ORIGINAL ARTICLE

Exploring the profile of patients attending tobacco cessation clinic at a tertiary care hospital in Punjab

Anurag Chaudhary, Mahesh Satija, Vikram Kumar Gupta, Nishant Sharma, Nitin, Arzoo Kundal, Nikhil Duggal, Devesh Kansal

Department of Community Medicine, Old Campus, Dayanand Medical College & Hospital, Ludhiana – 141001

CORRESPONDING AUTHOR

Dr Vikram Kumar Gupta, Professor, Room No. 307, Department of Community Medicine, DMCH, Old Campus, Civil Lines, Ludhiana-141001, Punjab

Email: drvikramgupta1983@gmail.com

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ABSTRACT

Background: Indian Global Adult Tobacco Survey round II in year 2016-17 reported that 28.6% (26.7 crore) adults use tobacco in various forms and is responsible for 1.35 million deaths per year. Mandatory establishment of tobacco cessation clinic (TCC) in medical colleges will surely curb this problem though at secondary level of prevention. **Aims & objectives:** This research was planned to study the sociodemographic profile of patients attending TCC in a tertiary care hospital of Punjab. **Methodology:** A cross-sectional study was conducted among 100 patients attending TCC and Fagerstorm scale was used. **Results:** Out of 100 patients, 96% were males and 4% females with mean age of 38.09± 12.02 years. Over half (55%) of patients were having education above senior secondary level, 14% being illiterate and 72% were married. Religion-wise, 48% were Sikhs, 46% Hindus and 6% Muslims. Half of the patients were consuming smokeless tobacco (SLT) and 40% were addicted on smoked form. About 39% of patients were in stage 1 of behavior change and 4% were in the final stage of behavior change. The mean Fagerstorm score for nicotine dependence was 6.67±2.92. The relationship between type of tobacco usage and religion was statistically significant ($p<0.01$). **Conclusion:** SLT is on the rise. Many of the working and young to middle age males are addicted to tobacco and they are in need of cessation services to lead a healthy life in future. Services for substance abuse need to be integrated along with TCC.

KEYWORDS

Nicotine, Tobacco, Tobacco Cessation Clinic, Fagerstrom Score,

INTRODUCTION

Globally, tobacco is responsible for 8 million deaths annually, while in India, it is responsible for 1.35 million deaths each year. (1) Regarding tobacco production and consumption, India ranks at second place worldwide. (1) Alarmingly, the number of deaths caused by tobacco related diseases outweighs the total number of deaths caused by malaria, tuberculosis (TB), and acquired immunodeficiency syndrome (HIV/AIDS) combined. (1)

According to second round of the Global Adult Tobacco (GATS-2) in India (2016-17, age group >15 years), it was reported that 28.6% (26.7 crore) adults use tobacco in various forms. During past one year, 38.5% of smokers and 33.2% of smokeless tobacco users tried to quit tobacco, while 55% of current smokers and 50% of smokeless tobacco users either planned or were thinking about quitting. (2)

Numerous factors influence tobacco consumption by an individuals, including beliefs, product availability, advertising campaign's and social norms.(3)

According to Article 14 of the Global Framework Convention on Tobacco Control (FCTC), "Each country should take effective measures to promote

cessation of tobacco use in any form and treatment for tobacco dependence".(4)

The establishment of functional TCC in every medical college was mandated by Ministry of Health and Family Welfare (MoHFW) in year 2024.(5)

Quitting tobacco becomes exceptionally challenging once addiction has developed, often necessitating the support of a healthcare professional, and this support is provided in TCC.(6) Furthermore, research suggests that brief advice from health professionals increases quit rates by up to 30%, while intensive advice increases the chances of quitting by 84%. Factors affecting tobacco quitting include individual motivations (health concerns, setting an example), addiction level, socioeconomic status, social support, education, and environment. (7)

National Family Health Survey-5 (NFHS-5) reports that, Punjab has the lowest rates of tobacco consumption, with barely 13% men and 0.4% women using tobacco and smoking is prohibited in faith of Punjab's majority. (8,9) Av1.1][DG1.2]

Aims and Objectives:

1. To study the sociodemographic profile of patients attending TCC
2. To study the determinants of quitting tobacco in patients attending TCC established in September 2024, in a medical college and tertiary care hospital in Punjab.

MATERIAL & METHODS

Study type and design: This was a cross-sectional study done at a single site.

Study setting: The study was conducted among the patients attending TCC (Tobacco Cessation Clinic), at a private medical college and tertiary care hospital in Ludhiana, Punjab.

Study Participants and Inclusion Criteria: All patients over 18 years of age attending the TCC were included in the study. The subjects were both from both rural and urban areas of Punjab.

Exclusion Criteria: The exclusion criteria consisted of patients under 18 years and those who did not want to participate.

Strategy for Data Collection: The clinic has been operational since October 1st, 2024 and 200 patients had reported by month of May 2025 and provide free services. The first 150 participants were chosen from the registers maintained at the TCC, and data were noted. [Av2.1][DG2.2]Patients were contacted using the telephone number provided in the records, and after brief introduction, their verbal consent was secured. The study subjects were apprised of the purpose of the study and any missing data was requested from them. The participants were interviewed using a pre-tested pro forma based on operational guidelines for running TCC by MoHFW. (6) Questions were asked in Punjabi, Hindi, or English to ensure clear comprehension. It primarily encompassed demographic information, understanding the pattern of tobacco consumption, and awareness within the population. The Fagerstorm scale was used to score the level of nicotine addiction. The investigators also verified their tobacco quitting status. As many contact numbers provided by patients were incomplete, switched off or not in use, a sample of 100 patients was obtained from the first 150 patients on the list. [Av3.1][DG3.2]At the end of the call, patients were advised and motivated to continue their efforts to quit tobacco and have timely follow-up from the TCC.

Sample Size: 100 patients (50% of available population)

Study Duration: From March 2025 to May 2025.

Ethical Issues: Approval from Institutional Ethics Committee, via letter no. IEC/2025/440 dated 27th May, 2025 was obtained before the commencement of the study.

Data Analysis: Data entry was done in Microsoft Excel spreadsheet and the mean, standard deviation, frequencies and proportion (percentage) were calculated. The Chi-square ($\chi 2$) test was performed for comparing categorical data. A p-value of less than 0.05 was considered statistically significant. Fagerstrom Test and various stages in behavioral change were also recorded.

Working Definition (FTND and TTM)

The FTND (*Fagerstrom Test for Nicotine Dependence*) is a tool used to assess various levels of dependence on nicotine in smokers, providing a score to guide treatment and cessation efforts. The scoring range is from 0 to 10. The score indicates level of dependence as follows:

0-2: very low; 3-4: low; 5: moderate; 6-7: high, and 8-10: very high. (10)

Stages of Behavior Change as per The Trans-theoretical Model (TTM)

The TTM provides conceptual understating of stages of behavior change for any condition or habit. (11) TTM is effective across a broad spectrum of problems, like smoking, alcohol abuse, addiction and cancer screening etc. The various stages in TTM stages include; Pre-contemplation, Contemplation, Preparation, Action and Maintenance. In Pre-contemplation, the person doesn't identify any problem with him/herself. In Contemplation stage, the person becomes aware of the problem and considers changing. At the preparation stage, the person acknowledges the problem and starts preparing to correct the problematic behavior. In the action and maintenance stages, person

maintains complete abstinence from adverse behavior for less than and more than six months duration respectively.

RESULTS

Out of 100 patients who attended the TCC, 96% were male and 4% were female. The maximum number of subjects (60%) were in the age group of 21-40 years followed by one third (33%) in 40-60 years (mean age=38.09± 12.02). Over half (55%) of patients had education above the senior secondary level, 14% being illiterate and 72% were married. All the female patients were housewives. Regarding the religion they followed, 48% were Sikhs, 46% Hindus and 6% Muslims.

Almost half (47%) patients were skilled and semiskilled workers and 17% were unemployed and Fifty-two percent had less than 10 years of service (mean years of service in years=11.97 ± 10.84). Regarding working hours, 65% worked less than 8 working hours (mean working hours= 6.71 ± 3.93). About two third (63%) had a family size of 3 to 5 members, with 49% having 1 to 3 people dependent on them for support. Nearly one-fourth (23%) had attempted to quit cigarette/tobacco products twice. Half of the patients consumed smokeless tobacco (SLT), and 40% were addicted to the smoked form.

According to trans theoretical model for behavior change, 39% of patients were in stage 1 of behavior change and 4% were in the final stage of behavior change. Over half of the patients (57%) had co-morbid substance abuse and they were receiving treatment for it.

When exploring the reasons for quitting, 63% didn't answer and 17% cited social reasons. Similarly, when asked about reasons for relapse, 63% didn't answer and 27% cited craving as the main reason (Tables 1 & 2). The patients were physically active, with mean physically active hours per week of 13.85 ± 17.08 and mean body mass index in kg/m2 (BMI) of 24.85 ± 4.31.

The mean Fagerstorm score for nicotine dependence was 6.67±2.92. (Table 3)

On applying statistical tests, association between the number of dependents family members versus quitting attempts (p=0.09), and income status with the Fagerstrom score (p=0.72) was found to be statistically non-significant. However, relationship between type of tobacco usage and religion was observed to be significant (p<0.01). [Av4.1][(Table 4)

Table 1: Sociodemographic variables of patients attending TCC (N=100)

Variables	Frequency (%)	Variables	Frequency (%)
Gender		Dependents	
Female	4 (4%)	0	17 (17.0%)
Male	96 (96%)	1–3	49 (49.0%)
		3–5	30 (30.0%)
Age Group		06-Jul	4 (4.0%)
<20	2(2%)	Previous Attempts at Quitting	
21-40	60(60%)	0	63 (63%)
41-60	33(33%)	≤2	23 (83.0%)
≥60	5(5%)	3–5	11 (11.0%)
		≥6	3 (3.0%)
Education Status			
Illiterate	14 (14%)	Type of Tobacco	
Primary	9 (9%)	Smoked	40 (40.0%)
Middle	8 (8%)	Smoked and Smokeless	10 (10.0%)
Matric	14 (14%)	Smokeless	50 (50.0%)
Secondary	33 (33%)		
Graduate	19 (19%)	Quitting Reasons	
Masters	3 (3%)	Declined to Answer	63 (63%)
		Social Unacceptability	17 (17%)
Marital Status		Self-awareness	8 (8%)
Unmarried	25 (25%)	Health Issues	6 (6%)
Married	72 (72%)	Family	3 (3%)
Divorced	2 (2%)	Financial	2 (2%)
Separated	1 (1%)	No specific reason	1 (1%)
Occupation		Relapse Reasons	
Housewife	4 (4%)	Declined to Answer	63 (63%)
Professional	11 (11%)	Craving	27 (27%)

Retired	3 (3%)	Irritability	3 (3%)
Semi-professional	2 (2%)	Peer Pressure	2 (2%)
Semiskilled	36 (36%)	Stress	3 (3%)
Skilled	11 (11%)	Loss of concentration	1 (1%)
Student	2 (2%)	Headache	1 (1%)
Unemployed	17 (17%)		
Unskilled worker	7 (7%)	Stage of Behavior Change	
Other	7 (7%)	1 Pre-contemplation	39 (39%)
		2 Contemplation	30 (30%)
No. of Years of Service		3 Preparation	11 (11%)
0–10	52 (52%)	4 Action	16 (16%)
11–20	24 (24%)	5 Maintenance	4 (4%)
21–30	10 (10%)		
>30	5 (5%)	Co-Morbid Substance Abuse	
Not Ever Worked	9 (9%)	None of Abuse	43 (43%)
		Alcohol	27 (27%)
No. of Working Hours		Opioids	27 (27%)
<8	65 (65%)	Cannabis	1 (1%)
≥8	26 (26%)	IV Drug Abuser	2 (2%)
Not Ever Worked	9 (9%)		
No. of Family Members			
1–3	15 (15%)		
3–5	63 (63%)		
≥6	22 (22%)		

Table 2: Mean & Median values for Age, Service hours/years, Income, Physical activity 7 BMI

Variable	Mean ± SD	Median (IQR)
Age (N=100)	38.09 ± 12.02	35.00 (29.00, 46.50)
No. of working hours per day (N=91) {9 patients not ever worked}	6.71 ± 3.93	8.00 (5.00, 10.00)
No. of Years in present service (N=91) {9 patients not ever worked}	11.97 ± 10.84	10.00 (2.00, 19.00)
Income per month (INR) (N=91)	20537.77 ± 19929.50	15000.00 (8000.00, 25000.00)
Physical activity (no. of hours per week) (N=100)	13.85 ± 17.08	10.00 (0.00, 20.00)
BMI (N=100)	24.85 ± 4.31	24.69 (22.23, 26.88)

Table 3: FAGERSTROM Score for Nicotine Addiction

Statistic	Value
Mean ± SD	6.67±2.92
Median (IQR)	8 (5-9)
Range	0-10

Table 4: Association between various variables

Number of Dependents	Number of Quitting Attempts		Total	P value
	≤2	≥3		
≤2	39 (92.9%)	3 (7.1%)	42 (100%)	0.09
≥3	47 (81.0%)	11 (19.0%)	58 (100%)	
Total	86 (86.0%)	14 (14.0%)	100 (100%)	
Income Status (INR)	Fagerstrom Score		Total	P value
	≤4 (Low Dependence)	≥5 (High Dependence)		
≤10,000	8 (19.5%)	33 (80.5%)	41 (100.0%)	0.61
≥10,000	14 (23.7%)	45 (76.3%)	59 (100.0%)	
Total	22 (22%)	78 (78%)	100 (100.0%)	

	Type of Tobacco			
Religion	Smoked	Smoked & Smokeless	Smokeless	P value
Sikh (48%)	12 (25.0%)	4 (8.3%)	32 (66.7%)	0.01
Hindu (46%)	24 (52.2%)	5 (10.9%)	17 (37.0%)	
Muslim (6%)	4 (66.7%)	1 (16.7%)	1 (16.7%)	
Total	40 (40.0%)	10 (10.0%)	50 (50.0%)	

DISCUSSION

The establishment of TCC in all the medical colleges is timely and right step by MoHFW, Government of India, as tobacco and related products are leading causes of NCDs and India as a nation needs a multipronged strategy to fight it, with TCC being one arm out of many.

In the present study, more than half of the subjects were in age group of 21-40 years and the mean age of the participants was 38.09± 12.02 years. Similar results were observed by Misra S et al in their study in Gujarat on tobacco users, where it was found that the current tobacco user's mean age was 36.93±13.73 years.(3) Also, Chahar P et al, in patients visiting TCC in New Delhi showed similar mean age of 39.8±11.4 years.(12)

Tobacco usage exhibits lower consumption in females and in the present study, 4% patients were females. In study by Misra S et al, 11% of participants were females.(3) The difference in the gender may be due to privacy issues for females and this TCC has been functional for last 8 months only. Punjab reports specifically lowest prevalence of tobacco use among females.(8) This gender difference was also observed by Jeong BY et al in Korea, with the finding, that web or telephone-based cessation services were preferred by women to ensure privacy. (13) Another study done by Li and Okamoto found social stigma as an important barrier for women accessing cessation services, resulting in difficulty in quitting tobacco.(14)

Regarding marital status, 72% subjects were married. Similarly, Chahar P et al showed the majority of the patients visiting the TCC (83.9 %) were married.(12)

Education brings awareness for quitting. More than half (55%) of the patients were educated above senior secondary level and 14% were illiterate. Sankar D et al at TCC in Chennai, South India reported that 84.4% had education above senior secondary level and 4.4 % were illiterate.(7)

Tobacco consumption requires money because of the taxes associated with the products. The mean income of study participants was ₹ 20537. (₹=Indian National Rupees). In a study by Budukh A et al in Mumbai, on factors affecting tobacco quitting, it was revealed that out of all the patients, 75.7% of patients had a monthly income of less than ₹30,000.(15)

In this study, about 47% patients were skilled and semiskilled workers; 17% were unemployed and 65% worked less than 8 hours (mean working hours= 6.71 ± 3.93). Chahar P et al showed that the half of the patients visiting the TCC were either semiskilled or skilled workers and 8.7% were not working.(12) They were working an average of 9.55 hours per day. Budukh A et al, found that 35% of all patients were drivers, farmers, or laborers by profession.(15)

If a particular religious' faith prohibits smoking, it could be an important determinant in tobacco consumption, particularly smoking. In present study, more than 52% of subjects followed Hindu and Muslim religions, while 48% were Sikhs. Sikhs consumed more smokeless tobacco (SLT), which was statistically significant (p<0.01). Dutta S et al in his study reported that consumption of any form of tobacco in male patients was higher in Muslims (AOR=1.43) and Christians (AOR=1.19) as compared to Hindus (AOR=1). (16)

In the present study, 37% of the study subjects had attempted to quit Cigarette/Tobacco in the past. Similar findings were reported by GATS-2 survey, where 38.5% of smokers and 33.2% of smokeless tobacco users tried quitting in last year. (2) Misra S et al has also reported that 44.33% of subjects tried quitting tobacco.(3) In current study, on asking about reasons for quitting, 17% cited social reasons.

In the present study, regarding stages of quitting according to behavior change theory, 39% of patients were in stage 1 of behavior change and 20% were in the pre-final and final stages of behavior change. A study by Sankar D et al at TCC in Chennai, South India reported that nearly half of the clients (53.9%) were in the pre-contemplation and contemplation stages and had a quit rate of 28.5% at 6 months.(7) However, a study has reported higher quit rates of 51.8% as it was conducted in diabetic patients and a disease condition can be important motivation for quitting.(17) The overall prevalence of tobacco users who attempted to quit the habit was found to be 31.5% for GATS-2.(2) As, the final stage of behavior change, requires a 6 months of tobacco-free period, our center's TCC quit rate can be calculated only in future after certain time period.

As discussed earlier, Fagerstrom score indicates nicotine dependence. In present study, the mean

Fagerstrom score was 6.67±2.92 indicating high dependence. While Misra S et al reported low and medium nicotine dependence in 83.03% of patients; Sankar D et al showed 26.4% had very low, and 34.1% had high levels of dependence; Chahar P et al showed 21.8% had low, 48.5% medium and 29.7% had high nicotine dependence.(3,7,12) in contrast, Islam K et al in their study in West Bengal, found a mean Fagerstrom score of 4.65±2.41 in people willing to quit versus mean Fagerstrom score of 7.76±1.90 in people not willing to quit.(18) The government should not lose focus on Punjab, because although it has lowest rate of tobacco consumption, but dependence is high ("Fagerstorm score was 6.67±2.92 indicating high dependence"), higher than other states.

In the present study, the TCC is located in a leading private medical college among northern states. In a study by Dutta S et al on intention-to-quit tobacco among tobacco users in India, it was revealed that maximum proportion of tobacco users (40%) having intention to quit (ITQ) had visited private health institutions among both genders.(16)

This study also reported co-morbid substance abuse among 57% patients attending TCC, and they were receiving treatment for the same. Sankar D et al reported 30.9% physical and psychological comorbidities in their study whereas, Budukh A et al, found 20.8% prevalence of substance abuse among the tobacco quitters. (7,15)

Strengths: This study provides a fresh insight on the functionality of the TCCs in a medical college after the MoHFW & NMC directives. Participants who were contacted telephonically appeared confident to quit tobacco. Tobacco consumption also exists with co-morbid drug abuse. Hence, the institutes need to provide a wide cover of services, so that patients get multiple benefits under one roof.

Conclusion

With more than 26 Crore of Indian population consuming tobacco in any form, and tobacco playing a major role in increasing cancer burden in India, Opening of TCC in all the medical college is a right step for quitting tobacco. [Av5.1][DG5.2]Smokeless tobacco consumption is on the rise. In this study, many of the working & young to middle age males are addicted to tobacco and they are in need of cessation services to lead a healthy life in future.

Recommendation

Services for substance abuse need to be integrated along with TCC.

Limitation of the Study

This study is a single center based study and sample is small, so it may not be representing overall population. Many patients could not be contacted due to wrong/non-working phone numbers provided. This could be a deliberate effort to avoid phone calls regarding quitting enquiries. As patients, are yet in phases of quitting, future follow-up studies will be needed. As the TCC is functional for the last 8 months only, it could be another limitation.

Relevance of the Study

The study highlights the importance of TCC in care of tobacco addicts and existing comorbid addictions.

Authors Contribution

All authors have contributed equally.

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Nil

Conflict of Interest

There are no conflicts of interest.

Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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