

Sociodemographic characteristics of tobacco users as determinants of tobacco use screening done by healthcare providers: Global Adult Tobacco Survey India 2009–2010

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ABSTRACT

Introduction: World Health Organization and Indian Public Health Standards recommend provision of tobacco use screening and cessation help at primary care settings. Evidence shows that brief advice by healthcare provider helps tobacco user quit. It starts with asking the patient about his tobacco use status. The rate of tobacco use screening done by healthcare providers is very low and also depends on sociodemographic characteristics of patients along with several other factors. **Objectives:** This paper intends to study how sociodemographic characteristics (age, gender, residence [rural/urban], education, and occupation) of tobacco users influence the tobacco use screening done by healthcare providers. **Materials and Methods:** The study was a secondary data analysis of the Global Adult Tobacco Survey India 2009–2010. There were 4958 smokers and 7255 smokeless tobacco users included in the study who visited healthcare provider in the past 12 months prior to the survey. **Results and Discussion:** The results showed that male smokers were more likely to be screened for smoking by healthcare providers as compared to female smokers. Furthermore, tobacco users in younger age groups were less likely to be screened for tobacco use by healthcare providers as compared to tobacco users in older age groups. Urban smokeless tobacco users were more likely to be screened for tobacco use by healthcare provider as compared to rural smokeless tobacco users. **Conclusion:** Healthcare providers were being biased in tobacco use screening of their patients based on demographic characteristics of patients, i.e., their age, gender, and rural/urban residence. However, the evidence shows that it is very imperative to screen each and every patient for tobacco use habit.

Keywords: Global Adult Tobacco Survey India, healthcare providers, tobacco cessation, tobacco use screening

Introduction

Tobacco use has been recognized as an epidemic.^[1] The first step in the control of an epidemic is proper screening of cases which are tobacco users in this epidemic. The healthcare providers play an important role in tobacco use screening and tobacco dependence treatment of patients.^[2] Several studies have shown deteriorating effects of tobacco use on general health and oral health.^[3] Almost every body system and organ get badly affected

by tobacco use, leading to several diseases such as cancers, stroke, cardiac problems, respiratory problems, etc.^[4,5] Similarly tobacco cessation has beneficial effects on general health as well as on oral health.^[3] The benefits of tobacco cessation start within 20 min of quitting and increases exponentially as the quitting process continues until months and years.^[6] Primary Health Centers are the most suitable setting for tobacco use screening and its treatment.^[7] Brief advice from healthcare provider could increase the quit rates by 3–6% as compared to quit rate of tobacco users who do not receive brief advice.^[8] Screening of tobacco users by healthcare provider is the first step toward cessation and gives

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How to cite this article: Ruhil R. Sociodemographic characteristics of tobacco users as determinants of tobacco use screening done by healthcare providers: Global Adult Tobacco Survey India 2009-2010. J Family Med Prim Care 2016;5:82-8.

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/2249-4863.184629

the chance to the tobacco user to get professional assistance for quitting. Ideally, healthcare providers should screen all the patients for tobacco use. However, studies showed that healthcare providers were ignorant about the importance of tobacco use screening and tobacco use screening rates were very low in India and worldwide.^[2,9,10] There are many predictors of tobacco use screening by healthcare provider. These predictors may be related to physician, patient and/or the illness/condition for which patient is seeking treatment. This paper is an attempt to study sociodemographic characteristics of patients/tobacco users as correlates of tobacco use screening done by healthcare providers.

The objectives of study include (a) to determine how tobacco use screening done by healthcare providers, gets influenced by sociodemographic characteristics of smokers, (b) to determine how tobacco use screening done by healthcare providers, gets influenced by sociodemographic characteristics of smokeless tobacco users, and (c) to give recommendations for healthcare providers on the basis of results of the study.

Materials and Methods

Study design

The study design was secondary data analysis of the Global Adult Tobacco Survey (GATS) India, 2009–2010.^[11] The GATS is one of the major parts of the Global Tobacco Surveillance System.^[12] It helps countries in tracking tobacco control indicators and formulating effective tobacco control interventions.

Setting

The primary data of GATS India was collected from June 2009 to January 2010 in a household survey by the International Institute for Population Sciences, Mumbai; with technical support from Centers for Disease Control and Prevention (CDC), Atlanta, and the World Health Organization. The GATS India covered all the 29 states (including New Delhi) and two union territories (UTs) – Chandigarh and Puducherry – covering about 99.92% of the total population of India.

Participants/sampling

The original GATS India 2009–2010 included participants of age 15 and above, on voluntary basis after giving informed consent. Participants were included on the basis of three-stage sampling independently in each state/UT and within each state/UT, independently in urban and rural areas. In this study of secondary data analysis, participants were all current, and former tobacco users (smokers and smokeless tobacco users) age 15 and above who visited healthcare provider in the past 12 months prior to the survey.

Variables

The exposure variables used for assessing association were residence (rural or urban), gender, age group, education level (no formal schooling, less than primary, primary but less than secondary, secondary, and above), occupation (government and nongovernment employee, self-employed, student,

homemaker, retired, and unemployed). Outcome variables were (a) tobacco use screening done by healthcare provider among smokers (b) tobacco use screening done by healthcare provider among smokeless tobacco users.

Data sources/measurement

Original data set of GATS India 2009–2010 was used which is available for public use from the United States CDC and Prevention website.^[13]

Data analysis

The analysis of the extracted data was conducted using SPSS version 16 (SPSS Inc. Released 2007. SPSS for Windows, Version 16.0. Chicago, SPSS Inc.). First, a descriptive analysis of all the variables included in the study was done. Next, an initial univariate logistic regression analysis was done by searching for associations of exposure variables with the outcome variables. Then multivariate logistic regression analysis was performed adjusting for all the confounders. The age and sex were independently associated with tobacco use screening in case of smokers and thus were potential confounders, which were adjusted in multivariate logistic regression analysis. Similarly, in case of smokeless tobacco users, age and residence were independently associated with tobacco use screening and thus were adjusted as potential confounders while performing multivariate logistic regression analysis. Significance levels for both univariate and multivariate logistic regression analysis were set at 0.05.

Results

Study participants at each stage of study

Figure 1 represents flow diagram of study participants at each stage of study from the GATS India survey data 2009–2010. Of the 4958 smokers aged >15 years who visited healthcare provider in the past 12 months prior to survey, 2677 smokers were asked by their healthcare provider about their smoking status. Of the 7255 smokeless tobacco users aged >15 years who visited healthcare provider in the past 12 months prior to the survey, 2516 smokeless tobacco users were asked by their healthcare provider about their tobacco use status [Figure 1].

Tobacco use screening by healthcare provider among smokers

Table 1 presents the sociodemographic characteristics (residence, gender, age, education, and occupation) of smokers who visited healthcare provider in the past 12 months prior to the survey. Multivariate logistic regression analysis shows that male smokers had 1.33 times higher odds (confidence interval [CI]: 1.08–1.65, $P = 0.007$) of being screened for tobacco use (smoking) by healthcare provider as compared to female smokers. It means that male smokers are more likely to be asked about their smoking habit by health care providers as compared to female smokers analysis also shows that smokers in younger age groups had fewer odds of being screened for tobacco use by healthcare provider as compared to smokers in the age group of 65+ [Table 1]. In

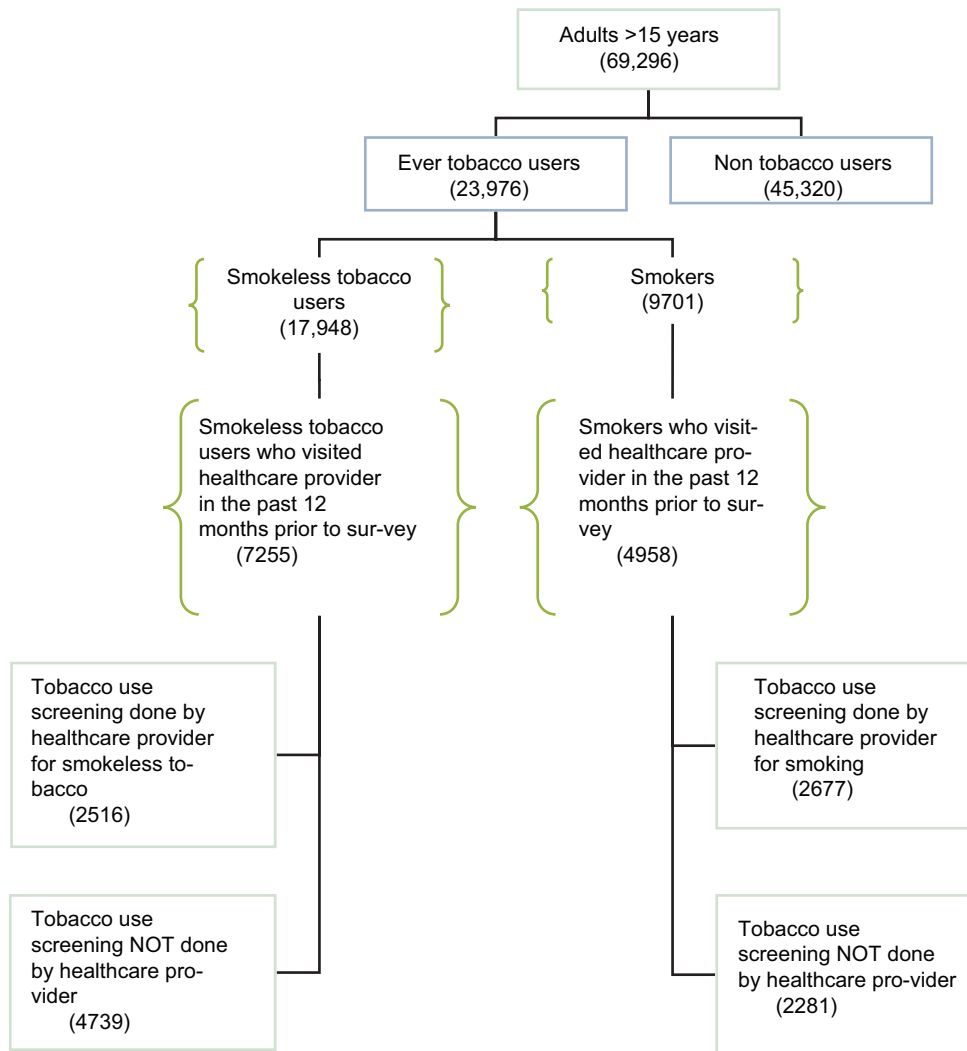


Figure 1: Flow diagram to show study participants at each stage of study

other words, young people are less likely to be screened for smoking by health care providers as compared to old people. Smokers in the age group of 15–24 had 0.27 times fewer odds (CI: 0.19–0.37, $P < 0.001$) of being screened for tobacco use by healthcare provider as compared to smokers in the age group of 65+. Smokers in the age group of 25–44 had 0.51 times fewer odds (CI: 0.42–0.64, $P < 0.001$) of being screened for tobacco use by healthcare provider as compared to smokers in the age group of 65+. Smokers in the age group of 45–64 had 0.74 times fewer odds (CI: 0.60–0.91, $P = 0.005$) of being screened for tobacco use by healthcare provider as compared to smokers in the age group of 65+. Other sociodemographic characteristics including residence (rural, urban), education, and occupation were not found to be significantly affecting the tobacco use screening by healthcare provider among smokers [Table 1].

Tobacco use screening by healthcare provider among smokeless tobacco users

Table 2 presents the sociodemographic characteristics (residence, gender, age, education, and occupation) of smokeless tobacco

users who visited healthcare provider in the past 12 months prior to survey. Both univariate as well as multivariate logistic regression analysis shows that urban smokeless tobacco users had higher odds of being screened by healthcare provider for tobacco use as compared to rural smokeless tobacco users [Table 2]. It means that healthcare providers were more likely to screen an urban tobacco user as compared to rural tobacco user for his smokeless tobacco use habit. Urban smokeless tobacco users were 1.19 times more likely (CI: 1.07–1.32, $P = 0.001$) of being screened by healthcare provider for tobacco use as compared to rural smokeless tobacco users. Furthermore, smokeless tobacco users in younger age groups had fewer odds (less likely) of being screened by healthcare provider for tobacco use as compared to smokeless tobacco users in older age group [Table 2]. Smokeless tobacco users in the age group of 15–24 had 0.54 times fewer odds (CI: 0.43–0.69, $P < 0.001$) of being screened by healthcare provider for tobacco use as compared to smokeless tobacco users in the age group of 65+. Smokeless tobacco users in the age group of 25–44 had 0.67 times fewer odds (CI: 0.56–0.80, $P < 0.001$) of being screened by healthcare provider for tobacco

Table 1: Sociodemographic characteristics and tobacco use screening by healthcare provider among smokers who visited healthcare provider during the past 12 months prior to survey: Global Adult Tobacco Survey India 2009-2010

Sociodemographic characteristics (n=4958)	Tobacco use screening by healthcare provider amongst smokers		Univariate logistic regression analysis		Multivariate logistic regression analysis	
	Yes (n=2677) (%)	No (n=2281) (%)	OR (95%CI) (%)	P	OR (95%CI) (%)	P
Residence						
Urban	916 (34.2)	740 (32.4)	1.08 (0.96-1.22)	0.187	1.13 (0.99-1.28)	0.063
Rural	1761 (65.8)	1541 (67.6)	1 (reference)		1 (reference)	
Gender						
Male	2393 (89.4)	1995 (87.5)	1.21 (1.01-1.44)	0.034	1.33 (1.08-1.65)	0.007
Female	284 (10.6)	286 (12.5)	1 (reference)		1 (reference)	
Age						
15-24	109 (4.1)	214 (9.4)	0.28 (0.21-0.37)	<0.001	0.27 (0.19-0.37)	<0.001
25-44	1201 (44.9)	1168 (51.2)	0.56 (0.46-0.68)	<0.001	0.51 (0.42-0.64)	<0.001
45-64	1021 (38.1)	711 (31.2)	0.78 (0.64-0.95)	0.016	0.74 (0.60-0.91)	0.005
65+	346 (12.9)	188 (8.2)	1 (reference)		1 (reference)	
Education						
No formal schooling	866 (32.4)	751 (33)	1.04 (0.90-1.21)	0.603	0.92 (0.78-1.09)	0.33
Less than primary	427 (16)	331 (14.5)	1.16 (0.97-1.39)	0.102	1.08 (0.89-1.31)	0.41
Primary but less than secondary	716 (26.8)	599 (26.3)	1.08 (0.92-1.26)	0.342	1.08 (0.92-1.27)	0.37
Secondary and above	662 (24.8)	597 (26.2)	1 (reference)		1 (reference)	
Occupation						
Government and non-Government employee	908 (34)	748 (32.9)	0.96 (0.81-1.13)	0.59	0.95 (0.78-1.15)	0.60
Self-employed	114 (4.3)	82 (3.6)	1.09 (0.80-1.50)	0.578	0.82 (0.59-1.15)	0.25
Student	1157 (43.4)	1021 (44.9)	0.89 (0.76-1.05)	0.161	0.86 (0.71-1.03)	0.11
Homemaker	24 (0.9)	58 (2.6)	0.33 (0.20-0.53)	<0.001	0.62 (0.35-1.08)	0.09
Retired and Unemployed	464 (17.4)	365 (16.1)	1 (reference)		1 (reference)	

OR: Odds ratio; CI: Confidence interval

use as compared to smokeless tobacco users in the age group of 65+. Other sociodemographic characteristics including gender, education, and occupation were not found to be significantly affecting the tobacco use screening by healthcare provider among smokeless tobacco users [Table 2].

Discussion

The results show that age of tobacco users influenced the tobacco use screening by healthcare providers among both smokers and smokeless tobacco users where younger tobacco users were less likely to be screened by healthcare provider for tobacco use as compared to tobacco users in older age groups. This result reminds me of a proverb, “bad habits should be nipped in bud.” This result may also be due to the fact that most of the tobacco-related illness, especially chronic diseases manifest in older age groups. In other words, tobacco users in older age groups are more likely to suffer from tobacco-related illness as compared to tobacco users in younger age groups. Thus present illness of patient may be a confounding factor, which has not been studied in this research, resulting in potential bias and thus limitation of this study. It emphasizes on further research on this topic, taking into account more exposure variables such as present illness of tobacco user for which he visited healthcare provider. The results also showed that male smokers were more likely to be screened by healthcare provider for smoking as compared to

female smokers. It requires major concern because same GATS survey showed that significantly high number of females smoke tobacco. Thus, healthcare provider should ask his female patients also about their smoking status. No such significant association was found between gender of tobacco user and tobacco use screening by healthcare provider, in case of smokeless tobacco users. In case of smokeless tobacco users, urban tobacco users were more likely to be screened by healthcare provider for tobacco use as compared to rural tobacco users. It emphasizes the need to train healthcare providers in rural areas regarding the importance of tobacco use screening of patients. Several studies have showed that prevalence of tobacco use in rural areas was higher as compared to urban areas.^[11,14]

The results of this study are consistent with many studies done worldwide. According to one study in Australia, male physicians were more likely to discuss smoking with a male smoker than a female smoker.^[15] Another study showed that primary care physicians in California were screening younger adolescents less frequently for tobacco use as compared to older teens.^[16] Young adolescents are very critical age at which most individuals worldwide start using tobacco.^[17] There are several other studies which have studied correlates related to physicians. In a study in Vietnam, some of the providers' characteristics were found influencing tobacco use treatment.^[18] These characteristics were older age of physicians, attitudes, self efficacy, and normative

Table 2: Sociodemographic characteristics and tobacco use screening by healthcare provider among smokeless tobacco users who visited healthcare provider during the past 12 months prior to survey: Global Adult Tobacco Survey India 2009-2010

Sociodemographic characteristics (n=7255)	Tobacco uses screening by healthcare provider among smokeless tobacco users		Univariate logistic regression analysis		Multivariate logistic regression analysis	
	Yes (n=2516) (%)	No (n=4739) (%)	OR (95%CI)	P	OR (95%CI)	P
Residence						
Urban	837 (33.3)	1383 (29.2)	1.21 (1.09-1.34)	<0.001	1.19 (1.07-1.32)	0.001
Rural	1679 (66.7)	3356 (70.8)	1 (reference)		1 (reference)	
Gender						
Male	1461 (58.1)	2651 (55.9)	1.09 (0.99-1.20)	0.08	1.09 (0.96-1.23)	0.19
Female	1055 (41.9)	2088 (44.1)	1 (reference)		1 (reference)	
Age						
15-24	209 (8.3)	541 (11.4)	0.56 (0.45-0.69)	<0.001	0.54 (0.43-0.69)	<0.001
25-44	1225 (48.7)	2542 (53.6)	0.69 (0.59-0.82)	<0.001	0.67 (0.56-0.80)	<0.001
45-64	788 (31.3)	1233 (26)	0.92 (0.77-1.09)	0.34	0.90 (0.75-1.08)	0.25
65+	294 (11.7)	423 (8.9)	1 (reference)		1 (reference)	
Education						
No formal schooling	923 (36.8)	1687 (35.7)	0.98 (0.85-1.12)	0.73	0.92 (0.78-1.07)	0.27
Less than primary	388 (15.5)	762 (16.1)	0.91 (0.77-1.07)	0.25	0.89 (0.75-1.06)	0.19
Primary but less than secondary	704 (28.1)	1403 (29.7)	0.89 (0.78-1.03)	0.13	0.91 (0.79-1.06)	0.23
Secondary and above	492 (19.6)	878 (18.6)	1 (reference)		1 (reference)	
Occupation						
Government and non-Government employee	701 (28)	1253 (26.5)	1.08 (0.95-1.22)	0.24	1.07 (0.92-1.24)	0.37
Self-employed	98 (3.9)	150 (3.2)	1.26 (0.96-1.65)	0.09	1.02 (0.77-1.35)	0.90
Student	866 (34.6)	1670 (35.3)	1.0 (0.89-1.13)	1.0	0.99 (0.86-1.14)	0.86
Homemaker	42 (1.7)	112 (2.4)	0.72 (0.50-1.04)	0.08	0.90 (0.60-1.35)	0.62
Retired and unemployed	799 (31.9)	1540 (32.6)	1 (reference)		1 (reference)	

OR: Odds ratio; CI: Confidence interval

beliefs.^[18] The barriers identified in the same study were lack of training, resources for referral, staff support, and patients' interest in quitting.^[18] One study in Ontario found that providers who gave high importance to tobacco cessation were more likely to screen their patients for tobacco use.^[19] Furthermore, screening by healthcare providers was related to patients' willingness to quit, present illness of the patient, and opting for an annual health examination by the patient.^[19] A study among Hispanic physicians in the USA depicted that tobacco use screening by physicians was related to their familiarity with standard cessation protocols and self-efficacy.^[20] The study also found better screening rates among male physicians.^[20] While some other study found better tobacco use screening and cessation counseling among female physicians.^[21] One study has reported a strong relationship between personal prevention habits and screening practices.^[22] Physicians who themselves were nontobacco users more often screened the patients for tobacco use.^[22] Some studies showed that tobacco use screening by physicians also depend on their specialization.^[22,23] Primary care practitioners, general practitioners, and public health physicians more often screened the patients for tobacco use as compared to dermatologists, ophthalmologists, anesthetist, psychiatrist, and surgical specialists.^[22,23] One study conducted in Minnesota showed that health systems also determine the tobacco use screening by physicians.^[24] Electronic health records or paper documentation of tobacco use status,

availability of nicotine gums/patches in pharmacy, training and education of staff, referral to tobacco cessation professionals, were some simple measures that facilitated tobacco use screening and treatment of patients.^[24] Few studies have shown a correlation between present illness of patient and tobacco use screening by healthcare provider. According to one study conducted in two Indian states (Andhra Pradesh and Gujarat), patients with respiratory illness were more likely to be screened for tobacco use by healthcare provider as compared to patients with general ailments.^[25] Furthermore, patients with more than five previous quit attempts were more likely to be screened for tobacco use by healthcare provider as compared to patients with no previous quit attempts.^[25] According to one study in South Africa, pregnant patients were more likely to be screened for tobacco use during antenatal care as compared to patients with other health problems.^[26]

Thus as per our literature review, rarely any study is available globally which have studied sociodemographic characteristics of patients as correlates of the tobacco use screening done by healthcare providers. In this way, our study helps in bridging this gap in literature and adds to new knowledge.

The main limitation of this study is that it is based on secondary data analysis. There are other limitations also. According to

literature review, physician-related variables, health system related variables, and present illness of patient also influence tobacco use screening done by healthcare providers and thus, these variables may be potential confounders which have not been taken into account. There may be recall bias as a limitation of primary data.

Conclusion

Now, we conclude that correlates of tobacco use screening done by healthcare providers among smokers were being male and being of older age group. Correlates of tobacco use screening done by healthcare providers among smokeless tobacco users were being of urban residence and being of older age group. Thus, there is a tendency in healthcare providers of being biased in tobacco use screening of their patients based on their demographic characteristics (age, sex, and rural/urban belonging). Healthcare providers should also screen young people, adolescents, females, and rural people for tobacco use because tobacco use is significantly prevalent among these groups also.^[11,14]

Acknowledgments

I would like to acknowledge my family, especially my husband Dr. Naveen Kumar for being a pillar of support throughout my study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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