Willingness to quit tobacco smoking and its correlates among Indian smokers – Findings from Global Adult Tobacco Survey India, 2009–2010

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Abstract

Background: In the stages of change model for smoking cessation, "willingness to quit" forms the starting point. **Objective:** To determine the prevalence and correlates of willingness to quit among smokers in India from Global Adult Tobacco Survey (GATS), 2009–2010. **Methods:** Secondary data analysis of GATS, 2009-10, was done to find the correlates of willingness to quit among smokers. All the sociodemographic variables, smoking-related factors such as frequency, previous attempt to quit, and also effect of antitobacco messages delivered to various media were tested for association using multivariable analysis. **Results:** Of 9627 current smokers analyzed, 50.9% [95% confidence interval (CI): 49.9-51.9] were willing to quit smoking. Multivariable analysis showed that younger age groups [prevalence ratio (PR): 1.31, 95% CI: 1.05–1.65], individuals who have their first smoke after 60 min of wakeup (PR: 1.19, 95% CI: 1.05–1.36), those living in a house with smoking restriction (PR: 1.29, 95% CI: 1.17–1.42), those who received advice to quit from doctor, those who attempted to quit in the past 12 months (PR: 1.28, 95% CI: 1.03–1.60), having knowledge about illness caused due to smoking, and those who have noticed antismoking messages in billboards/hoardings were willing to quit smoking compared to their counterparts (PR: 1.13, 95% CI: 1.04–1.23). **Conclusion:** Enforcing social restrictions like smoking restriction at house and also brief advice by doctors to quit smoking during any contact with the tobacco user could improve quit rate especially in young tobacco users and those who have attempted to quit before.

Keywords: Smoking cessation, tobacco use, willingness to quit

Introduction

The effects caused by the use of tobacco and the increasing burden of tobacco use in low- and middle-income countries like India is well known. Around 80% of the world's 1.1 billion smokers live in low- and middle-income countries.[1] In India, 14% of adults (15 years and above) were found to be tobacco smokers; 24.3% of males and 2.9% of females were smoking some form

of tobacco.[2] Studies done in India reported the quitting rates of tobacco to be varied between 12% and 33%.[3] The meeting in 2002 by World Health Organization Tobacco Free Initiative to develop "Policy Recommendations for Smoking Cessation and Treatment of Tobacco Dependence" put forward a mix of three strategies. A public health approach targeted toward social climate and promoting a supportive environment; a health systems approach to promote and integrate clinical best practices into a sustainable healthcare system; and surveillance, research, and information approach that promotes increased awareness of the need to change social norms. These strategies make the

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environment more conducive to tobacco-dependent consumers so as to increase their chance of "quitting successfully." The committee also put forward prioritizing cessation strategies according to different national circumstances and resources available.[4] The willingness to quit smoking (tobacco) forms an important preliminary step for the behavioral change in an individual.[5] Though willingness to quit is not the only predictor of cessation of smoking, it is known to be highly associated with future attempt to quit and finally stop smoking.[6,7] Identifying these subgroups of smokers who are willing to quit becomes critical in developing effective interventions, beneficial in helping smokers quit their habit. There is paucity of literature regarding willingness to quit and the factors associated with it in India. With this background, we tried to assess the prevalence and correlates of willingness to quit among smokers age 15 years and above in India from a nationally representative sample of Global Adult Tobacco Survey (GATS), 2009–2010.

Methods

For this study, secondary analysis was done from GATS 2009–10 done in India. This survey was conducted in 29 states and two union territories (UTs) covering about 99.9% of the total population. This household survey was done among people age 15 years and above. The survey was conducted among 69,296 individuals forming a nationally representative sample. For GATS India survey, sampling was done independently in each state/UT and within the state/UT, independently in urban and rural areas. In urban areas, three-stage sampling was adopted for the selection of households. The primary sampling units (PSUs) were the city wards, secondary sampling units (SSUs) were census enumeration blocks, and tertiary sampling units were households. In rural areas, two-stage sampling was adopted for selection of households. The PSUs were villages and SSUs were households. All the villages are first stratified into different strata using geographical regions, and further stratified by village size, proportion of scheduled caste, scheduled tribe population, and female literacy. PSUs were selected using probability proportional to size sampling. The selection of the required number of households was done using systematic sampling. Half of the selected households were randomly assigned to be "male" households where only the males were interviewed, and the other half were assigned to be "female" households where only the females were interviewed. In the final stage, one individual was randomly picked from each selected household by elementary random sampling. The detailed methodology of this survey has been published elsewhere.[2] The authors declare that this study is a secondary analysis of openly available datasets for researchers from CDC and thus does not warranty any ethical clearance from any ethical board.

The classification of the study group as "smokers" and "non-smokers" was done based on the question, "Do you currently smoke tobacco?" Those who responded as "not at all" were considered as "non-smokers"; both "daily" and "less than daily" users were classified under "smokers." This study analyzed

data among the smoking population. Willingness to quit smoking was assessed based on the question, "Which of the following best describes your thinking about quitting smoking?" The responses being either "Quit within next month" or "thinking to quit within the next 12 months" or "Quit someday, but not within next 12 months" were considered as having "willingness to quit." Those who responded to this question as "Not interested in quitting" were taken as smokers who were "not willing to quit." Those who did not respond to the question or answered as "don't know" were excluded from the analysis [Figure 1].

The sociodemographic characteristics included in the study were age, gender, education status, occupation status, region, and residence (urban/rural). GATS India dataset contains information for the number of items possessed by a household against a list of items which includes presence/absence of electricity, flush toilet, car, scooter/motorcycle, television, refrigerator, washing machine, fixed telephone, cell telephone, and radio. "Principal component analysis" was done to generate a "wealth index" score for each household on the basis of their possession of assets. First component or principal component explaining maximum variability in the data was considered to assign a score to household.[8] We divided the number of households into five quintiles from poorest (with minimum score) to richest (with highest score) (minimum score was 2.90 and maximum score was 4.72). The first two quintiles (with minimum scores) were combined as "poor," and the last two quintiles (with maximum scores) were combined as "rich" and the middle quintile was taken as "middle class."

We also analyzed smoking-related factors such as frequency of smoking, time of first smoke after wakeup, attempt to quit smoking in the past 12 months, smoking inside house allowed/not, use of smokeless tobacco, noticing health warnings on cigarette packets in the past 30 days, advice by doctor
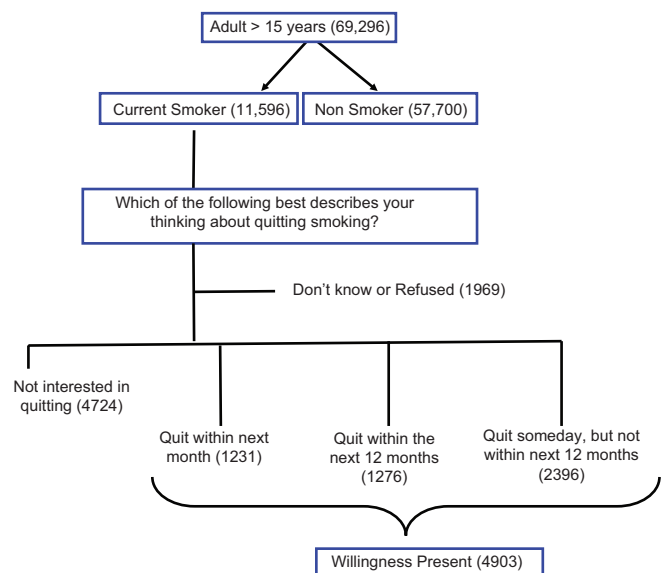

Figure 1: Flow diagram showing the derivation of study participants from Global Adult Tobacco Survey India, 2009–10

to quit in the past 12 months, and knowledge that smoking causes serious illness. We also analyzed antismoking messages in various media (newspaper/magazine, television, radio and billboards/hoardings) noticed in the past 30 days as a factor.

Statistical analysis

Data were analyzed using Stata statistical software version 11 (StataCorp LP, College Station, TX, USA). Age was reported as mean [standard deviation (SD)]. All the sociodemographic characteristics, smoking-related factors, and willingness to quit were reported as proportion (%). Correlates of willingness to quit were independently assessed using bivariate logistic regression. Stepwise modeling using Poisson's regression was done for multivariable analysis. The model was built using sociodemographic variables in the first step (model 1), then along with model 1 and smoking factors (model 2), and then model 2 and media factors (model 3). Model 4 was then done using all the variables which had P value <0.1 in model 3. From each previous model, only those variables which had P value <0.1 were considered for the next model. The final model was built with the variables which had significant P value in model 4. All models' significance was reported using R^2 and P values for respective models. The collinearity between the variables in the model was checked using the variance inflation factor. The association was expressed as prevalence ratio (PR) with 95% confidence intervals (CIs). In addition, use of PR for reporting association will give more precise estimates compared with reporting of odds ratio.[9]

Results

Sociodemographic profile of surveyed population

Of the 11,696 smokers age 15 years and above interviewed in GATS 2009–10 India survey, 9627 responded about the willingness to quit smoking and were included in the analysis. Of the 9627 current smokers, the mean age (SD) among male smokers was 42 (13.8) years, and among females it was 47.9 (15.4) years, 8593 (89.3%) were males, 6494 (67.5%) belonged to rural area, 7707 (80.2%) were employed, and 4880 (50.9%) belonged to poor class (wealth index).

Proportion of people who are having willingness to quit

Of the 9627, 4903 (50.9%, 95% CI: 49.9–51.9) were willing to quit smoking. Among these 4903 who were willing to quit, 1231 (25.1%), 1276 (26.0%), and 2396 (48.9%) were willing to quit within the next month, quit within next 12 months, and quit someday but not within the next 12 months, respectively.

Bivariate analysis – Association between various factors associated with willingness to quit smoking

Sociodemographic factors

The willingness to quit smoking was more in the younger age group compared with those who were age 65 years and above with highest willingness in the category of 15–24 years

(PR   : 1.54, 95% CI: 1.39–1.71). Males showed 10% more willingness to quit compared with females (95% CI: 2–17). Education showed significant association with those who had completed secondary or higher secondary school willing to quit more compared with those who had no formal education (PR: 1.36, 95% CI: 1.28–1.44). Compared with those who were unemployed, employed were more willing to quit with students showing highest willingness to quit (PR: 1.37, 95% CI: 1.19–1.58). People belonging to rich class showed 10% increased willingness to quit compared with the poor class (95% CI: 5–15) [Table 1].

Smoking-related factors

Compared with daily smokers, those who smoke less than daily were willing to quit (PR: 1.42, 95% CI: 1.36–1.48). Similarly, those who have their first smoke more than 60 min after waking

Table 1: Sociodemographic factors associated with willingness to quit among smokers age 15 years and above in India (Global Adult Tobacco Survey 2009-2010), n=9627

Sociodemographic characteristic	Total, n	Willing to quit, n (%)	PR (95% CI)
Age (years)			
15-24	757	445 (58.8)	1.54 (1.39-1.71)
25-44	4848	2628 (54.2)	1.42 (1.30-2.55)
45-64	3151	1497 (47.5)	1.24 (1.13-1.36)
≥65	871	333 (38.2)	Reference
Gender			
Male	8593	4418 (51.4)	1.10 (1.02-1.17)
Female	1034	485 (46.9)	Reference
Residence			
Urban	3133	1608 (51.3)	1.01 (0.97-1.05)
Rural	6494	3295 (50.7)	Reference
Region			
North	2074	1006 (48.5)	1.18 (1.06-1.30)
Central	1380	801 (58.0)	1.41 (1.27-1.56)
East	1326	678 (51.1)	1.24 (1.12-1.37)
North-East	2846	1384 (48.6)	1.18 (1.07-1.30)
West	671	277 (41.3)	Reference
South	1330	757 (56.9)	1.38 (1.25-1.53)
Education			
No formal education	2898	1263 (43.6)	Reference
Primary incomplete	1465	751 (51.3)	1.18 (1.10-1.26)
Primary but not secondary	2759	1434 (52.0)	1.19 (1.13-1.26)
Secondary and higher secondary	1713	1014 (59.2)	1.36 (1.28-1.44)
Graduation and above	759	433 (57.1)	1.31 (1.22-1.41)
Occupation			
Government/nongovernment employee	3101	1730 (55.8)	1.31 (1.20-1.42)
Self-employee	4605	2277 (49.5)	1.16 (1.06-1.26)
Student	205	120 (58.6)	1.37 (1.19-1.58)
Home-maker	883	421 (47.7)	1.12 (1.01-1.24)
Unemployed	815	348 (42.7)	Reference
Wealth Index			
Poor class	4880	2388 (48.9)	Reference
Middle class	1581	809 (51.2)	1.05 (0.99-1.1)
Rich class	3121	1678 (53.8)	1.10 (1.05-1.15)

PR: Prevalence ratio; CI: Confidence interval

up were more willing to quit compared with those who smoke within 5 min (PR: 1.34, 95% CI: 1.25–1.44). Those individuals who had attempted to quit smoking in the past 12 months were willing to quit smoking more than those who did not (PR: 2.11, 95% CI: 2.03–2.19). Individuals who were not allowed to smoke in their house, those who noticed health warning on cigarette package in the past 30 days, those who had knowledge that smoking causes serious illness, and those who were advised to quit smoking by a doctor in the past 12 months were found to be more willing to quit [Table 2].

Antismoking messages in various media

Individuals who had seen or read or heard about any antismoking messages in any media in the past 30 days were more willing to quit smoking compared with those who did not. Those who saw messages in television were more willing to quit compared with other media (PR: 1.19, 95% CI: 1.13–1.24), although other media also showed significant increase in willingness to quit [Table 3].

Multivariable analysis – Association between various factors associated with willingness to quit smoking

The model for multivariable analyses was build step by step. The first model included all the sociodemographic factors; of the seven factors included, gender, wealth index, and occupation did not show any significant association ($R^2 = 0.01$, $P < 0.001$).

The second model was built with sociodemographic factors that came significant in the first model (occupation included as $P < 0.1$) and all the smoking-related factors except the factor "frequency of smoking" (excluded due to collinearity). The second model showed no significance for factors such as residence ($P < 0.1$), education, occupation ($P < 0.1$), use of smokeless tobacco, and health warning on cigarette package ($R^2 = 0.06$, $P < 0.001$). The third model included all the factors which were having $P < 0.1$ in model 2 along with media factors. This model showed no significant association in radio and newspaper/magazine media ($R^2 = 0.07$, $P < 0.001$). The fourth model was built with all the factors in model 3 which had $P < 0.1$. In this model, occupation and residence ($P < 0.1$) were not significant ($R^2 = 0.07$, $P < 0.001$). The final model was then built by excluding occupation and residence factor which was not significant in the fourth model. Thus, the final model included eight factors (model $R^2 = 0.06$, $P < 0.001$) [Table 4].

Multivariable analysis showed that those individuals in the age group (15–24 and 25–44 years compared with ≥65 years), region (North, Central, and East compared with West), time of first smoke after wakeup (≥60 min vs within 5 min), attempted to quit in the past 12 months, smoking not allowed inside house, advised to quit smoking by doctor in the past 12 months, having knowledge that smoking causes serious illness, and those who have seen antismoking messages on billboards/hoardings were

Table 2: Smoking-related factors associated with willingness to quit among smokers age 15 years and above in India (Global Adult Tobacco Survey 2009-2010)			
Smoking-use-related factor	Total, *n*	Willing to quit, *n* (%)	PR (95% CI)
Frequency of smoking (*n*=9627)			
Daily	7711	3625 (47.0)	Reference
Less than daily	1916	1278 (66.7)	1.42 (1.36-1.48)
Time of first smoke after wakeup (*n*=7685)			
Within 5 min	1919	802 (41.2)	Reference
6-30 min	3142	1431 (45.6)	1.09 (1.02-1.16)
31-60 min	1240	606 (48.9)	1.17 (1.08-1.26)
>60 min	1384	775 (56.0)	1.34 (1.25-1.44)
Attempt to quit smoking in the past 1 year (*n*=9584)			
Yes	3031	2409 (79.5)	2.11 (2.03-2.19)
No	6553	2470 (37.7)	Reference
Smoking inside house (*n*=7565)			
Allowed	5127	2300 (44.9)	Reference
Not allowed	2438	1614 (66.2)	1.48 (1.42-1.54)
Use of smokeless tobacco (*n*=9627)			
Yes	3276	1710 (52.2)	1.04 (0.99-1.08)
No	6351	3193 (50.3)	Reference
Noticed health warning on cigarette package (in the past 30 days) (*n*=8758)			
Yes	6051	3255 (53.8)	1.18 (1.13-1.24)
No	2707	1233 (45.6)	Reference
Advise by doctor to quit (in the past 1 year) (*n*=9627)			
Yes	2045	1356 (66.3)	1.42 (1.36-1.47)
No	7582	3547 (46.8)	Reference
Knowledge that smoking causes serious illness (*n*=9153)			
Present	8607	4535 (52.7)	1.50 (1.34-1.68)
Absent	546	192 (35.2)	Reference

PR: Prevalence ratio; CI: Confidence interval

Table 3: Association of antismoking messages in various media with willingness to quit among smokers age 15 years and above in India (Global Adult Tobacco Survey 2009-2010)

Antismoking messages in various media	Total, *n*	Willingness to quit, *n* (%)	PR (95% CI)
Newspaper/magazine (*n*=7302)			
Yes	3105	1778 (57.3)	1.18 (1.13-1.24)
No	4197	2033 (48.4)	Reference
Television (*n*=7871)			
Yes	4094	2272 (55.5)	1.19 (1.13-1.24)
No	3777	1768 (46.8)	Reference
Radio (*n*=6929)			
Yes	2078	1085 (52.2)	1.06 (1.01-1.11)
No	4851	2383 (49.1)	Reference
Billboards/hoardings (*n*=7862)			
Yes	2526	1446 (57.2)	1.17 (1.12-1.22)
No	5336	2610 (48.9)	Reference

PR: Prevalence ratio; CI: Confidence interval

Table 4: Variables included in various models considered in multivariable analysis along with R^2 and P values of the corresponding models

Model	Variables included	R^2 (P)
Model 1	Age, gender, residence, region, education, occupation, wealth index	0.01 (<0.001)
Model 2	Age, residence, region, education, occupation, time of first smoke after wakeup, attempt to quit smoking in the past 1 year, smoking inside house, use of smokeless tobacco, noticed health warning on cigarette package, advise by doctor to quit (in the past 1 year), knowledge that smoking causes serious illness	0.06 (<0.001)
Model 3	Age, region, residence, occupation, time of first smoke after wakeup, attempt to quit smoking in the past 1 year, smoking inside house, advise by doctor to quit (in the past 1 year), knowledge that smoking causes serious illness, newspaper/magazine, television, radio, billboards/hoardings	0.07 (<0.001)
Model 4	Age, region, residence, occupation, time of first smoke after wakeup, attempt to quit smoking in the past 1 year, smoking inside house, advise by doctor to quit (in the past 1 year), knowledge that smoking causes serious illness, television, billboards/hoardings	0.07 (<0.001)
Final model	Age, region, time of first smoke after wakeup, attempt to quit smoking in the past 1 year, smoking inside house, advise by doctor to quit (in the past 1 year), knowledge that smoking causes serious illness, billboards/hoardings	0.06 (<0.001)

independently shown to be associated with willingness to quit smoking [Table 5].

Discussion

This study tried to assess the factors associated with willingness to quit smoking from a nationally representative data among smokers age 15 years and above. The study found that about 51% were willing to quit smoking with about half of them willing to quit in the next 12 months. Multivariable analysis showed that younger age, individuals who have their first smoke after 60 min of wakeup, those living in a house with smoking restriction, those who received advice to quit from doctor, those who attempted to quit in the past 12 months, having knowledge about illness caused due to smoking, and those who have noticed antismoking messages in billboards/hoardings were willing to quit smoking compared with their counterparts.

Proportion of smokers willing to quit

A pilot cross-sectional study done in two states of India (Maharashtra and Bihar) showed that about 33% of the tobacco users intended to quit tobacco.[10] Although this study used the same definition as used in the current study to define "willingness to quit," the difference can be attributed to inclusion of only smokers in our study compared with all tobacco users in the pilot study which could have undermined the result. Another facility-based cross-sectional study conducted in two states of India (Andhra Pradesh and Gujarat) showed that about 12% of tobacco users were willing to quit tobacco in the next 30 days.[3] The findings were similar to that seen in this study, 12.7% (1231/9627).

Cross-sectional studies done in other countries reported the willingness to quit smoking ranging from 27% to 75%.[11–14] This intercountry variability may be attributed to the different tobacco control programs existing in the respective countries. The difference can also be attributed to the difference in methodologies especially in assessing the time duration for willingness to quit; some studies have operationally defined willingness within the "next six months," whereas others have taken willingness to quit "anytime."

Sociodemographic correlates in willingness to quit smoking

Studies showed varied results with respect to age as a correlate in willingness to quit smoking.[3,11,12,15] The facility-based cross-sectional study done in India showed that those who were less than 25 years of age were more willing to quit tobacco.[3] Another study from United States analyzing data from 2011 U.S. National Health and Wellness Survey showed that those in the age group of 18–44 years were more willing to quit compared with older individuals.[12] These study results were concurrent with our findings. But cross-sectional studies done in Hong Kong and Bangladesh showed counter-findings that elderly were more willing to quit.[11,12] This difference may be due to the intensified health programs among these age groups and also thus increased reach of antitobacco messages in elderly. This can also be due to the demographic structure seen in countries with India in demographic transition having much younger population. This study showed that younger age group in the group of 15–44 years were more willing to quit smoking compared with elderly (≥65 years). This calls for smoking

Table 5: Multivariable analysis showing correlates of willingness to quit smoking among people age 15 years and above in India (Global Adult Tobacco Survey 2009-2010), *n*=4725	
Study characteristics	Adjusted PR (95% CI)
Age (years)	
15-24	1.31 (1.05-1.65)
25-44	1.30 (1.10-1.55)
45-64	1.18 (0.98-1.40)
≥65	Reference
Region	
North	1.24 (1.02-1.49)
Central	1.37 (1.12-1.68)
East	1.01 (0.82-1.27)
North-East	1.23 (1.01-1.48)
West	Reference
South	1.10 (0.90-1.34)
Time of first smoke after wakeup	
Within 5 min	Reference
6-30 min	1.05 (0.94-1.17)
31-60 min	1.12 (0.98-1.28)
>60 min	1.19 (1.05-1.36)
Attempt to quit smoking in the past 1 year	
Yes	2.06 (1.89-2.24)
No	Reference
Smoking inside house	
Allowed	Reference
Not allowed	1.29 (1.17-1.42)
Advise by doctor to quit (in the past 1 year)	
Yes	1.32 (1.21-1.45)
No	Reference
Knowledge that smoking causes serious illness	
Present	1.28 (1.03-1.60)
Absent	Reference
Billboards/hoardings	
Yes	1.13 (1.04-1.23)
No	Reference

Model R^2=0.06, *P*<0.001. PR: Prevalence ratio; CI: Confidence interval

cessation policies to be focussed on younger age group so as to halt the growing tobacco epidemic in developing countries like India.

This study showed that smokers living in central, north, and north-east parts of India were willing to quit compared with those living in western part of India after adjusting for other covariates. This shows the differential implementation of Cigarettes and Other Tobacco Products Act (2003) and also attitudes of people toward tobacco in various parts of the country. There is urgent need, especially in western and southern parts of the country to ensure the passage of antitobacco messages among smokers and increase their willingness to quit tobacco.

Although some studies reported that higher education was associated with increased willingness to quit smoking, this study could not establish any such independent association.[6,13] This study also showed that there was no variance in willingness to quit with respect to residence (urban/rural), occupation, and also

socioeconomic status (wealth index). Further research is required to explore the possible reasons for these findings.

Smoking-related factors associated with willingness to quit smoking

Studies done in India and other countries show that smoker who had ever attempted to quit in the past year were more intended to quit again compared with never attempters, which was concurrent with our study results.[3,6,7,12,14] This shows that identifying and targeting cessation advices to those who have attempted to quit but failed could yield more positive results. Studies also show that non-daily smokers have more willingness to quit compared with daily smokers.[16,17] This study not only reports similar findings (twice more willing than those who did not attempt) but also generates evidence that smokers who have their first smoke 60 min or later after they wakeup were more willing to quit compared with those who smoke within first 5 min of waking up. Similar findings were also noted in Bangladesh GATS survey analysis.[18] This suggests that counselors can focus on counseling the smokers for postponement of first smoke which would increase the chances of willingness to quit in future. Furthermore, willingness to quit was seen to be more among smokers who had lesser dependence on tobacco, and hence comparatively new smokers need to be targeted so as to make them quit smoking compared with chronic smokers.

Studies done using in Bangladesh, the United States, and Korea showed that willingness to quit was more in them where smoking was not allowed at house.[13,16-19] This finding is congruent with our study results and calls for policies to strengthen or formulate household smoking which has being ignored in countries like India.

This study also found that willingness to quit was significantly higher among those smokers who had received some form advice to quit by the doctor (in the preceding 12 months). This shows that doctors should never miss an opportunity to advice their patients who are smokers to quit smoking as brief interventions by health practitioners are proven to reduce tobacco use as shown from studies in other countries.[20,21]

Among smokers, having knowledge that smoking causes serious illness increased their willingness to quit by 28%. Similar findings were found in a study done among intermediate and secondary school students.[22] Effective interventions focusing on providing information regarding the hazards of smoking could help initiate the intention to quit among smokers.

Influence of antitobacco messages in media on willingness to quit smoking

In a review of GATS, data from 14 countries revealed a strong association between willingness to quit and awareness of antismoking messages in various media.[23] Studies done in China and also pilot study from India among tobacco users showed positive results with antitobacco message

and willingness to quit.[3,10,12,14] This study which is a country-level GATS analysis also showed that smokers who saw antismoking messages in various media like television, radio, newspaper/magazines, and billboards/hoardings during the past 30 days were willing to quit smoking more than those who did not see. Messages on bill boards/hoardings were found to be independently associated in increasing willingness to quit. This calls for increased efforts in repeated advertising of antitobacco messages and ban pro-tobacco advertisements in various media.

The study has few strengths. This was the first study to assess various correlates including sociodemographic, smoking-related, and media-related factors in a single domain from a nationally representative sample. A standardized questionnaire, sample design, data collection methodology was adopted in the GATS India survey. This study identified target groups for focused interventions and also identified areas for policy implementations as reported above. The findings can be used for intercountry comparisons and also to see the change of trends in future when the next GATS survey (2016–17) results are available.

This study has few limitations. As the study was cross-sectional, the study limits in temporal association. There is a possibility of self-reported bias as the willingness to quit was defined based on a response to a single question in a self-reported questionnaire. Similarly, recall bias cannot be ruled out as few questions involved a recall period varying from 30 days to 12 months. The study failed to capture the duration of smoking which could have been a confounder in assessing willingness to quit. In addition, the possibility of underreporting of prevalence and overreporting of willingness to quit due to social desirability cannot be ruled out in our study.

Smoking cessation is proven to decrease anxiety, stress, or depression and also improve the quality of life among tobacco users compared with those who continue to smoke.[24] Thus, this study shows the groups that could be targeted and also the policies that can be formulated such that smokers tend to cease smoking and enjoy the benefits of cessation. The interventions would yield higher benefits if these are targeted at the primary care level with involvement of primary care physicians in assessing the dependence and offer help in quitting tobacco.

Conclusion

Enforcing social restrictions like smoking restriction at house and also brief advice by doctors to quit smoking during any contact with the tobacco user could improve quit rate especially in young tobacco users and those who have attempted to quit before. In addition, the study establishes the usefulness of billboards or hoardings with antitobacco messages as an effective interventional strategy among tobacco users.

Conflicts of interest

There are no conflicts of interest.

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