Original Article

A cross sectional study to assess tobacco use and its correlates among patients attending non-communicable disease clinics of a Northern Jurisdiction in India

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ABSTRACT

Background: Non-Communicable Diseases (NCDs) continue to rise unabated globally and the existing evidence has unequivocally established the relationship between tobacco use and NCDs. In 2010 the Government of India (GOI) introduced NCD clinics under the National Program for Prevention and Control of Cancer, Diabetes, Cardio Vascular Diseases and Stroke (NPCDCS) with the purpose of preventing and combating the NCD epidemic. This study was undertaken with an objective to comprehensively determine tobacco use and its correlates among patients attending these NCD clinics. **Methods:** A descriptive cross-sectional study was carried out among 1172 patients attending NCD clinics at district level, in Punjab, India between May to October 2018. Using systematic sampling every fourth patient was interviewed and equal numbers of visits were made to both the clinics. **Results:** Overall, the current tobacco use in any form was reported to be 10.2% among the study respondents. Majority of the tobacco users were males (23.3%), in 40–49 year age group, (18.7%), residing in urban area (15%), educated up to secondary school (18%) and non-government occupation bracket (27.4%) and hypertension disease category (41.6%). More SLT users had thought of quitting in past in comparison to smokers (46.6% vs 40%) and had higher quit attempts in past (42.5% vs 38.3%). In the binary logistic regression analysis, odds of tobacco use increased with increasing age, three times higher among participants who were employed (OR 3.75; CI 1.41-10.02),6 times higher in COPD disease category (OR 6.88; CI 2.1-20.59). **Conclusion:** Higher tobacco use among the NCD clinic attendees with increasing age predisposes them to develop grave complications. This calls for the need to administer intensive behaviour change interventions for tobacco cessation at the existing NCD clinics. This could further strengthen existing health systems and thereby improving health outcomes followed by achieving Sustainable Development Goals.

Keywords: Clinics, India, NCDs, prevalence, smokeless, smoking, tobacco

Background

The epidemic of Non Communicable Diseases (NCDs) continues to rise unabated worldwide leading to 40.5 million deaths annually.[1] In South East Asia Region (SEARO), NCDs are responsible for 14.5 million of all deaths.[2] Tobacco use

directly contributes to 14 percent of all NCD deaths among adults which would reach to 6.8 million in 2030 in low and middle income countries (LMICs) in the absence of robust actions.[3] In India, NCD epidemic has come up to be a major contributor to mortality leading to 62% of all deaths with 55% attribution to DALYs.[4] Further, the country houses around 266.8 million adult tobacco users[5] and the economic costs of tobacco attributable diseases was estimated to be 22.4 billion US Dollars (USD).[6]

Evidence from existing literature suggests that tobacco smoking increases the relative risk of chronic obstructive pulmonary disease (1.4 times), stroke (1.5 times), coronary heart disease (2-3 times), and lung cancer (12 times).[7] Smokeless tobacco (SLT) raises systolic & diastolic blood pressure up to 21 and 14 mm of Hg respectively.[8] It increases the risk of micro and macrovascular complications among patients with T2DM and is associated with insulin resistance.[8–10]

The literature across the globe has unequivocally established the relationship between tobacco use and NCDs. A systematic review and meta-analysis reported the pooled prevalence of active smoking among patients with hypertension and diabetes mellitus to be 12.9% (95% CI: 10.6–15.3) and 12.9% (95% CI: 9.6–16.6) respectively.[11] Findings from a cross sectional study carried out in Turkey reported that nearly half of the COPD patients continued smoking even after they were diagnosed with COPD.[12] A secondary data analysis performed on The Health Information National Trends Survey reported an overall smoking rate of 18.7% among Cancer Survivors.[13]

The United Nations Sustainable Development Goals (SDGs) targets to decrease one third of pre-mature mortality from NCDs by 2030 (Target 3.4).[14] In response to World Health Organization's (WHO) Global Action Plan for prevention and control of NCDs.[15] India has set specific national targets by adapting National Action Plan which aims at curtailing premature mortality due to NCDs by 25% by 2025. In addition, by 2025 India is also committed to achieve 30% relative reduction in prevalence of current tobacco use through widespread implementation of the National Monitoring Framework for Prevention and Control of NCDs.[15] Management of NCDs includes opportunistic and prompt case-finding for the identification of risk factors. This is accompanied by subsequent referral of suspected cases to higher facility such as Community Health Centre (CHC) & district hospital for comprehensive management and continuous encouragement compliance to treatment. This provision is facilitated by the National Program for Prevention and Control of Cancer, Diabetes, Cardio Vascular Diseases and Stroke (NPCDCS) at subcenter and primary health care (PHC) level. In 2010 the Government of India initiated the NPCDCS with the purpose of preventing and combating the NCD epidemic by setting up NCD clinics at district and CHC level. These clinics carry out comprehensive examination & investigations of patients, opportunistic screening, health promotion activities, management of chronic diseases through early diagnosis, treatment, and follow up. These clinics function on all working days of the week.[16] A key activity to be undertaken by the health care providers at these NCD clinics is to screen and counsel the attending patients for risk factors including tobacco use.

After WHO - STEPS survey in the state of Punjab (2014-2015) there has been no study to assess tobacco use. However, this survey was population based. There is still paucity of literature in Indian scenario on tobacco consumption amongst NCD clinic attendees. The patients attending NCD clinics form the high-risk group of patients who either already have an existing NCD or at the same time are at risk of developing other NCDs as well. One of the objectives of Global Action Plan for Prevention and Control of NCDs is to decrease modifiable risk factors and tobacco is one among them. In order to identify, inform the stakeholders and policy makers to develop comprehensive tobacco cessation interventions for the NCD clinic attendees, it's important to assess this modifiable risk factor among the high-risk population group. To the best of our knowledge, the current study is one of its kind that focuses comprehensively upon determining the tobacco use prevalence and its correlates among the NCD clinic attendees (patients) at the district level in Punjab, India.

Methods

General settings

Punjab state is situated in the northwest region of India and is geographically divided into three regions namely Majha, Malwa and Doaba, with agriculture as the mainstay of the state's economy.[17] A state wide WHO STEPS survey carried out in all districts of Punjab (2014 –2015) reported prevalence of current tobacco use (18-69 years) to be 11.3%. In addition, the prevalence of hypertension and diabetes mellitus was reported to be 40.1% & 14.3% respectively.[18]

Program settings

Punjab has NCD cells and NCD clinics in each district with the provision of dedicated staff (medical officer, counselor, nurse and a data entry operator) under the NPCDCS program.[19] The present study was conducted at two NCD clinics established at two district hospitals (Sahibzada Ajit Singh Nagar and Fatehgarh Sahib). These clinics are functional all days a week and around 160 to 220 patients visit these facilities on a daily basis and are provided with screening, diagnosis, management and counseling services for NCD's.

Study design, period and population

It was a descriptive cross-sectional study conducted between May to October 2018. The patients aged 30 years and above attending NCD clinic and diagnosed with any NCD and provided voluntary written informed consent were included in the study. The patients who do not have physical or mental capacity to provide informed consent, admitted in indoor patient department or those already diagnosed with psychiatric comorbidity and terminally illness were excluded from the study.

Sample size calculations and sampling

The sample size was calculated in using prevalence of 21.6%,[20,21] an absolute precision of 3%,[22] design effect of 1.5[23] at 95% confidence interval. The calculated sample size was 1084. Further, considering the non-response rate, the sample size was increased to 1172. Using systematic sampling, every fourth patient attending NCD clinic was interviewed by the researcher. Equal numbers of visits were made to both the districts, four days a week.

Study instruments

A pre-tested, structured questionnaire was used which comprised of questions on socio demographic characteristics (age, sex, marital status, education, occupation, religion and area); NCD type & duration, tobacco use: history, forms, duration, quantity and frequency, age of initiation, reasons for initiation, triggers, urge to use, ever thought of quitting, quit attempts made in the past and currently willing to quit.

Data collection & analysis

Administrative permissions were obtained from the tobacco control cell and NCD control cell at the state and district levels followed by preparation of a day wise schedule in consultation with key stakeholders. They were detailed about the objectives and intended benefits of the study. The eligible participants were detailed about the purpose and procedure involved in the research. Thereafter, written informed consent was requested from the eligible participants in the language they understood (ensuring anonymity & confidentiality). The study respondents were free to decide their participation in the study (autonomy) and the recruited participants were interviewed using a pre-tested questionnaire. Double data entry was done and errors were checked. Data analysis was performed using IBM Statistical Package for Social Sciences, version 16. Descriptive statistics was performed. The dependent variables as tobacco use and independent variables as age, gender, location, education and occupation were analyzed. Binary logistic regression model was applied to test the association of various characteristics with tobacco use among study participants.

Operational definitions [Figure 1]

Ethics

The ethical approval was granted by Institute Ethics Committee (IEC), Post Graduate Institute of Medical Education & Research (PGIMER), Chandigarh, India [IEC no. INT/IEC/2017/1361].

Results

This study was undertaken in two selected district level NCD clinics of Punjab among to determine the prevalence of tobacco use among NCD clinic attendees. A total of 1172 patients participated in the study (participation rate of 100%). By design, every 4th patient (irrespective of gender) was interviewed and equal numbers of visits were made to both the clinics. Overall,

Operational definitions

Current tobacco smoker/ smokeless tobacco user : a person who currently smokes any tobacco product/, uses any smokeless tobacco product either daily or occasionally.[6]

Current/Daily smoker and Current/Daily smokeless user: person currently smokes at least one tobacco product/uses at least one smokeless tobacco product every day, over a period of one month or more.[6]

Current/Occasional smoker and Current/Occasional smokeless user: person currently smokes /uses smokeless tobacco products less than daily (either formerly daily or never daily).[6]

Figure 1: List of operational definitions used

prevalence of current tobacco use was reported to be 10.2 percent with SLT as the most common form of tobacco used.

Overall, 10.2% of the study respondents reported current tobacco use in any form. Majority of the tobacco users were males (23.3%), in 40-49 year age group, (18.7%), residing in urban area (15%), educated up to secondary school (18%), non-government occupation bracket (27.4%) and hypertension disease category (41.6%) [Table 1].

Majority of smokers were reported in 50-59 years age group (54.5%) while highest SLT (52.3%) and dual users (28.5%) were reported in 40-49 year age group. No SLT use was reported among female users [Table 2].

Majority of smokers had frequency of smoking with more than ten times (19.1%) per day, while SLT users' had a frequency of one to five times per day (22.5%). Maximum tobacco users reported peer pressure to be an initiating factor for tobacco use among both smoked and SLT groups (38.3 and 44.1%) [Table 3].

For running binary logistic regression model, the categories of variable occupation were merged into meaningful categories (government & non-government employees were merged into those employed; while homemakers and retired/unemployed into unemployed as there were no tobacco users in the homemaker category). The odds of tobacco use were three times higher among participants who were employed (OR 3.75; CI 1.41-10.02). Among disease groups the odds of tobacco use were 6 times higher in COPD disease category (OR 6.88; CI 2.1-20.59) [Table 4].

Discussion

The current study carried out to ascertain tobacco use and its correlates at NCD clinics of two districts of Punjab reports an overall prevalence of tobacco use as 10.2% among NCD clinic attendees. The findings are close to study done among hypertensive patients in Gujarat, India by Sarkar *et al*[24] that reported an overall tobacco use prevalence of 11.0%. A systematic review conducted by Noubiap *et al*[11] reported 12.9 % as pooled prevalence of active

Table 1: Distribution of socio demographics and tobacco use among the study participants

Socio-demographic characteristics		[n=1172] Number (%)	Tobacco user	
			Yes (n=120)	No
Age (in years)*	30-39	75 (6.4)	14 (18.7%)	61 (81.3%)
	40-49	213 (18.2)	42 (19.7%)	171 (80.3%)
	50-59	325 (27.7)	33 (10.2%)	292 (89.8%)
	60 & above	559 (47.7)	31 (5.5%)	528 (45.1%)
Gender*	Male	507 (43.3)	118 (23.3%)	389 (76.7%)
	Female	665 (56.7)	2 (0.3%)	663 (99.7%)
Residence*	Urban	508 (43.3)	76 (15.0%)	432 (85.0%)
	Rural	664 (56.7)	44 (6.6%)	620 (93.4%)
Education*	No formal education	370 (31.5)	23 (6.2%)	347 (93.8%)
	Up to Primary education	233 (19.8)	20 (8.6%)	213 (91.4%)
	Up to Secondary education	133 (11.3)	24 (18.0%)	109 (82.0%)
	Higher education	436 (37.2)	53 (12.2%)	383 (87.8%)
Occupation*	Government employee	80 (6.8%)	16 (20.0%)	64 (80.0%)
	Non-government employee	314 (26.8%)	86 (27.4%)	228 (72.6%)
	Unemployed & retired	405 (34.6%)	18 (4.4%)	387 (95.6%)
	Homemaker	373 (31.8%)	0	373 (100%)
NCD's	Hypertension*	496 (42.3)	50 (41.6)	16 (32.0)
	Diabetes Mellitus*	334 (28.4)	32 (26.6)	13 (40.6)
	COPD*	32 (2.7)	24 (20)	18 (75)
	CAD	13 (1.1)	2 (1.6)	1 (50)
	Co-morbid conditions	297 (25.3)	12 (10)	6 (50)

*P<0.05. *Smokeless tobacco (SLT), Hypertension (HTN), Diabetes Mellitus (DM), Chronic Obstructive Pulmonary Disease (COPD), Coronary Artery Disease (CAD). **Figure in parentheses denotes percentage (%)

Table 2: Distribution of tobacco users according to form of tobacco used

Variables		Tobacco users among participants n (%)	Type of tobacco used n (%)		
			Smoked	SLT	Dual
Overall		120 (10.2)	54 (45)	60 (50)	6 (5)
Age (in years)	30-39	14 (18.7)	4 (28.5)	10 (71.4)	-
	40-49	42 (19.7)	16 (38.0)	22 (52.3)	4 (28.5)
	50-59	33 (10.2)	18 (54.5)	14 (42.4)	1 (3.0)
	60 & above	31 (5.5)	16 (51.6)	14 (45.1)	1 (3.2)
Sex	Male	118 (23.3)	52 (44.0)	60 (50.8)	6 (5.0)
	Female	2 (0.3)	2 (100)	-	-
Residence	Urban	76 (15.0)	38 (50)	32 (42.1)	6 (7.8)
	Rural	44 (6.6)	16 (36.3)	28 (63.6)	-
Education	No formal education	23 (6.2)	11 (47.8)	10 (43.4)	2 (8.6)
	Up to Primary education	20 (8.6)	8 (40)	11 (55)	1 (5)
	Up to Secondary education	24 (18.0)	9 (37.5)	14 (58.3)	1 (4.1)
	Higher education	53 (12.2)	26 (49.0)	25 (47.1)	2 (3.7)
Occupation	Govt. Employee	16 (20.0)	8 (50)	8 (50)	-
	Non Govt. employee	86 (27.4)	36 (41.8)	45 (52.3)	5 (8.9)
	Retired/Unemployed	18 (4.4)	10 (55.5)	7 (38.8)	1 (5.5)
	Homemaker	-	-	-	-
NCD's	Hypertension	50 (41.6)	16 (32.0)	34 (68.0)	-
	Diabetes Mellitus	32 (26.6)	13 (40.6)	18 (56.2)	1 (3.1)
	COPD	24 (20)	18 (75)	3 (12.5)	3 (12.5)
	CAD	2 (1.6)	1 (50)	-	1 (50)
	Co morbid conditions	12 (10)	6 (50)	5 (41.6)	1 (8.3)

*Smokeless tobacco (SLT), Hypertension (HTN), Diabetes Mellitus (DM), Chronic Obstructive Pulmonary Disease (COPD), Coronary Artery Disease (CAD). **Figure in parentheses denotes percentage (%)

smoking among hypertensive or diabetic patients in Africa. Though the mandate of NCD clinics under NPCDCS program caters to Diabetes, Cardiovascular diseases, Cancers and Stroke. This study does not report any patient suffering from cancer and stroke.

Majority of the participants who reported tobacco use were males (23.3%). Similar differences in tobacco use among males and females were also reported in Global Adult Tobacco Survey (2016-17) and state wide STEPS survey conducted

Table 3: Distribution of correlates of tobacco use among users

Variable		*n* (%)	
Total study participants		1172	
Tobacco use in past	Daily & less than daily	131 (11.2)	
Current tobacco user	(Daily & Occasionally)	120 (10.2)	
Type of tobacco use (among current tobacco users, *n*=120)	Smoked form	54 (45.0)	
	Smokeless Tobacco Use (SLT)	60 (50.0)	
	Dual use	6 (5.0)	
		Smoked *n* (%)	**SLT *n* (%)**
Frequency of tobacco use per day	One to five times	17 (14.1)	27 (22.5)
	Six to ten times	14 (11.6)	20 (16.6)
	More than ten times	23 (19.1)	13 (10.8)
Duration of tobacco use (in years)	<10 years	4 (3.3)	7 (5.8)
	10 to 20 years	13 (10.8)	25 (20.8)
	>20 years	37 (30.8)	28 (23.3)
Age when started tobacco use (in years)	<18 years	7 (5.8)	13 (10.8)
	>18 years	47 (39.1)	47 (39.1)
Initiating factor for tobacco use	Family	4 (3.3)	7 (5.8)
	Peers	46 (38.3)	53 (44.1)
	Films/advertisements	4 (3.3)	-
Urge to use tobacco	Before bowel movement in morning	17 (14.1)	6 (5)
	After tea/coffee/meals	14 (11.6)	31 (25.8)
	While/after drinking alcohol	6 (5)	7 (5.8)
	When feeling stressed	8 (6.6)	6 (5)
	Seeing others use tobacco	6 (5)	6 (5)
	When alone/bored	3 (2.5)	4 (3.3)
Ever thought of quitting tobacco use	Yes	48 (40)	56 (46.6)
	No	6 (5)	4 (3.3)
Made any quit attempt in past	Yes	46 (38.3)	51 (42.5)
	No	2 (1.6)	5 (4.1)
Currently willing to quit	Yes	47 (39.1)	52 (43.3)
	No	5 (4.1)	6 (5)
	Don't know	2 (1.6)	2 (1.6)

*Smokeless tobacco (SLT). **Figure in parentheses denotes percentage (%)

by Thakur *et al.*[18] This may be attributable to socio-cultural differences and religious norms in the state and in the country.[25,26] Punjab is one such province in India where majority of the population practices Sikh faith. The tenets of Sikhism prohibit use of tobacco and consider its use as a taboo.[27]

Tobacco use was reported higher among NCD clinic attendees from urban area in comparison to rural area (15.0% vs 6.6%). More than half of the tobacco users were using SLT (50%). *Bidi* (81.4%) & *zarda* (95%) were the most commonly used smoked and smokeless tobacco products respectively among the users. These findings are in consonance with GATS (2016), Punjab.[5] This urban-rural difference in use of type of tobacco may be due to the cultural and religious influence in the state while *zarda* and *bidi* remain to be cheaper tobacco products and hence easily affordable.[28] Moreover, higher use of SLT may be attributed to the perceptions and beliefs among participants such as use of SLT are less risky or less harmful in comparison to smoked tobacco products.[29,30]

Age is an important determinant of tobacco use.[31] The current study reported that the odds of tobacco use increased with increasing age group among NCD clinic attendees (OR 3.75; CI 1.41-10.02). The findings are in concordance with Rani *et al.*[32] The current study found that most of the tobacco smokers have frequency of use of more than ten times a day (19.1%) and have been using it for more than 20 years (30.8%). This higher frequency and duration of use could possibly lead to development of nicotine dependence. This dose response relationship makes it difficult for users to quit owing to the highly addictive potential of nicotine.[33,34]

The inverse relationship between education and tobacco use is well known.[31] In contrast, the current study reports high tobacco use in the higher education category. The current times call for higher educational credentials for better employment opportunities. These could be a reason for difference in tobacco use across various educational categories. Few studies in past have also highlighted this difference of tobacco smoking prevalence and education level.[35,36] A study from Thailand also reported that a higher level of education was associated with smoking prevalence.[37]

The adjusted analysis for occupation variable found that the odds of tobacco use among the participants were three times higher among

	Table 4: Binary logistic regression model to test the association of various Characteristics with Tobacco Use among study participants				
Variable	Study participants n=1172 (%)	Unadjusted		Adjusted	
		OR (95% CI)	P	OR (95% CI)	P
Age (in years)			<0.01		0.025
30-39	75 (6.4)	Reference			
40-49	213 (18.2)	0.934 (0.47-1.82)	0.843	1.37 (.57-3.30)	0.472
50-59	325 (27.7)	2.03 (1.02-4.02)	0.042	1.94 (.80-4.67)	0.139
60 and above	559 (47.7)	3.91 (1.97-7.75)	<0.01	3.75 (1.41-10.02)	0.008
Sex					
Female	665 (56.7)	Reference			
Male	507 (43.3)	100.5 (24.7-409.0)	<0.01	70.68 (15.58-320.54)	<0.01
Residence					
Rural	664 (56.7)	Reference			
Urban	508 (43.3)	0.40 (0.27-0.59)	<0.01	0.402 (.22-.66)	<0.01
Education			0.001		<0.01
No formal education	370 (31.5)	Reference			
Up to Primary education	233 (19.8)	0.70 (0.37-1.31)	0.273	2.08 (.89-4.8)	0.091
Up to Secondary education	133 (11.3)	0.30 (0.16-0.55)	<0.01	1.10 (.47-2.5)	0.814
Higher education	436 (37.2)	0.47 (0.28-0.79)	0.005	3.7 (1.81-7.96)	<0.01
Occupation					
Employed	394 (33.6)	Reference			
Unemployed	778 (66.4)	14.74 (8.78-24.78)	<0.01	3.06 (1.45-6.47)	0.003
NCDs					
Hypertension	496 (42.3)	0.31 (0.15-0.62)	0.001	0.379 (.17-.81)	0.012
Diabetes Mellitus	334 (28.4)	0.29 (0.14-0.57)	<0.01	0.389 (.18-.81)	0.012
COPD	32 (2.7)	7.8 (3.0-20.5)	<0.01	6.88 (2.1-20.59)	0.001
CAD	13 (1.1)	0.61 (0.15-2.39)	0.483		

*Odds ratio (OR), Confidence interval (C.I.). ** Figure in parentheses denotes percentage (%). ***Chronic Obstructive Pulmonary Disease (COPD), Coronary Artery Disease (CAD)

those who were employed in comparison to who were not (OR 3.06; CI 1.45-6.47). This could be attributed to financial independence and therefore decision making followed by interaction and exposure to tobacco using peers. Moreover, in the merged categories there were no tobacco users in the homemaker category which comprised of females among our study participants. The current findings resonate with results of a state wide study carried out in Gujarat, India by Kahar *et al.*[38] which also state that employed ones are more likely to use tobacco in comparison to the unemployed. Findings from the current study are also consistent with WHO STEPS survey carried out in Rawanda by Habiyaremye *et al.*[39] In addition, results from current study conform to the findings from World Health Survey on social determinants of smoking in LMICs which demonstrates that tobacco use is more common among people with income in comparison to individuals who do not earn.[40]

Tobacco use among hypertensive patients attending NCD clinics was reported to be higher for SLT products (68%) compared to smoking. Similar was the findings by Sarkar *et al.*[24] in a study carried out in Gujarat among patients suffering from hypertension, tobacco use among diabetic patients was 26.6% which is lower than pooled prevalence of 30.6% reported for India by Roderick *et al.*[21] The difference could be because the prevalence of tobacco use in the state of Punjab is lower compared to the other states of the country.[5] However, SLT use was higher in this disease group too. The reasons for continuing tobacco use could be attributed to higher dependence on nicotine and impact of financial independence.[41] Three-fourth (75%) of the COPD patients were current smokers and 12.5% were SLT users among the patients attending NCD clinic. The previous literature suggests that the COPD patients continue to smoke tobacco despite of being aware about the role of smoking in causing and worsening their disease. This may be because they believe that it's too late to quit now, give more weightage to personal advantages of continuing smoking and lack of stage specific tailored cessation interventions.[42-44] Furthermore, new research suggests that health care professionals should provide specific advice to tobacco users and combine health education with an emphasis on the health consequences of tobacco use among these high-risk patients.[45–47]

Strengths and limitations

This is the first comprehensive facility-based study to ascertain tobacco use among NCD patients attending NCD clinics. Also, the authors have strictly adhered to STROBE guidelines for reporting findings of the current study. However, due to the inherent limitation of study design, this study cannot establish an association or possible causality between the risk factor and outcome. In addition, no proxy measure has been used to validate tobacco use and due to social desirability bias by the respondents (as tobacco use is a sensitive issue in the state) which might have resulted in under reporting of tobacco use.

Conclusion and Recommendations

The overall prevalence of tobacco use among study participants was reported to be 10.2%. Higher tobacco use among the NCD clinic attendees with increasing age predisposes them to develop grave complications and multiple co-morbidities. This calls for the need to administer strong behaviour change strategies in higher age group bracket to reduce the toll due to this major risk factor. Qualitative research is required to determine the underlying reasons as why some people refrain from the tobacco use, while others continue to do so even after being diagnosed with some or the other NCD. Further, intensive behaviour change interventions for tobacco cessation that are customised to the disease of the patient needs to be incorporated and strengthened through capacity building of existing manpower at the NCD clinics. In addition, continuous medical education of primary health care physicians and grass root level workers involved at the community level with respect to risk factor screening followed by referral to higher health facility needs to be strengthened especially in resource constraint settings. This could couple up in supporting the existing health systems and thereby improving health outcomes followed by achieving Sustainable Development Goals.

Conflicts of interest

There are no conflicts of interest.

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