Section: Community Medicine

Original Research Article

A STUDY OF PREDICTORS OF INTENTION TO QUIT TOBACCO USE AMONG CURRENT TOBACCO USERS - ANALYSIS OF GLOBAL ADULT TOBACCO SURVEY-INDIA, 2009-10

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Abstract

Background: Tobacco use remains to be the largest preventable cause of death and disability worldwide. Providing tobacco cessation services is an important strategy in tobacco control and is of great relevance to India. Having an intention to quit is a 'prerequisite' for making quit attempts. 56% current tobacco users in the Global adult tobacco survey (GATS) in India did not intend to quit, which is less compared to other studies. The objective is to assess the role of certain socio-demographic correlates, specific tobacco use practices and tobacco control strategies in predicting intention to quit tobacco use among current tobacco users. **Materials and Methods:** Data source: Current tobacco users from GATS-India 2009-10. Study design: A Secondary analysis of cross-sectional data, obtained from standardised household survey on a nationally representative sample. Analysis: Associations of independent variables with intention to quit tobacco studied using chi-square test. Bivariable and multivariable analysis conducted to identify the determinants of intention to quit tobacco separately for smokers and smokeless tobacco users. **Result:** In bivariable analysis, except residence all the factors considered in the study were determinants of intention to quit tobacco use. In multivariable analysis among all tobacco users, tobacco users who practiced combined' use (OR 0.66; CI 0.53-0.80), had no quit attempt in the previous year (OR 0.23; CI 0.20-0.26), had no exposure to preventive messages (OR 0.68; CI 0.56-0.80), had no knowledge of harm caused by smoking, and had no restrictions on smoking in homes, were less likely to desire to quit. Among only smokers, age-group, quantity of tobacco used per day, time to first smoke of the day, and smoking restriction in the homes were important predictors. Among smokeless users, in addition to the factors significant for smokers, females (OR 0.58; CI 0.46-0.74), and those with low education (OR 1.38; CI 1.08-1.77) were less likely to intend to quit. **Conclusion:** Age-group, gender, education level, quantity of tobacco use, time to first smoke of the day, previous quit attempt, exposure to preventive messages and knowledge of harm cause by tobacco use were important predictors of intention to quit tobacco use.

INTRODUCTION

Tobacco use remains the largest preventable cause of death and disability worldwide. Tobacco is also known to cause illness among those present around smokers, through environmental tobacco smoke (ETS). The World Health Organization (WHO) 2008 report on the tobacco epidemic warns that it could kill one billion people during this century. One of the of six tested and proven policies for averting this huge loss of lives in MPOWER package and calls for immediate implementation is to offer help to quit tobacco use.[1] WHO realizes the challenge posed by tobacco and has made an appropriate effort by instituting the Framework Convention on Tobacco Control (FCTC), a first ever international public

health treaty on any health issue. Tobacco problem exists in all regions of the world and China and India are the top two sufferers.[1]

In general, quitting tobacco use has been associated with immense health benefits to the tobacco users and people near smokers and provides relief from the enormous burden imposed on the environment and economy of the nation. Although more than 75% of the tobacco smokers express a desire to quit, actual quit rates observed have been very low (1-14%), mainly because of the strong nicotine addiction, lack of professional help, and easy availability of tobacco product.[1-6] The process of smoking cessation, as described by DiClemente et al. involves a "Transtheoretical Model", comprising pre-contemplation stage, followed by contemplation, preparation, action and maintenance, where a smoker passes from stage of pre-contemplation to maintenance if successful, or joins back one of the stages if relapsed.[7]

Results of the GATS-India survey showing only 47% of tobacco users having an intention to quit has caused great surprise, interest, and concerns as compared to the results of the other studies.[8,9] An intention to quit is recognized as the predictor of making quit attempts and later success. Thus, it seems to be an obligatory prerequisite for making quit attempts and successful quitting. In this situation, it becomes imperative to understand the factors associated with intention to quit tobacco use, to identify those likely to make quit attempts for providing cessation services and for formulating evidence-based, context-specific cessation strategies for India.[10-11] This exploratory analysis is anticipated to open the field for further detailed research in tobacco cessation to maximize the success obtained in quitting tobacco use. The results should be generalizable to the countries of Southeast Asia with similar tobacco scenario.

Specific objectives of this study were 1. To examine a range of socio-demographic correlates as determinants of intention to quit tobacco use among current tobacco users, using an exploratory approach; and 2. to assess the influence of selected factors (visit to doctor in the past 12 months, doctor's enquiry into tobacco use habits of patient, doctor's advice to patient about quitting tobacco), tobacco use practice inside the house/room, smoking policy in indoor place of work, exposure to preventive messages in media advertisements, health warnings on tobacco packets and knowledge of harm caused by tobacco use on intention to quit tobacco use among current users.

MATERIALS AND METHODS

This study used data from GATS-India carried out in 2009-10, by the International Institute of Population Sciences, Mumbai, for the Ministry of Health and Family Welfare, Government of India, using standard protocol outlined in Global Tobacco Surveillance System (GTSS). GATS is recognised as a "global standard for systematic monitoring of adult tobacco use and tracking key tobacco control indicators".[12]

GATS-India is a household tobacco survey, using a nationally representative probability sample of individuals aged 15 years and older population to provide national and regional estimates by gender. It uses a stratified, multi-stage cluster sampling approach in which probability proportional to size (PPS) random selection methods are employed to select clusters in several steps. Full details of the methodology of GATS-India are available on the website www.iipsindia.org and www.mohfw.nic.in. The original GATS-India study interviewed 69,296 persons, representing 94.8% of a total of 79,296 sampled persons. Study setting: 29 states and 2 union territories of India, covering 99% of the total population of India. Study design: Cross-sectional design. Study type: Secondary analysis of survey data. Study population: 24,329 (35.1%) persons aged 15 years and older identified as current tobacco users by the GATS-India 2009-10. Missing data for the outcome variable 'intention to quit tobacco use': 219 (0.9%) of 24,329. Effective sample size - 24,110. Data collection: Private, face-to-face interview using standard GATS-India questionnaire after obtaining informed consent. Definition of current tobacco user: person who currently uses any tobacco product either daily or occasionally.

Categorization of variables: Outcome variable: Intention to quit tobacco use categorised as 1. Yes, within the next month, 2. Yes, within the next 12 months, 3. Yes, some day but not in next in 12 months, 4. Not interested in quitting and 5. Don't know.

Outcome variable was categorised into a binary variable for doing bivariate and multivariable analyses. Categories 1, 2 and 3 grouped to form one category as 'yes intention' and the other category was 'No intention' category. The 'don't know' response category for the outcome variable was excluded from the analysis as it could not be grouped with any of the two categories. It formed 13% of the outcome variable. Explanatory variables: Variables for gender, residence, tobacco use pattern, past quit attempts, visit to doctor in the past 12 months for the reason of person health, doctor's enquiry about tobacco use, doctor's advice to quit tobacco, exposure to preventive messages in the media about tobacco in the last 30days, effect of health warnings on cigarette packets since last 30days were categorised in a binary manner. Weighted percentages were calculated that are representative of the country. Stratification and clustering effect were considered in the calculation of 95% confidence intervals. When dealing with subpopulation, the command 'subpop' was used and not 'if/in' as the latter commands tend to underestimate the variance.[13]

Analysis was done using Stata software version 12. We used exploratory approach for the analysis as there were no previous studies that addressed this

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research question in India (the aetiology was largely unknown) and there were many independent factors in the study. Predictive modelling was only appropriate if there were few explanatory factors that could explain maximum variation in the outcome variable, which was not the case in this study.[14] Causal modelling was not used as the type of variables included and information available was not sufficient to create a conceptual framework showing meaningful hierarchy. All the explanatory factors were of equal importance in the analysis.

Bivariable analysis and multivariable analysis was conducted between each of the independent variables and outcome variable (2 categories). The linear association test was conducted for the association between age-group and intention to quit in bivariable analysis by using regress command. Only cases with complete information were included for analysis in the multivariable analysis. Multivariable analysis was done with stepwise approach, first for all tobacco users,

The interaction between age-group and gender was tested using Wald test. Likelihood Ration test (LRT) cannot be used for survey data as it assumes that the data is independent, which is not the case in survey data (due to the presence clustering) and Wald test does not make this assumption. Finally, the model with interaction terms was retained. Adjusted Odds ratios and their 95% Confidence intervals and p values were calculated. A p value of <0.05 was considered statistically significant. Ethical clearance: Ethical approval was granted by London School of Hygiene and Tropical Medicine. Since the GATS-India data is already in the public domain, it was not necessary to obtain ethical approval from IIPS, Mumbai, India.

RESULTS

A total of 24,329 out of 69,296 persons were current tobacco users, giving a tobacco use prevalence of 34.6% for India (weighted), and this formed study sample for the current study. There were 219 (0.9%) missing observations in the outcome variable 'Intention to quit' tobacco, and less than 1% missing for education level and occupation. [Table 1] shows the distribution of baseline characteristics in the study sample. The age of current tobacco users ranged from 15 to 110 years. More than 70% were male and nearly 80% lived in rural areas. The majority were in the age-groups 25-44years and 45-64 years (75% together), did not have formal education (39.7%), were self-employed or worked for the government and non-government sectors (72%), used smokeless tobacco only (59.6%), and practiced tobacco use daily (82.1%). The proportions of 'daily' users were approximately similar among smokers and smokeless users (82.1% and 83.4%). Less than half (44.1%) expressed a desire to quit tobacco. About 45.5% among 'smokers only' and 50.3% among 'smokeless users only' expressed intention to quit tobacco. About 15.3% practiced more than one form of tobacco use.

In bivariable analysis [Tables 2 & 3], except for residence, all the independent variables showed significant association with intention to quit tobacco use (binary categorisation, 'No intention' versus 'yes intention' -responses 1, 2 and 3 clubbed to form 'yes intention'). Compared to tobacco users in the youngest age-group, tobacco users in all the older age-groups were less likely to have an intention to quit tobacco (ORs 0.60, 0.43, 0.27). There is a significant trend of decreasing intention to quit with increasing age-group (test of linear association p value <0.001). Females were 30% less likely to intend to quit than males.

Tobacco users with more than secondary education had 2 times the odds of desiring to quit compared to those with no formal education. Student tobacco users are at around 2 times the odds of desiring to quit compared to tobacco users in government and non-government jobs. Those practicing 'combined' use were 28% less likely to intend to quit than those who only smoked. Both among smokers and smokeless tobacco users, daily users were at more than 2 times the odds of having the desire to quit compared to those doing occasionally. Those who smoked after 60minutes of waking up were at 2.6 times odds of showing desire to quit than those who smoked within 5 mins of waking up in the morning.

Those who did not have a quit attempt in the last year were 80% less likely to show the intention to give up compared to those with an attempt in the previous year. Those who did not receive quit advice from doctors in the previous year were 41% less likely to show the desire to quit compared to those who received quit advice. Tobacco users living in smoke-free homes or workplaces were 70% more likely to report the desire to quit compared to those living in non-smoke-free places. Tobacco users who were not exposed to preventive messages about tobacco in the media, who thought warnings on packets did not make them to think about quitting and those who had no knowledge of illness caused by tobacco use were less likely to intend to quit compared to their comparison groups.

[Table 4] shows the results of multivariable analysis among all tobacco users. Variables residence, education level, occupation, knowledge that smokeless tobacco use causes serious illness, were no more determinants of intention to quit tobacco use after adjusting for the confounding effect of all the other variables in the model. Combined users were 34% less likely to show the desire to quit compared to those who 'only' smoked after taking out the confounding effect of other variables in the model. There was no difference by type of tobacco used (smoking and smokeless). Non-daily users were more likely to have the desire to quit compared to daily users (Adj. OR 1.81, CI 1.51-2.15). Variables previous quit attempts, visit to doctor in the last year, smoking policy inside home, exposure to preventive messages in mass media, knowledge that smoking

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causes serious illness were statistically significant predictors in the multivariable analysis.

There was effect modification between age-groups and gender, with Wald test for interaction showing strong evidence against the null hypothesis of no difference between the stratum specific odds ratios ($p<0.001$). After controlling for potential confounders and taking into account this interaction, odds of intention to quit differed between age-groups within the same sex, with lowest intention to quit in older age-groups compared to youngest age-group. However, in each age-group, the odds of intention to quit were not different for females compared to males in the same age-group.

Table 1: Distribution of baseline characteristics of current tobacco users in GATS-India, 2009-10, showing un-weighted counts and weighted population estimates. (N=24,329; Weighted N=274,886,830).

Baseline characteristic		Un-weighted number	Weighted population estimates	
			Weighted number	Weighted %
Overall	GATS-India 2009-10 study	69,296	795,533,825	100
	current tobacco users	24,329	274,886,830	34.6
Current study	All current tobacco users in GATS -India 2009-10.	24,329	274,886,830	100
Age (in years)	15-24	2,558	43,157,232	15.7
	25-44	12,662	124,798,621	45.4
	45-64	6,997	81,366,502	29.6
	>65	2,112	25,564,475	9.3
Gender	Male	16,971	197,093,857	71.7
	Female	7,358	77,792,973	28.3
Residence	Urban	7,489	58,825,782	21.4
	Rural	16,840	216,061,048	78.6
Education level	No formal schooling	8,038	109,130,071	39.7
	Less than primary	3,752	43,707,006	15.9
	Primary but less than secondary	7,106	74,769,218	27.2
	Secondary and above	5,362	45,906,101	16.7
	Missing	71	1,374,434	0.5
Occupation	Govt & Non-govt employee	6,912	86,589,351	31.5
	Self-employed	10,068	111,054,280	40.4
	Student	666	6,597,284	2.4
	Homemaker	4,734	49,754,516	18.1
	Retired or Unemployed	1,889	20,341,625	7.4
	Missing	60	549,774	0.2
Tobacco use type	Smoking Only	7,517	68,996,594	25.1
	Smokeless use only	12,733	163,832,551	59.6
	Combined use	4,079	42,057,685	15.3
Tobacco use pattern	Daily	19,015	225,682,087	82.1
	Less than daily	5,314	49,204,743	17.9
Smoking pattern n=7,517; wt. n= 68,906,248	Daily use	6,293	56,572,030	82.1
	Less than daily	1,787	12,334,218	17.9
Smokeless pattern 12,733; Wt. n= 163,683,336	Daily use	10,391	136,511,902	83.4
	Less than daily use	2,342	27,171,434	16.6
Intention to quit tobacco use n=24,110. Wt. n= 273,029,348	Yes, within 1 month	2,594	35,766,844	13.1
	Yes, but within 1 year	2,534	34,674,727	12.7
	Yes, but after 1 year	4,651	49,964,371	18.3
	No intention to quit	10,461	117,402,620	43.0
	Don't know	3,870	35,220,786	12.9

Table 2: Potential determinants of intention to quit tobacco use- Bivariable analysis. (n=20,240; weighted. n= 237,844,910) **

Variable	Categories	Intention to quit present wt. %	Crude OR	95% CI	P value$
Age-group (In years)	15-24	65.2	1		<0.001 *
	25-44	53.0	0.60	0.51-0.71	
	45-64	44.6	0.43	0.36-0.51	
	65+4	33.2	0.27	0.22-0.33	
Gender	Male	53.1	1		
	Female	44.3	0.70	0.62-0.79	<0.001
Residence	Urban	52.0	1		
	Rural	50.3	0.93	0.83-1.05	0.256
Education status n= 20,179 Wt. n= 236,780,611	No formal schooling	43.4	1		
	Less than primary	50.6	1.34	1.17-1.53	<0.001
	Primary but less than sec.	54.7	1.58	1.39-1.78	<0.001
	Secondary and above	61.4	2.08	1.81-2.39	<0.001
Occupation n= 20,204	Govt & Non-govt employee	53.7	1		
	Self-employed	50.3	0.87	0.77-0.99	0.033

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Wt. n= 237,540,989	Student	69.7	1.98	1.33-2.95	0.001
	Homemaker	46.3	0.75	0.64-0.87	<0.001
	Retired or Unemployed	43.9	0.68	0.55-0.83	<0.001
Tobacco use type	Smoking Only	52.6	1		
	Smokeless use only	51.4	0.95	0.85-1.07	0.425
	Combined use	44.3	0.72	0.61-0.84	<0.001
Tobacco use pattern	Daily	47.0	1		
	Less than daily	64.3	2.03	1.79-2.30	<0.001
Age at Initiation (in years) n= 17,944; Wt. n= 212,237,471	15 or before	44.9	1		
	16-30	50.2	1.24	1.09-1.40	0.001
	31-45	50.3	1.24	1.04-1.48	0.017
	After 45	42.3	0.90	0.74-1.10	0.299
Quantity smoked per day. (Only daily smokers) n= 5,350; Wt.n= 49,127,453	1-5	53.2	1		
	6-10	44.0	0.69	0.54-0.89	0.004
	11-20	46.5	0.76	0.57-1.03	0.076
	More than 20	47.9	0.81	0.59-1.10	0.173
No of times of smokeless tobacco use per day. (Only daily smokeless tobacco users) n= 8,883; Wt. n= 119,171,766	1-5	48.8	1		
	6-10	43.6	0.81	0.69-0.96	0.012
	11-20	38.4	0.65	0.49-0.88	0.005
	More than 20	57.0	1.39	1.08-1.80	0.010
Time to first smoke in the morning after waking up (only daily smokers) n=5,342; Wt. n= 49,087,739	Within 5 mins	43.5	1		
	6-30mins	47.3	1.17	0.90-1.52	0.255
	31-60 mins	49.0	1.25	0.90-1.72	0.179
	More than 60 mins	57.9	1.78	1.30-2.44	<0.001

$ Wald test p value; *linear association test p value; Wt. n = weighted n. Clustering and stratification effect considered in calculation of confidence intervals. ** 'No intention' coded as 0 (ref) versus 'intention yes' as 1.

Table 3: Potential determinants of intention to quit tobacco use- Bivariable analysis. (n=20,240; weighted. n= 237,844,910)

Variable	Categories	Intention to quit present Wt. %	Crude OR	95% CI	P value
Time to first smokeless tobacco use in the morning after waking up (only daily smokeless users) n=8,871; Wt. n= 119,070,251	Within 5 mins	37.1	1		
	6-30mins	43.5	1.31	1.08-1.58	0.007
	31-60mins	54.9	2.06	1.62-2.62	<0.001
	More than 60 mins	56.1	2.17	1.74-2.70	<0.001
Quit attempt in the last 1 year n=20,183; Wt. n= 237,476,207	Yes	75.0	1		
	No	38.5	0.21	0.19-0.23	<0.001
Length of time abstained in the last quit attempt n= 6,200; Wt. n= 83,534,452	Months	75.6	1		
	Few days or weeks but less than a month	73.5	0.89	0.73-1.09	0.257
	Less than a day	67.3	0.66	0.48-0.92	0.014
Visit to a doctor in the last 12months n= 20,041; Wt. n=23,5196,915	Yes	54.4	1		
	No	46.7	0.74	0.67-0.81	<0.001
Doctor's enquiry into tobacco use N= 9,059; Wt. n= 112,915,768	Enquired	57.4	1		
	Not enquired	52.7	0.83	0.72-0.95	0.010
Doctor's advice to quit tobacco use. n=4,015; Wt. n= 48,593,411	Advised	58.8	1		
	Not advised	45.9	0.59	0.46-0.77	<0.001
Smoking policy inside home n= 15,711; Wt. n= 191,000,403	Allowed	44.6	1		
	Not allowed but exceptions	57.3	1.67	1.46-1.92	<0.001
	Never allowed	58.0	1.71	1.51-1.95	<0.001
Smoking policy in indoor workplace n= 5,502; Wt.n= 47,465,183	Allowed	51.0	1		
	Never allowed	63.8	1.70	1.37-2.11	<0.001
	No policy in place	54.4	1.15	0.86-1.53	0.349
Exposure to preventive messages in mass media in last 30days n=17,289; Wt.n= 187,628,220	Yes	63.3	1		
	No	50.5	0.59	0.50-0.69	<0.001
Effect of health warnings on cigarette packet since last 30days n= 8,111; Wt.n= 109,223,036	Led to think about quitting	72.0	1		
	Not led to think about quitting	33.5	0.20	0.17-0.23	<0.001
Effect of health warnings on smokeless tobacco packets in last 30days N= 5,587; Wt.n= 50,013,148	Led to think about quitting	67.7	1		
	Not led to think about quitting	38.1	0.29	0.24-0.36	<0.001
Knowledge that smoking causes serious illness N= 20,196; Wt.n= 237,377,566	yes	52.8	1		
	no	37.1	0.53	0.42-0.67	<0.001
	Don't know	33.9	0.46	0.37-0.57	<0.001
Knowledge that smokeless tobacco use causes serious illness N=20,196; Wt.n=237,387,213	yes	52.7	1		
	no	40.3	0.60	0.49-0.75	<0.001
	Don't know	0.36	0.50	0.41-0.60	<0.001

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Table 4. Multivariable analysis of potential predictors of intention to quit tobacco use among current tobacco users. (N=13,290; weighted n= 150,438,412).

Variable	categories	Crude** OR	Adj. OR	95% CI *	P value$
Gender among age-group 15-24 years	Male	1	1		
	Female	0.90	1.23	0.76-1.97	0.395
Gender among age-group 25-44 years	Male	1	1		
	Female	0.82	0.85	0.66-1.10	0.209
Gender among age-group 45-64 years	Male	1	1		
	Female	0.73	0.86	0.63-1.17	0.329
Gender among age-group >65 years	Male	1	1		
	Female	0.55	0.67	0.40-1.12	0.126
Age-group (in years) among Males	15-24	1	1		
	25-44	0.62	0.63	0.48-0.80	<0.001
	45-64	0.47	0.50	0.37-0.64	<0.001
	>65	0.33	0.38	0.26-0.53	<0.001
Age-group (in years) among Females	15-24	1	1		
	25-44	0.56	0.43	0.28-0.66	<0.001
	45-64	0.38	0.35	0.22-0.55	<0.001
	>65	0.20	0.20	0.11-0.36	<0.001
Interaction between age-group and gender					<0.001#
Education status	No formal schooling	1	1		
	Less than primary	1.3	1.15	0.97-1.39	0.113
	Primary but less than sec.	1.6	1.02	0.86-1.22	0.766
	Secondary and above	2.1	1.25	1.03-1.54	0.027
Occupation	Govt & Non-govt employee	1	1		
	Self-employed	0.9	0.93	0.80-1.09	0.397
	Student	2.0	0.99	0.60-1.64	0.998
	Homemaker	0.7	1.03	0.80—1.29	0.877
	Retired or Unemployed	0.7	0.74	0.57-0.98	0.035
Tobacco use type	Smoking Only	1	1		
	Smokeless use only	0.9	0.89	0.74-1.04	0.154
	Combined use	0.7	0.66	0.53-0.80	<0.001
Tobacco use pattern	Daily	1	1		
	Less than daily	2	1.81	1.51-2.15	<0.001
Quit attempt in the last 1 year. n=20183; wt. n= 237,476,207	Yes	1	1		
	No	0.2	0.23	0.20-0.26	<0.001
Visit to a doctor in the last 12months. n= 20,041; wt. n=235,196,915	Yes	1	1		
	No	0.7	0.87	0.77-1.00	0.044
Smoking policy inside home. n= 15,711; wt. n= 191,000,403	Allowed	1	1		
	Not allowed but exceptions	1.7	1.45	1.21-1.72	<0.001
	Never allowed	1.7	1.46	1.23-1.71	<0.001
Exposure to preventive messages in mass media in last 30days. n=17,289; wt.n= 187,628,220	Yes	1	1		
	No	0.6	0.68	0.56-0.80	<0.001
Knowledge that smoking causes serious illness. N= 20,196; wt.n= 237,377,566	yes	1	1		
	no	0.5	0.66	0.48-0.91	0.012
	Don't know	0.5	0.71	0.48-1.00	0.053
Knowledge that smokeless tobacco use causes serious illness. N=20,196; wt.n=237,387,213	yes	1	1		
	no	0.6	0.98	0.71-1.36	0.912
	Don't know	0.5	0.91	0.68-1.26	0.626

*** 'No intention' coded as 0 (ref) versus 'Yes intention' coded as 1. $ Wald test p values. # Wald test p value for interaction between age-group and gender is <0.001, adjusted for all other variables in the table. * Clustering

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and stratification effect considered in calculation of Confidence Intervals. *** Odds ratios presented for age-group and gender are stratum-specific odds ratios.

DISCUSSION

This study is one of the first to study factors associated with the intention to quit tobacco use among current tobacco users in India. Using data from a rigorous, nationally representative household survey, it finds that 44.1% tobacco users desired to quit, and this percentage was 45.5% among only smokers and 50.3% among only smokeless users. Results of this study on gender, education level, and occupation are like findings observed in few previous studies.[15-18] However, few others reported that low education was associated with low intention to quit.[5,19] The simplest explanation for the differing results could be differences in the design, eligibility criteria, categorising, and definition of intention to quit. However, gender and education level were predictors of intention to quit tobacco use among smokeless users in this study. One study revealed that females were more likely to have the desire to quit than males, contradicting with the finding in my study which found males were more likely to want to quit.[19] The possible reasoning for the finding in this study could be that tobacco use among females may be more related to 'passing time' at home (socio-cultural practices) rather than to some worries concerned with running the house and may also be because they are usually less educated and have less awareness of the tobacco hazards in India and consume less frequently. Young age was a significant determinant among both smokers and smokeless users, in agreement with other studies.[5,9] The reason may be that repeated failures over the years and the severity of nicotine dependence may have rendered the elderly tobacco users resistant to make intentions to quit tobacco. There was significant effect modification between age-group and gender as seen by the differences in stratum specific odds ratios for age-groups within the same sex and Wald test p value for interaction was <0.001. However, it is important to know that presence of previous quit attempts was associated with increased desire to quit despite previous failures.

The findings on Indicators of nicotine dependence like quantity of tobacco used per day and time to first tobacco use of the day were consistent with other studies where it was measured as heaviness of smoking index.[9,16,17]

Exposure to preventive media messages in mass media, positive effect of health warnings on tobacco packets on tobacco users, knowledge that smoking causes serious illness were determinants of intention to quit tobacco, as seen in several other studies.[18,20-23] Knowledge that smokeless tobacco use causes serious illness was not a predictor in this study. This may be because the knowledge may have been provided in an ineffective manner. Visit to the doctor in the previous year was associated with greater intention to quit possibly the response to doctor's advice or because of health concerns.

Smoking-restrictions in homes was associated with greater desire to quit, as noted in few other studies.[5,24] Smoking restriction in workplace and history of greater duration of abstinence in the previous quit attempt were significantly associated with greater intention to quit in bivariable analysis but could not be studied in multivariable analysis. Great heterogeneity existed across studies, including the definitions used for the outcome variable, making precise comparisons difficult. However, because of the cross-sectional design, establishing causality was not possible (as reverse causality cannot be ruled out). Recall bias is possible with reference to the age at initiation variable especially in long standing tobacco users. Information bias was minimal because of the simple operational definitions used for most variables. Observer bias can be expected to be minimum. Information on some variables like income was not available.

CONCLUSION

In bivariable analysis except urban/rural residence all the factors considered in the study were determinants of intention to quit tobacco use. In multivariable analysis, type of tobacco used, pattern of tobacco use, previous quit attempts, visit to doctor in the last year, smoking policy inside home, exposure to preventive messages in mass media, knowledge that smoking causes serious illness were statistically significant predictors of intention to quit tobacco use in India. There was significant effect modification between variables age-group and gender. Findings of this study should be particularly made of use of when formulating tobacco cessation strategies for smokers and smokeless users. The findings can be used to help identify non-intenders to understand the reasons and appropriate measures can be taken to increase the numbers of tobacco users coming forward to quit tobacco. This study should open the field for further in-depth research on the cessation behaviours, using longitudinal data and causal approaches. It is expected that results from this nationally representative study will be used to improve the present situation in India where more than half of current tobacco users did not wish to quit tobacco.

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