

## Original Research Article

# Prevalence and predictors of intention to quit tobacco smoking in smokers of rural area of North India (Haryana)

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## ABSTRACT

**Background:** Intention to quit is a strong predictor of quitting tobacco smoking. Knowledge about factors determining intention to quit smoking is essential for the development of smoking cessation strategies. The objective of this study was to determine the predictors of tobacco smoking cessation among smokers of a rural area of Haryana.

**Methods:** A cross-sectional study was conducted among 945 current tobacco smokers of a rural area of district Ambala of Haryana, India through an interviewer-administered questionnaire. The survey included questions pertaining to socio-demographic factors, smoking history, smoking practices, knowledge about smoking-related damage, perceived health status and intention to quit. Binary logistic regression was used to determine the predictors of intention to quit smoking among the study participants.

**Results:** The intention to quit smoking was present in 52.4% smokers out of whom 41.4% had attempted to quit smoking during the past 1 year. Binary logistic regression analysis revealed educational status, the presence of trigger feelings (stress/frustration/loneliness) for smoking, more money spent on smoking, the presence of any health problem, health professional advice received and awareness of harmful effects of smoking as predictors of intention to quit smoking.

**Conclusions:** The prevalence of intention to quit smoking among study participants is high but lower in comparison to developed countries. The predictors of quitting intention in the current study should be considered during designing of tobacco control programs and policies.

**Keywords:** Intention to quit, Prevalence, Predictors, Tobacco, Smoking

## INTRODUCTION

Globally tobacco accounts for around 6 million deaths each year of which direct tobacco use causes more than 5 million deaths.<sup>1</sup> WHO estimates that deaths due to tobacco use will rise above 8 million deaths annually in the next two decades worldwide, of which low and middle-income countries will contribute to more than 80% of deaths.<sup>2</sup> In India annually 8-9 lakh deaths are due to tobacco use.<sup>3</sup> In 2010, Global Adult Tobacco Survey

(GATS) in India revealed that 24.3% of men and 2.9% of women aged 15 years and above in India were tobacco smokers.<sup>4</sup>

Intention to quit smoking is an important predictor of smoking cessation.<sup>5</sup> Knowledge about factors affecting intention to quit smoking can be helpful in motivating a smoker to quit smoking. According to Wave 1 Tobacco Control Policy (TCP) India survey, 17.6% smokers had the intention to quit smoking although the pilot study of

the same survey reported intention to quit smoking in 37.4% of smokers.<sup>6,7</sup> Global Adult Tobacco Survey (GATS) in India reported intention to quit smoking in 46.6% of smokers while a study conducted in West Bengal reported same in 63.3% tobacco users.<sup>4,8</sup>

Several factors have been found to be associated with intentions to quit, including literacy level, health concerns, awareness of tobacco-related damage, having received medical advice to quit smoking, and past quitting attempt.<sup>9,11-17</sup> Intention to quit smoking is also associated with various factors that indirectly determine the addictions levels like the heaviness of smoking, and timing of first smoke of the day.<sup>14,18-20</sup>

Besides few national level surveys, studies pertaining to intention to quit smoking are limited in North India particularly in rural areas. Hence, the present study was designed to estimate the prevalence and determine the predictors of intention to quit smoking among smokers of a rural area of Haryana.

## METHODS

A cross-sectional, community-based study was conducted among 945 current smokers in a rural area of Haryana during a period of one year from April-2015 to March-2016. The area selected was the rural field practice area of MMIMSR, Mullana in district Ambala of Haryana, India. A sample size of 981 subjects was estimated by taking the prevalence of intention to quit smoking as 17.6% at the precision of 2.5% and a non-response rate of 10%.<sup>6</sup> Finally, 945 smokers participated in the study selected through multistage cluster sampling technique.

Each subject was explained the motive behind the study and an informed consent was taken. A semi-structured questionnaire was put to each subject to assess their intention to quit, smoking practices, smoking history, knowledge about smoking-related damage and perceived health status. Approval from Institutional ethics committee was sought before conducting the study.

Data was analyzed by SPSS version 20 statistical software. Chi-square test was used to find the association of various factors with the intention to quit smoking. A p value of less than 0.05 was considered statistically significant. Variables found to be significant by Chi-square test were entered into a forward step-wise binary logistic regression analysis to determine the final predictors of intention to quit smoking among the tobacco smokers.

## RESULTS

Among 945 study participants, around 86% (813) smokers were males while 14% (132) were females. Intention to quit smoking was expressed by 52.4% (495) smokers out of whom 41.4% (205/495) had attempted to quit smoking during the past 1 year. Overall, 21.7% (205/945) smokers had attempted to quit smoking in the past year.

Smokers with literacy status of above primary level had statistically significant ( $p=0.001$ ) higher odds (crude OR=1.613) of intention to quit smoking than those with the education of up to primary level. Association of other socio-demographic factors with the intention to quit smoking was statistically not significant (Table 1).

**Table 1: Association of socio-demographic variables with the intention to quit smoking.**

	Intention to quit		Odds Ratio (95% CI)	P value
	Present (495)	Absent (450)		
	N (%)	N (%)		
Age in years				
≤ 20	31 (50.8)	30 (49.2)	Ref	
21-40	211 (52.1)	194 (47.9)	1.053 (0.614, 1.804)	0.852
41-60	196 (53.0)	174 (47.0)	1.09 (0.634, 1.874)	0.755
>60	57 (52.3)	52 (47.7)	1.061 (0.567, 1.986)	0.854
Gender				
Male	429 (52.8)	384 (47.2)	1.117	0.555
Female	66 (50.0)	66 (50.0)	(0.773, 1.614)	
Literacy status				
Above primary	196 (60.1)	130 (39.9)	1.614	<0.001*
Up to primary	299 (48.3)	320 (51.7)	(1.229, 2.118)	
Employment status				
Employed	424 (52.9)	378 (47.1)	1.137	0.478
Not employed	71 (49.7)	72 (50.3)	(0.797, 1.624)	

\* Statistically highly significant

**Table 2: Association of smoking habits, beliefs and other factors with the intention to quit smoking.**

	Intention to quit		Odds Ratio (95% CI)	P value
	Present (495)	Absent (450)		
	N (%)	N (%)		
Age of smoking initiation				
>20 years	378 (54.8)	312 (45.2)	1.429	0.018*
≤20 years	117 (45.9)	138 (54.1)	(1.071-1.907)	
Duration of smoking				
≤15 years	357 (54.8)	294 (45.2)	1.373	0.029*
>15 years	138 (46.9)	156 (53.1)	(1.041-1.809)	
Family history of smoking				
Present	322 (52.61)	290 (47.39)	1.027	0.875
Absent	173 (51.95)	160 (48.05)	(0.739-1.428)	
Monthly expenditure on smoking in Rupees				
>500	196 (62.0)	120 (38.0)	1.803	<0.001**
≤500	299 (47.5)	330 (52.5)	(1.368-2.375)	
No. of sticks smoked/day				
≤10	375 (56.6)	288 (43.4)	1.758	<0.001**
>10	120 (42.6)	162 (57.4)	(1.326-2.330)	
First smoke of the day				
After 30 minutes	359 (55.1)	292 (44.9)	1.428	0.014*
Within 30 minutes	136 (46.3)	158 (53.7)	(1.083-1.883)	
Trigger feelings (stress/frustration/ loneliness)				
Present	266 (62.7)	158 (37.3)	2.147	<0.001**
Absent	229 (44.0)	292 (56.0)	(1.652-2.790)	
Health professional advice received for smoking cessation				
Yes	211 (67.8)	100 (32.2)	2.6	<0.001**
No	284 (44.8)	350 (55.2)	(1.956-3.457)	
Ill-effect awareness				
Present	222 (64.2)	124 (35.8)	2.162	<0.001**
Absent	270 (45.3)	326 (54.7)	(1.646-2.839)	
Any health problem present				
Yes	198 (74.4)	68 (25.6)	3.745	<0.001**
No	297 (43.7)	382 (56.3)	(2.735-5.129)	

\* Statistically significant; \*\* Statistically highly significant.

**Table 3: Predictors of intention to quit smoking using binary logistic regression analysis.**

Predictors	Adjusted odds ratio (95% CI)	P value
Education above primary level	1.529 (1.139-2.053)	0.005
Monthly expenditure of more than Rs 500 on smoking	1.624 (1.205-2.188)	0.001
Presence of trigger feelings (stress/frustration/ loneliness)	1.992 (1.502-2.643)	<0.001
Health professional advice received for smoking cessation	1.490 (1.067-2.081)	0.019
Awareness of ill effects	1.696 (1.252-2.298)	0.001
Presence of any health problem	3.323 (2.335-4.728)	<0.001

Intention to quit smoking was significantly higher in smokers with early age of smoking initiation, lesser duration of smoking, delayed (after 30 minutes of awakening) smoking initiation during a day, lesser number of sticks smoked/day, higher monthly expenditure on smoking, smokers with some trigger feelings (stress, frustration, loneliness), smokers with some health problems, awareness about the harmful effects of smoking and also among smokers who had

received advice for smoking cessation from health professionals (Table 2).

Binary logistic regression analysis revealed the presence of any health problem as the strongest predictor (adjusted OR=3.323,  $p<0.001$ ) of intention to quit smoking. Education above primary level, monthly expenditure on smoking of more than 500 Rupees, the presence of trigger feelings (stress/frustration/loneliness) for smoking,

awareness of smoking-related health damage and health professional advice received for smoking cessation were the other statistically significant predictors of quitting intention among smokers (Table 3).

## DISCUSSION

The study was designed to determine the factors associated with intention to quit smoking and the predictors of intention to quit smoking among smokers of a rural area of North India. Almost half (52.4%) of the smokers had the intention to quit smoking in future which is comparable to findings of Global Adult Tobacco Survey India that revealed an intention to quit smoking in 46.6% smokers.<sup>4</sup> A study of West Bengal also reported higher intention of quitting smoking in 63.3% smokers.<sup>8</sup> However, TCP wave 1 reported quitting intention in 17.6% smokers only although its pilot survey had found quitting intention in 37.4% smokers.<sup>6,7</sup> Our findings are consistent with findings of studies conducted in other countries that reported intention to quit smoking among smokers as high as 56.8% in Jordan, 57.8% in Malaysia, and 66% in Australia.<sup>18,21,22</sup> An International tobacco control (ITC) survey of four developed countries (Canada, United States, United Kingdom and Australia) also found high quitting intention in 64.7-81.5% of smokers aged 18 years and above.<sup>23</sup>

We observed a significantly higher intention to quit smoking in smokers with literacy status of above primary level compared to below primary level. Previous studies have also depicted significant association of higher intention to quit smoking among educated smokers.<sup>9,11</sup> There is a significant increase in quitting intention with an increase in literacy level from lower to higher levels.<sup>10,24</sup> Among other socio-demographic factors, we could not find any significant association of age, gender, and employment status with intention to quit smoking which is consistent with findings of TCP India survey, TCP Bangladesh survey, and studies conducted in Jordan, and Australia.<sup>10,14,18,22</sup>

Age of initiation of smoking also affects intention to quit smoking. We found a higher quitting intention in smokers who had started smoking at a later age i.e., after 20 years compared to before 20 years of age. This is in agreement with findings of a study conducted by Hymowitz et al who also reported higher intention to quit smoking in smokers who started smoking after 20 years of age.<sup>25</sup> Other studies have also reported significantly higher quitting intention in smokers who had initiated smoking at an age later than 15-16 years.<sup>8,26</sup> Lower quitting intention in smokers with early smoking initiation age may be attributed to increased nicotine dependence among them.<sup>27</sup>

Various smoking practices like light smoking (<10 sticks/day), delayed first smoke of the day (after 30 minutes of awakening) and lesser smoking duration (< 15 years) were associated with significantly higher quitting

intention among smokers. Studies from Bangladesh and Jordan have also reported significantly higher quitting intention in smokers who smoked less than 10 sticks per day.<sup>14,18</sup> Similarly higher intention to quit smoking in smokers with the first smoke of day after 30 minutes of awakening was reported in studies from the United States and China.<sup>19,20</sup> In agreement to our findings, Islam et al reported significantly higher quitting intention in smokers with smoking duration of below 15 years than above 15 years.<sup>8</sup> Association of quitting intention with these smoking practices can be attributed to the difference in the addiction levels for nicotine.

Trigger feelings like stress/frustration/loneliness for smoking were found to be associated with higher intention to quit which is supported by a study conducted in Jordan that also reported significantly higher quitting intention in smokers who were bothered by something, felt unhappy and lonely at the time of smoking.<sup>18</sup> Stressful situations in day to day life act as barrier for quitting which has been reported in a systematic review of studies conducted in high-income countries.<sup>28</sup>

Intention to quit was also significantly higher in smokers who were aware of the harmful effects of smoking which is in agreement to findings from International Tobacco control policy surveys of Bangladesh and its pilot study in India.<sup>7,14</sup> In a study conducted in Australia, smokers who believed that smoking was not doing any harm to them had significantly lower odds of intention to quit smoking.<sup>22</sup> Surani et al in their study, also reported higher quitting intention in smokers who perceived that tobacco use has damaged their health.<sup>9</sup> Thus maintaining adequate knowledge about the detrimental effects of smoking among public can be an effective strategy for motivating smokers to quit smoking.

Receiving advice from a health care professional regarding smoking cessation was also associated with higher intention to quit which is consistent with findings of International Tobacco Control Policy surveys of India and Bangladesh.<sup>10,14</sup> One study reported that physician's advice was associated with higher awareness about tobacco-related damage.<sup>15</sup> This may contribute to a higher intention of quitting smoking among smokers who receive advice from a health care professional than those who don't receive. Advice by healthcare professionals not only motivates smokers in quitting but also leads to successful smoking cessation.<sup>16,29</sup> A meta-analysis of 39 controlled trials also revealed that advice by a doctor for quitting smoking is an effective tool for promoting smoking cessation.<sup>30</sup> Hence, the involvement of healthcare professionals in increasing awareness among smokers and regular advice regarding quitting smoking might increase the success rates of smoking cessation strategies.

Moreover, a higher quitting intention was also associated with the presence of health problems among smokers which is consistent with the findings from a study

conducted in Jordan that also reported higher quitting intention among smokers who had some health related issues like dyspepsia, irritable bowel, heart disease or shortness of breath.<sup>18</sup> Thus smokers already suffering from any health ailments may be more receptive to smoking cessation interventions and should be motivated for quitting smoking.

The predictors of intention to quit smoking obtained from binary logistic regression were education above primary level, more money spent on smoking, the presence of trigger feelings for smoking, health professional advice received for smoking cessation, awareness about harmful effects of smoking and presence of any health problems. A study conducted in West Bengal also reported education as predictors of intention to quit smoking in the binary logistic regression model.<sup>8</sup> Consultation with a healthcare professional/doctor for smoking cessation was also one of the predictors of quitting intention in multivariate models of TCP India survey and also in a study conducted in Australia.<sup>10,22</sup> Same study conducted in Australia revealed awareness about the harmful effects of smoking as a predictor of quitting intention, suggesting the need of involvement of skilled health care providers for supporting smoking cessation interventions in general population.<sup>22</sup>

To conclude more than half of the smokers showed interest in quitting smoking and the rate of past quitting attempts among them was also high. Improvement in the educational status of the community along with the involvement of healthcare professionals and increasing the awareness of tobacco-related damage in general population can be of considerable help in the development of intention to quitting smoking and subsequent smoking cessation. Looking up for alternative strategies for coping up with stressful situations should also be considered for formulating smoking cessation interventions.

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