tobacco usage and its impact on morbidities and mortality. This study is conducted to know the current situation of tobacco use and the associated morbidity conditions other than cancer and oral condition in rural districts of India. The objective of this study is to find the prevalence of self-declared chronic morbidity conditions other than cancers and oral conditions in tobacco users among adults in Kolar district of Karnataka, India.

METHODS

A community based, cross sectional and analytical study was conducted in 6 taluks of Kolar district Karnataka, from November 2018 to March 2019. Kolar district has population of 15 lakhs with Males 7.7 lakhs and females 7.60 lakhs. The inclusion criteria for study subjects was residents of Kolar district and aged above 18 years. Exclusion criteria was pregnant ladies and subjects hospitalized.

The sample size of 1534 was estimated based on the pilot study. The subjects were selected from KGF, Kolar rural, Kolar urban, Mulbagal, Bangarapet, Malur and Srinivasapura taluks. The study subjects of 220 from each taluk were randomly selected at certain hot spots of each taluk namely bus stands, hotel, education institutions, restaurants, railway station, Government offices, agriculture field, residence in rural area, gathering places (weekly market).

Six interviewers were trained for two days for the purpose of data collection. The process of data collection was regularly supervised by then investigators. The questionnaire consisted of three parts, a) Socio demographic profile, b) morbidity profile and c) tobacco usage history.

Data were collected by direct interview using pretested, validated structured questionnaire by one to one

interaction. It required around 15 minutes to complete each questionnaire. The questionnaire was filled by the interviewer after explaining the study importance and taking their verbal consent.

Meaning of terms used

No tobacco user: person never used any form of tobacco.

Smoking type: Person who uses/used either one or more of tobacco products cigarette, beedi.

Smokeless tobacco: Who uses/used either one or more of tobacco products kaddipudi, gutka, panmasala, hogesoppu.

Both types of tobacco use: Person who use both smoking and non-smoking type products.

Age group: The age group was divided as young adults (<20 years), adults (21-30 years), middle aged (31-40 years) (41-50 years) old age or senior citizens (51-60 years) (>60 years) for the convenience of analysis among both sexes.

Illiterate: A person who is not able to read and write with understanding in any language and aged 15 years or more.

Primary and middle school: A person who has studied up to 1st to 7th standard.

Higher secondary and diploma: A person who has studied up to 8th to 12th standard and diploma course. Ex: DT, DMLT, ITI, CSC, D.Ed , etc.

Graduate: A person who has obtained a bachelor degree in any field. Ex. B.com, B.BM, B.Tech, B.Sc, B.A. B.E etc.

Post graduate: A person who has obtained master degree in any field. Ex. MA, M.Com, M.Sc, M.Tech, MCA etc.

Agriculture: A person who is employed in any type agriculture related work.

Daily wages: A person who is employed in any work on daily basis other than agriculture work. Ex: auto driver, carpenter, waterman, housekeepers etc.

Students: a person who is studying any course and not employed.

Retired: A person who is retired from active work and not employed currently.

Desk job: A person who is engaged in job where he/she is required to sit for long duration at work. Ex: Clerk, Teacher, Bank Employee, Advocate, Engineer etc.

Marketing: A person who is engaged in job where he/she is required to move from one place to another on regular

basis. Ex: salesman, LIC agent, Bescom, medical representative.

Miscellaneous: Who does not fit in any of the above-mentioned category? Ex: photographer, politician etc.

Cardio vascular disease: These include disease like hypertension, coronary artery disease.

Respiratory disorders: Disease from the respiratory system like asthma, COPD.

Other disease: Include musculoskeletal problem, eye problems, skin allergies, Thyroid etc

Statistical analysis

The data were checked for completeness then entered in M.S Excel and analyzed using SPSS software version 22. Descriptive frequency was used to characterize the sample and numerical data was presented by mean and SD. Odds ratio was used to establish the tobacco use as dependent variable. P-value 0.05 was considered as statistically significant for chi square test and Z test was used for difference between proportions.

RESULTS

The study was conducted among 1534 subjects of all taluks of Kolar district. There were 903 males and 631 females, the mean age of subjects among male was 35.8±12.1 years and female were 36.3±12.8 years. The range was from 18 to 80 years. Nearly 80 percent of the subjects were Hindus followed by 17.8% were Muslims and 3.3 % were Christians. The proportion of unmarried among both sexes includes both students and bachelors which accounts for 24.4%. There were 521 tobacco users in 1534 population (33.9%).

The overall prevalence of tobacco users is 33.9% in 1534 subjects. The prevalence of tobacco use among adult males was 43.9% and females was 19.8% (Table1). The prevalence among female was half the prevalence rate among males. The overall prevalence of tobacco use was high in the age group of >61 years (48.3%). The overall prevalence was almost equal among in the age group of less than 20 years (28.9%) and 21-40 years age group (30.1%).

The overall prevalence rate of tobacco use was seen decreasing from 58.9% to 9.1% as the literacy level increased. More than two thirds of male subjects were among illiterates and studied till middle schooling, whereas more than half of the female's subjects among illiterates and one third of subjects studied middle schooling were using tobacco products. One of four male subjects who were graduates were tobacco users. Nearly two thirds of subjects working as daily wagers in different fields or categories were using tobacco followed by 57.5% among the subjects of agriculture related activities. The

similar pattern in the prevalence of tobacco use among female subjects was observed. Nearly one fourth of the home makers were using the tobacco products. It means 4 out of 10 married and 2 out of 10 unmarried subjects were using tobacco.

221 subjects suffering from chronic morbidity conditions accounting to 14.4% of 1534 subjects. The observed morbidities among male and female were 64.3% and 35.7% respectively and the distributions were similar in both sexes for different conditions (Table 2).

Around 80% of the total morbidity is from cardiovascular diseases (38.7%) and diabetes mellitus (41.5%). However nonspecific conditions amounted to 10.9% of the total morbidity. The proportion of morbidity conditions between males and females were found to be statistically significant (p<0.05) except for thyroid disorder.

The analysis of 126 chronic morbidity conditions among 521 of 1534 tobacco users in both sexes as the odds ratio (OR) for risk of total morbidity, cardio vascular disease, diabetes mellitus and other diseases (Table 3). They are showing an increasing trend among all age groups compared to less than 20 years. However, the risk was strongly associated among age group 20 to 40 years for chronic morbidity condition, 51 to 60 years for cardio vascular disease (OR>10) and 61 years and above for diabetes mellitus condition (OR>20).

The risk of cardio vascular disease, diabetes mellitus and other disease was more among illiterates when compared to graduates, the OR ratio was 1.2, 2.1 and 3.7 respectively. The odds ratio for total morbidity was 2.5 among illiterate when compared with graduates. The risk of chronic morbidity was more among retired person when compared to marketing and miscellaneous job. Homemakers or house wife (OR=3.2) and retired person (OR=3.7) were at higher risk of diabetes milletius when compared to marketing and miscellaneous respectively.

The prevalence of chronic morbidity conditions in relation to the presence of tobacco users in the family was analysed. The prevalence of total chronic morbidity conditions among families of subjects with at least one tobacco user and no tobacco user was found to be 15.9 and 11.5 percent respectively (Table 4). The OR was 1.4, 8 and 1.3 for total morbidities, cardiovascular diseases and diabetes mellitus respectively. The OR was 1.4, 1.3, 1.5 for CVD, DM and other disease respectively.

The prevalence of total morbidity, cardio vascular diseases and DM were 26.9%, 11.5% and 10% among smoking type tobacco users, whereas it was 21.6%, 7.0% and 9.0% among the non-smoking type and both types of tobacco users for similar morbidity conditions. The smoking type of tobacco user was at risk of developing chronic morbidity the OR was 3.6 when compared to no tobacco users. This observation was seen in CVD, DM and other diseases also, the OR was 3.0, 2.6 and 3.0 respectively.

The prevalence of total morbidities of 33.3%, 39.6% and 22.7% was observed among beedi users with the frequent use of less than 5, more than 5 and occasional users per day respectively. The prevalence was less than 20 % for total morbidities among cigarette users, around 25% among kaddipudi and pan masala users. The beedi user were at high risk of developing chronic morbidity when compared to no tobacco user, the OR was 4.8 for less than 5 times per day and OR 6.3 for more than 5 times per day. Among kaddipudi users OR was 3.7 for less than 5 times per day and OR 3.2 for more than 5 times per day respectively. Pan masala users more than 5 times per day users were 5-4 times higher risk of developing chronic morbidity when compared to no tobacco users.

Table 1: Distribution and general characteristics of study subjects.

Characteristics		Male			Female		
		Tobacco users			Tobacco users		
		Yes	No	Total	Yes	No	Total
		N (%)	N (%)	N	N (%)	N (%)	N
Age group (years)	<20	60 (36.1)	106 (63.9)	166	10 (10.2)	88 (89.8)	98
	21-30	100 (38.0)	163 (62.0)	263	20 (10.8)	166 (89.2)	186
	31-40	68 (49.3)	70 (50.7)	138	21 (19.6)	86 (80.4)	107
	41-50	76 (51.0)	73 (49.0)	149	22 (18.8)	95 (81.2)	117
	51-60	55 (46.2)	64 (53.8)	119	25 (39.1)	39 (60.9)	64
	>61	37 (54.4)	31 (45.6)	68	27 (45.8)	32 (54.2)	59
Education	Illiterates	62 (69.7)	27 (30.3)	89	84 (52.8)	75 (47.2)	159
	Primary and middle school	80 (67.8)	38 (32.2)	118	20 (33.9)	39 (66.1)	59
	Higher secondary and diploma	184 (44.4)	230 (55.6)	414	19 (8.3)	210 (91.7)	229
	Graduates	65 (25.7)	188 (74.3)	253	2 (1.3)	156 (98.7)	158
	Postgraduates	5 (17.2)	24 (82.8)	29	0 (0.0)	26 (100.0)	26
Occupation	Agriculture	42 (56.0)	33 (44.0)	75	8 (66.7)	4 (33.3)	12
	Daily wages	137 (66.2)	70 (33.8)	207	26 (63.4)	15 (36.6)	41
	Students	46 (28.9)	113 (71.1)	159	1 (1.1)	94 (98.9)	95
	Retired	11 (37.9)	18 (62.1)	29	0 (0.0)	1 (100.0)	1
	Deskjob	127 (37.6)	211 (62.4)	338	3 (3.3)	87 (96.7)	90
	Marketing	7 (35.0)	13 (65.0)	20			
	Housewife				86 (22.4)	298 (77.6)	384
	Miscellaneous	26 (34.7)	49 (65.3)	75	1 (12.5)	7 (87.5)	8
Marital status	Married	314 (49.9)	315 (50.1)	629	123 (23.2)	407 (76.8)	530
	Unmarried	82 (29.9)	192 (70.1)	274	2 (2.0)	99 (98.0)	101
Religion	Hindu	298 (42.8)	398 (57.2)	696	98 (19.1)	416 (80.9)	514
Religion	Hindu	298 (42.8)	398 (57.2)	696	98 (19.1)	416 (80.9)	514
	Muslim	92 (52.6)	83 (47.4)	175	27 (27.6)	71 (72.4)	98
	Christian	6 (18.8)	26 (81.3)	32	0 (0.0)	19 (100.0)	19

Table 2: Distribution of chronic morbidity pattern among study subjects.

Morbidity pattern	Male	Female	Total
	N (%)	N (%)	N (%)
Respiratory illness	12 (8.45)	5 (6.33)	17 (7.7)
Cardiovascular disease	55 (38.73)	30 (37.97)	85 (38.5)
Diabetes mellitus	59 (41.55)	32 (40.51)	91 (41.2)
Thyroid disorder	0 (0.00)	4 (5.06)	4 (1.8)
Others	16 (11.27)	8 (10.13)	24 (10.9)
Total	142 (100.00)	79 (100.00)	221 (100.0)

Table 3: Relationship of chronic morbidity and tobacco use between age group, education and occupation.

Variable	Total	Morbidity Yes	Morbidity No	OR	CVD Yes	CVD No	OR	DM Yes	DM No	OR	Others Yes	Others No	OR
Age (years)													
<20	70	3	67	1.00	1	69	1.0	1	69	1.00	1	69	1.00
21-30	120	19	101	6.4*	8	112	5.0	3	117	1.8	8	112	4.9
31-40	89	16	73	4.9*	5	84	4.1	6	83	5.0	5	84	4
41-50	98	26	72	8	8	90	6.2*	14	84	11.6*	4	94	2.9
51-60	80	31	49	14.3	13	67	13.6*	13	67	13.6*	5	75	4.5
>61	64	32	32	22.3	16	48	23.3	14	50	19.6*	2	62	2.2
Education													
Graduates	72	12	60	1.00	8	64	1.00	4	69	1.00	2	70	1.00
Illiterates	146	49	97	2.53*	19	127	1.20	16	130	2.12	14	132	3.71
Primary and middle school	100	27	73	1.85	13	87	1.20	10	90	1.92	4	96	1.46
Higher sec. and diploma	203	38	165	1.15	10	193	0.41	21	182	1.99	7	196	1.25
Occupation													
Miscellaneous and marketing	34	8	26	1.00	5	30	1.00	2	33	1.00	3	31	1.00
Agriculture	50	9	41	0.71	3	47	0.38	4	46	1.43	2	48	0.43
Daily wages	163	33	130	0.83	13	150	0.52	11	152	1.19	9	154	0.60
Retired	11	5	6	2.71	2	9	1.33	2	9	3.67	1	10	1.03
Deskjob	130	43	87	1.61	19	111	1.03	18	112	2.65	6	124	0.50
Housewife	86	28	58	1.57	9	77	0.70	14	72	3.21	5	81	0.64

* Indicates statistically significant, p<0.05.

Table 4: Relationship of chronic morbidity, tobacco user in the family, type of tobacco use, different forms of tobacco products and their frequency of use per day.

Variable		Morbidity Yes	Morbidity No	OR	CVD Yes	CVD No	OR	DM Yes	DM No	OR	Others Yes	Others No	OR
Tobacco user in the family	Yes	158	31	1.4*	61	928	1.4	64	925	1.3	33	956	1.5
	No	63	482		24	521		27	518		12	533	
Tobacco use	No tobacco	95	918	1.0	35	978	1.0	41	972	1.0	19	994	1.0
	Smoking type	70	190	3.6	30	230	3.6	26	234	2.6*	14	246	3.0*
	Non-smoking type	43	156	2.7	14	185	2.1*	18	181	2.4*	11	188	3.1*
	Both smoking and non-smoking type	13	49	2.6*	6	56	3.0*	6	56	2.5*	1	61	0.9
Cigarette usage	<5 times /day	15	73	2.0	6	82	2.0	8	80	2.4	1	87	0.6
	>5 times / day	13	62	2.0	3	72	1.2	7	68	2.4	3	72	2.2
	Occasionally	12	32	3.6	3	41	2.0	7	37	4.5	2	42	2.5
Beedi usage	<5 times /day	26	52	4.8	11	67	4.6	11	67	3.9	4	74	2.8
	>5 times / day	19	29	6.3	9	39	6.4	6	42	3.4	4	44	4.8
	Occasionally	5	17	2.8	3	19	4.4	0	22	-	2	20	5.2
Kaddipudi usage	<5 times /day	22	58	3.7	8	72	3.1	8	72	2.6	6	74	4.2
	>5 times / day	6	18	3.2	1	23	1.2	4	20	4.7	1	23	2.3
	Occasionally	4	18	2.1	0	22	-	2	20	2.4	2	20	5.2
Pan masala usage	<5 times /day	11	48	2.2	4	55	2.0	7	52	3.2	0	59	-
	>5 times / day	5	9	5.4	3	11	7.6	2	12	4.0	0	14	-
	Occasionally	2	15	1.3	2	15	3.7	0	17	-	0	17	-

*indicates statistically significant p<0.05.

DISCUSSION

The well-known fact is that tobacco causes the chronic morbidities including cancers as reported from well conducted epidemiological studies, reports and surveys throughout the world. But reports on morbidities other than cancer is very limited in Indian settings. The study highlights the prevalence and estimation of associated risk of non-cancerous chronic morbidities among the tobacco users in Kolar district of Karnataka state in India. The prevalence of tobacco use was 43.9% and 19.8% among males and female's population accounting to 33.9% among the total of 1534 subjects. This study includes the tobacco users and the self-declared health conditions. No clinical examination or any tests or record verification are conducted to prove their self-declared health conditions.

It did not include the efforts made to stop tobacco use and any time during previous years. There could be tobacco users in the present study who were made efforts to stop tobacco use but restarted after sometime or the decreased the quantity of use. these factors were not collected and analysed in the present study.

Tobacco use prevalence

The prevalence of tobacco use was three times higher in males than females in the age group of <20 years and 21-40 years as shown in Table 1. Nearly 26% of the females using tobacco were in the age group of less than 40 years. The mean age of tobacco users among male and female was 37.6±15.9and 45±17.9 years respectively. The prevalence of tobacco use in India is 28.6% and it was more among 30-60 years age group.[1,6,9]

Tobacco use was observed among more than half of illiterates, primary and middle schooling completed males. The trend of high prevalence rate of tobacco use was observed among men doing daily wagers (66%) and agriculture related activities (56%). The overall prevalence of was around 30 percent among people working within the office premises among male subjects. It could be coincident finding about tobacco use and marriage which is not valid since the event such as marriage is not associated with tobacco use.

Prevalence of chronic morbidities

The overall prevalence of morbidity was 14.4% in this study population and majority were cardiovascular diseases and diabetic mellitus conditions. The prevalence of chronic morbidities was 64.3% and 35.7% among males and females subjects as shown in Table 2.

The proportion of total morbidity conditions among tobacco users (521) and non-tobacco users (1013) were 24.2% of and 9.4% respectively. The estimated OR was 3.4 and the association between the tobacco use and chronic morbidities was found to be statistically significant (p<0.001). The prevalence of morbidity among 903 males and 631 females subjects was 15.7% and 12.5% respectively irrespective of tobacco use. However, the prevalence of morbidity was less than 5 percent among the tobacco users in females, thus the findings in this study highlights morbidities among the tobacco users in males.

Cigarette smoking is a risk factor for the development of type 2 diabetes through two pathways. The first is mediated directly through hyperinsulinemia and insulin resistance. The second is mediated through the accumulation of visceral fat, and the effect is confounded by low physical activity and unhealthy diet. Evidence is increasing that smoking causes greater accumulation of visceral fat. Smoking makes the body more resistant to insulin, which can lead to higher blood sugar levels. Irrespective of the type of diabetes, smoking makes diabetes harder to control.[3,10]

Risk of chronic morbidities and factors

The risk ratio was assessed comparing the lowest prevalence of tobacco use among different variables. The OR as 1 for aged less than 20 years, graduate level education, marketing jobs for estimation of risk as shown in Table 3 for tobacco users only in both sexes.

The OR was high for the age group of 51 years and above for all morbidities which may be suggestive of longer duration with different levels of tobacco use which is 14.3 and 22.3. Similarly, the OR was high for CVD (13.6, 23.3) and DM (13.6, 19.6) for the age group of 51–60 years and more than 61 years age group respectively.

Age of the subjects plays an important role in the initiation of tobacco use, period of use and level of tobacco products use and combination of tobacco products usage. In this study it proves that age of the subject and duration are equally important factor for acquiring the pathological damages from tobacco products in initiation of untoward health conditions apart from cancers.

The OR for illiterates for total chronic conditions was 2.5 compared to 2.2 for diabetic mellitus and 1.2 for cardio vascular diseases and highest as 3.7 for other conditions. The risk reduces as the literacy level increases may be attributing to the level of awareness and working status. The OR for retired person, desk job had 2.7 and 1.6 which has highest OR for diabetes mellitus (3.6, 2.6) for the same groups. Interestingly the males had the OR of 1.5 for total morbidities and 3.2 for Diabetes Mellitus among the tobacco users in the female population.

The findings in the present study is similar to the observation of the cohort and cross-sectional studies.[3,11-13] The incidence of hypertension was 34 to 43%. It can be assessed that high rates of tobacco consumption or usage results in higher burden of CVD and their reduction is crucial to avert the tobacco related morbidities and premature deaths.[1,6] Study findings among health care

workers (nurses), it was found that female smokers were 25% more likely to develop CVD than male workers.[3,4]

Prevalence of diabetes mellitus was high in this study (41.2%). Diabetes mellitus is likely to develop among tobacco users.[4,8,10,14-16] the prevalence of diabetes mellitus was lower among the above studies compared to the present study findings. The OR for developing diabetes Mellitus was found to be in the range of 1.3 to 4.9).[3,4,10,15,16] This proves that irrespective of geographical location, food habits, and pattern of tobacco use is high risk for diabetes mellitus. It is interesting to note that the incidence of chronic morbidities comes to the equal of non-tobacco users after a decade if the present tobacco users ceases to use.[3,11,13]

Risk of chronic morbidities and tobacco use pattern

The assessment of total chronic morbidities other than cancers are hard to find in the literatures. Thus, the risk of total morbidities among tobacco users in this study stands as OR of- to- for- various factors in this study. The smoking, non-smoking and both types of tobacco users were accounted for 49.9%, 38.1% and 12% of total tobacco users respectively. More number of cigarette users than beedi users in this study. The frequency of cigarette and beedi users of more than 5 times per day were found to be 38% and 32% respectively whereas users less than 5 times per day was 42% and 52% respectively. Most of the kaddipudi and tobacco users were consuming less than 5times per day. It can be assumed that the associated chronic morbidities from tobacco use is higher in Kolar district and the prevalence of similar morbidities may vary in different parts of our country because of presence different factors including lifestyle habits and types of tobacco product consumption.

CONCLUSION

This study concludes that the morbidities other than cancers and oral conditions are high among any type of tobacco users and necessity to highlight the importance to early diagnosis of their chronic morbidities for better treatment and reduction of premature deaths in addition to strong measures to reduce tobacco use or consumption in the district. It is recommended to conduct the studies in other parts of India on prevalence of similar chronic morbidities.

ACKNOWLEDGEMENTS

REFERENCES

1. WHO report on the global tobacco epidemic 2017: Monitoring tobacco use and prevention policies, 2017. Avaiable at: https://www.who.int/tobacco/ global_report/2017/en/. Accessed 5 November 2019.
2. Prabhakaran D, Jeemon P. Global Burden of Cardiovascular Disease Cardiovascular Diseases in India. Circulation AHA. 2016; 1605–20.
3. Roy A, Rawal I, Jabbour S. Tobacco and Cardiovascular Disease: A Summary of Evidence. In: Prabhakaran D, Anand S, Gaziano TA, et al (eds). Cardiovascular, Respiratory, and Related Disorders. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017. Available at: https://www.ncbi.nlm.nih.gov/books/NBK525170/d oi: 10.1596/978-1-4648-0518-9/ch4. Accessed 5 November 2019.
4. Gupta R, Gupta S, Sharma S, Sinha DN, Mehrotra R. A systematic review on association between smokeless tobacco and cardiovascular diseases. Indian J Med Res. 2018;148:77-89.
5. Revised National Tuberculosis Control Programme: 'TB India 2017 Revised National Tuberculosis Control Programme: Annual Status Report' March 2017. Available at: https://tbcindia.gov.in/ index1.php?lang=1&level=1&sublinkid=4160&lid= 2807. Accessed 2 September 2019.
6. Blog Tobacco control. India: steep decline in tobacco consumption in India reported in second Global Adult Tobacco Survey (GATS 2017). Avaiable at: https://blogs.bmj.com/tc/2017/06/23/india-steep-decline-in-tobacco-consumption-in-india-reported-in-second-global-adult-tobacco-survey-gats-2017/. Accessed 2 September 2019.
7. Verma P, Saklecha D, Kasar PK. A study on prevalence of tobacco consumption in tribal district of Madhya Pradesh. Int J Community Med Public Health. 2018;5:76-80.
8. Paul F, Joseph R. Global lssues in Medicine. In: Longo DL, Kasper DL, Hauser SL, Jameson JL, Loscaizo J. Harrison's Principles of Internal Medicine. 18th edition. New York: McGraw-Hill; 2012: 17.
9. GATS 2 India; Fact sheet 2016-17. Global adult tobacco survey Available at: https://www.who.int/ tobacco/surveillance/survey/gats/GATS_India_2016 -17_FactSheet.pdf. Accessed on 4 June 2019
10. Preventive Care. Risk and dangers of smoking for diabetic patients. Available at: https://drmohans.com/risk-and-dangers-of-smoking-for-diabetic-patients/. Accessed on 12 September 2019.
11. Halperin RO, Michael Gaziano J, Sesso HD. Smoking and the risk of incident hypertension in middle-aged and older men. Am J Hypertens. 2008;21(2):148–52.
12. Li G, Wang H, Wang K, Wang W, Dong F, Qian Y, et al. The association between smoking and blood

pressure in men: a cross-sectional study. BMC Public Health. 2017;17(1):797.

13. Burns DM. Epidemiology of smoking-induced cardiovascular disease. Prog Cardiovasc Dis 2003;46(1):11–29.

14. Vardulaki KA, Walker NM, Day NE, Duffy SW, Ashton HA, Scott RAP. Quantifying the risks of hypertension, age, sex and smoking in patients with abdominal aortic aneurysm. British J Surgery. 2000;87(2):195–200.

15. Khalid N, Ahmad EK, Saleem S, Tahir A, Mahmood H, Saleem S. Prevalence and Associated Factors of Cigarette Smoking among Type 2 Diabetes Patients in Pakistan. Int J Collab Res Intern Med Public Health. 2014;6(4):73–88.

16. Venkatachalam J, Rajesh ME, Singh Z, Devi S, Purty AJ, Stalin P, et al. Smoking and Diabetes: A Case Control Study in a Rural Area of Kancheepuram District of Tamil Nadu. J Dental Med Sci. 2012;3:18-21.