

Original Research Article

## Epidemiological Study of Tobacco Use in Indian Adults: Addiction Pattern and Determinants of Tobacco Cessation

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### ABSTRACT

**Background:** Smoking cessation plays a crucial role in reducing mortality and morbidity. Hence, knowledge about pattern of smoking in Indian population and factors influencing smoking cessation can help in effectively implementing interventional measures for its reduction.

**Objective:** To assess pattern of smoking/tobacco habits, level of motivation to quit smoking and to understand the interventional measures that can be taken for effectively achieving smoking cessation.

**Methods:** An observational study was conducted in 577 subjects using a pre-validated questionnaire to analyze the pattern, forms and level of tobacco addiction and level of motivation for smoking cessation. Questionnaire administration by personal visits to participants was followed by a brief presentation on hazards of smoking along with motivation for smoking cessation. The data obtained was analyzed using descriptive statistics.

**Results:** Majority of the smokers were males preferring tobacco smoking over smokeless tobacco. Smoking at public places was avoided by them particularly where smoking was banned. Many of them were not aware of the anti-tobacco campaign/advertisements in the last 30 days. However, it was encouraging to see that majority were willing to quit smoking, especially males and they were ready to take medications for the same. But, very few visited to the doctor and were advised to quit smoking. Health and family concerns were the major reasons contributing for smoking cessation.

**Conclusion:** Smoking bans at home, work and public places, anti-tobacco campaigns and motivation from family and healthcare professionals can facilitate smoking cessation.

**Key words:** Tobacco use, Addiction, Motivation, Smoking cessation.

### INTRODUCTION

Tobacco smoking is among the largest preventable causes of premature deaths globally. <sup>[1]</sup> India is the second most populous country in the world, and also second largest producer and consumer of tobacco after China. <sup>[2]</sup> Various forms of smoking are common in India, of which

beedis and hand rolled cigarettes are the most widely used forms of smoking than cigarette, along with Hookah and Chillum. Though cheaper, beedi smokers are at least at an equal risk of developing cancers as cigarette smokers due to use of smoked tobacco. <sup>[3]</sup> The patterns of use of bidis or manufactured cigarettes varies across

different regions and socioeconomic levels. [4,5] Use of smokeless tobacco in the form of Khaini, Gutkha, Jarda, Paan (betel leaf) with tobacco, Paan masala, Mawa, Mishri and dry snuff is also seen prevalently. [3,6,7]

Tobacco use leads most commonly to diseases affecting the heart, liver and lungs and smoking is a major risk factor for hypertension, heart attacks, strokes, chronic obstructive pulmonary disease and lung and mouth. [8] The effects depend on the number of years that a person smokes and on how much the person smokes, smoking started earlier in life especially with cigarettes containing higher amount of tar increases the risk of these diseases. [8]

Also, it has been proved that passive smoking leads to an increased risk of cardiovascular diseases, lung cancer and other cancers, asthma and other respiratory diseases. [9,10] In contrast, smoking cessation significantly improves life expectancy, decreases morbidity, and reduces healthcare costs. Various behavioral and pharmacological interventions are available to aid smoking cessation and the Food and Drug Administration (FDA) has approved seven medications for this purpose: five nicotine replacement therapies (NRT), bupropion and varenicline. [11,12]

The greatest hurdle in quitting smoking/tobacco appears to be the motivation. In addition to understanding the health hazards of tobacco consumption, the constant support and motivation from family, friends and society can change the current scenario. Hence, this study was conducted to assess the pattern of smoking / tobacco habits amongst Indian population, know the level of motivation to quit smoking and to better understand the interventional measures that can be taken for effectively achieving smoking cessation.

## **MATERIALS & METHODS**

An observational study was conducted at Pune district for the duration of 3 months from April 2016 to June 2016. After approval from the Ethics Committee and obtaining written informed

consent from participants, total of 653 Indian adults of either sex with history of addiction were approached by personal visits by trained hospital staff to the selected sites. The study was predominately carried out in Pune city on a random basis. After discussion with practicing physicians in the city about the growing concern over tobacco usage, the volunteers involved in the campaign used to visit the 3 selected physician's outpatient department to get the questionnaires filled from patients attending the clinic who gave the history of tobacco addiction including smokeless form of tobacco. In addition, local corporate bodies like Pune Municipal Corporation, local NGO's and IT companies were approached to allow the study to be carried out in their employees and associated community.

Out of these, 577 people (88.4%) consented and completed the questionnaire. As this was an epidemiological study to assess tobacco addiction, no formal sample size calculation was done. The volunteers used the below WHO criteria to define addiction. [13] Dependence is a maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period: tolerance, as defined by either a need for markedly increased amounts of the substance to achieve the desired effect, or markedly diminished effect with continued use of the same amount of substance; withdrawal, as manifested by either the characteristic withdrawal syndrome for the substance, or the substance being taken to relieve or avoid withdrawal symptoms; taking larger amounts of the substance or over a longer period than was intended; a persistent desire for or unsuccessful efforts to cut down on substance use; a great deal of time being spent in activities necessary to obtain or use a substance and abandonment or reduction of important social, occupational, or recreational activities because of substance abuse. The subjects included in the study

were first confirmed as nicotine dependents using the above criteria.

Current daily smokers were defined as those who were currently smoking tobacco daily in the form of cigarettes, bidis, hookah (Indian water pipe), chillum, or any other smoked form. Similarly, current daily smokeless tobacco users were defined as those who were currently using chewable tobacco products: khaini (tobacco-lime mixtures), gutkha, naswar (snuff), or zarda paan (betel quid with tobacco) daily. [14,15] Responses from subjects were recorded through smoking / tobacco cessation questionnaire. It consisted of three parts; first part contained 10 questions pertaining to tobacco addiction including the pattern, forms and level of tobacco addiction. Second part consisted of 16 questions on tobacco quitting desire including the level of motivation and factors affecting the tobacco cessation. Third part was about demographic information of the subjects. It was then pre-validated in a small group of population addicted to tobacco / smoking and was modified according to the responses obtained.

**Statistical Analysis:** Data was analyzed using descriptive statistics like percentages, mean  $\pm$  standard deviation (SD). The questionnaire administration was followed by a brief presentation on health hazards and economic impact of tobacco / smoking and motivational support to assist them in quitting tobacco / smoking.

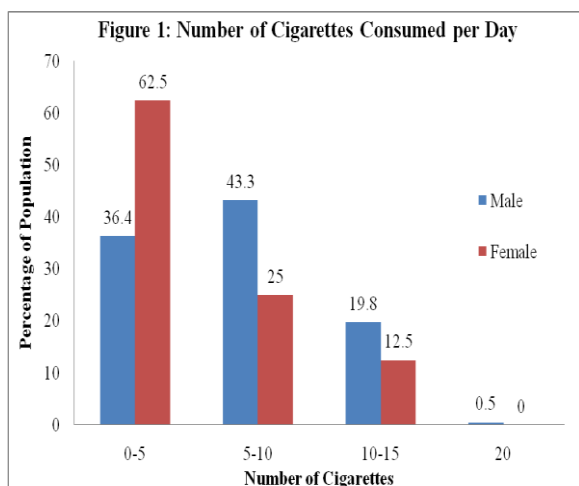
## RESULTS

Out of the total number of 653 people screened in community, responses of 577 general populations who are addicted to any form of tobacco were gathered till June 2016. It was observed that out of the total number of people enrolled (577), 524 (90.8%) were males and 53 (9.2%) were females. Mean age of males was  $39.8 \pm 13.2$  (S.D.) years and mean age of female was  $48.2 \pm 14.9$  (S.D.) years. Family members of most of the subjects were non-users of tobacco ( $n = 262$ , 58%) as against 42% ( $n = 190$ ) subjects with at least 1 family member

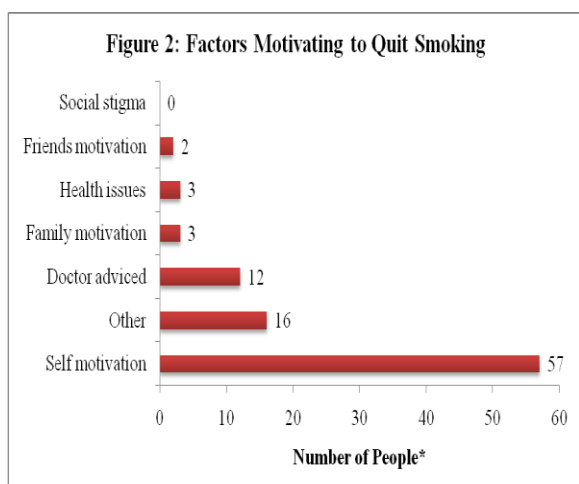
using tobacco. About 35.1% subjects spend Rs 100 to Rs 1000, 15.1% subjects spend Rs 1000 to Rs 5000, while 39% population spend  $>$ Rs 5000 annually on health. In contrast to this annual expenditure on health, 37% people spend Rs 500, 20% people spend Rs 500 to Rs 1000 and 26.6% spend Rs 1000 to Rs 2000 monthly on cigarettes/tobacco.

Tobacco smoking ( $n = 438$ ) was prevalent over smokeless tobacco ( $n = 27$ ), while 106 subjects use both the forms of tobacco. Total 76% male and 77% female smoke tobacco, whereas only 3.2% male and 18.9% female use smokeless tobacco. Amongst different tobacco forms, most of the subjects were addicted to hand rolled tobacco, cigarette smoking and gutka (82%, 24.8% and 19.9% respectively). Most of the tobacco user were using tobacco for  $<$ 5 years (31.5%) and 6-10 years (25.3%). Amongst chronic users ( $>$  10 years), 11.4% subjects were using tobacco for 11-15 years and 10.9% subjects were using for 16-20 years. Subjects using tobacco for  $>$ 20 years were 20.8%. Amongst smokers, 42.6% subjects smoke 5-10 cigarettes per day followed by 37.4% subjects smoking  $<$ 5 cigarettes per day and 19.5% people smoking 10-15 cigarettes per day.

As shown in figure 1, higher number of female smoke  $<$ 5 cigarettes per day than male, whereas smoking  $>$ 5 cigarettes per day was more prevalent in male. Nearly half of the subjects (51.1% males and 45.3% female) consume tobacco within 30 minutes after they woke up. Total 72.1% subjects said that they can avoid smoking in public places. Male were more controlled to avoid smoking at public places ( $n = 386$ , 73.7%) than female ( $n = 30$ , 56.6%). Even assessment of willingness to avoid smoking when subjected to the situation where 'no smoking policy' is displayed suggested that majority of the subjects (65.1%) felt no desire to smoke.



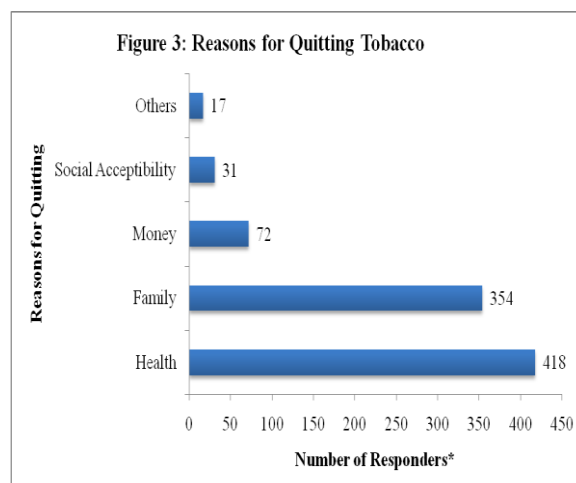
When asked about the last timing of use of tobacco/smoking in a day, most of the subjects were found to use tobacco/smoke (69.8%) just before sleeping as against 1 hour before sleeping (14.6%) and 2 hours before sleeping (5.2). However, very small group of subjects slept with tobacco in mouth (13.3%). More than half of the subjects (n = 212, 58.1%) were not aware of advertisement or warning signs of anti-cigarette/anti-tobacco campaign in last 30 days. Past history of smoking demonstrated that half of the subjects (n = 288, 49.9%) tried to quit tobacco at least once in the past, while 36.9% (n = 213) people never tried to quit using tobacco in the past. Only 28.7% (n = 106) subjects visited doctor for quitting smoking and only 34.6% subjects were advised by their doctors to quit smoking (figure 2).



\*Number of people who tried to quit smoking in past (n=93)

When enquired at the time of survey, most of the subjects (n = 411, 71.2%) wanted to quit smoking, whereas 12.7% subjects were unsure of taking the decision to quit smoking. More number of males (72.5%) wanted to quit smoking than females (58.5%). Most of the subjects (n = 429, 74.4%) were willing to take help of medication to quit tobacco/smoking.

Very few smokers (21.1%) tried to quit tobacco in the past, self-motivation (57.44%) being the major reason for quitting. As shown in figure 3, amongst those who wanted to quit tobacco, the most important reason for most of the people's decision was health concerns (n = 418, 72%), family concerns (n = 354, 61.5%) and money problem (n = 72, 12.5%).



\*Opinion of all study participants (n=577) about reasons to wish quitting smoking

## DISCUSSION

Smoking and tobacco use is gaining concern as a serious risk factor for many respiratory, cardiovascular diseases, oral and lung cancer. This study describes the pattern of smoking and factors affecting smoking cessation which provides information to design appropriate interventions to facilitate smoking cessation. Majority of the smokers in the study were males as was commonly seen with other studies in India. [5,16] The mean age was around 40 years for males and around 49 years for females in our study.

In our study, 26.3% subjects had 1 family member who was addicted to some

or other forms of tobacco and probably this could be one of the reasons for failure of smokers to quit tobacco. A previous study suggests that an informal ban from home will facilitate in quitting smoking. [15] It was seen in our study that substantial amount of earning of subjects was spent on smoking / tobacco products rather than on health which is a serious matter of concerns. Smoking cessation measures have proved not only to be effective but also cost effective in delivering the much-desired cost savings and net gains to individuals and thereby to family members. As majority of our population was rural and urban-slum population, tobacco smoking was more prevalent than smokeless tobacco as observed in a previous study done in India. [14] The finding of greater prevalence of tobacco smoking in rural and urban-slum population was consistent with the GATS India 2010 findings. [17] Cost being the main factor, cheaper hand rolled cigarettes was preferred over cigarettes which were consistent with previous studies. [4,14]

Another matter of concern was that majority of the subjects in this study were smoking / using tobacco for 5-10 years, which is probably enough to explain ineffectiveness of current tobacco cessation campaigns if these campaigns are reaching to these set of population, lack of desire to quit and family or social support to help them quit. Moreover, the health hazards of chronic smoking/ tobacco consumptions and resultant morbidity and mortality will continue to rise if no appropriate steps are taken at the earliest. Many studies have shown increasing mortality in male and female populations who began smoking in early adult life and did not quit. [18-21] All these studies have shown that in middle age group (about 30 to 69 years of age), mortality among cigarette smokers was two to three times the mortality among otherwise similar persons who had never smoked, leading to a reduction in life span by an average of about 10 years. [12]

However, it was encouraging to see that a large number of subjects were willing

to quit tobacco, for which the main driving force was health and family and they were ready to take help of medication for quitting tobacco/smoking. This was consistent with previous studies. [15] Smoking bans at home, at work, and in public places do motivate smokers to quit smoking; however, social acceptability plays a secondary role. Majority of the population were not willing to smoke in public places where “no smoking policy” was implemented. Bans on smoking in public places can also reduce non-smokers exposure to tobacco smoke and help to decrease the overall consumption, hence, more comprehensive bans on all direct and indirect advertising or promotion of any tobacco goods or trademarks will further help to reduce consumption as consistent with a previous study. [12] A large number of subjects were habituated to smoke just before sleeping. A recent study suggests that smoking at bedtime is an indicator of nicotine dependence and predicts smoking cessation failure.

A greater proportion of subjects were not aware of any anti-tobacco campaign they have come across in last 30 days which aimed at building public awareness of immediate health damage caused by smoking and exposure to secondhand smoke, with encouragement to quit smoking and provide free help. Hence, it was observed that few of them had not even attempted to quit smoking. Thus, more effective means of anti-cigarette/tobacco advertisements and campaigns need to be implemented to create awareness about health hazards of tobacco. [12] Very few subjects visited the doctor to quit smoking. Surprisingly, even after knowing about the smoking history of the patient, very few of the male smokers (35%) and female smokers (31.3%) were advised to quit smoking when they visited doctor for some other health issues. The observations were similar to GATS India 2010 study indicating inadequate motivation from healthcare providers in India to encourage people quit smoking. [17] More emphasis shall be given

by healthcare professionals to counsel the subjects for quitting smoking/tobacco and motivate some of them for use of medication wherever indicated or absolutely necessary to quit tobacco. Also prompt follow up shall be taken among subjects willing to quit tobacco.

Thus to conclude, tobacco consumption / smoking is less prevalent in females as compared to males (90.8% vs 9.2%) as seen in a previous study. [1] However, males appear to be more motivated to quit smoking than females. This probably suggests more focused targeting of anti-tobacco campaign on female in motivating them in quitting tobacco, while integrated social and family support to the motivated male will help them in quitting tobacco / smoking more effectively. Healthcare providers can also play a big role in this initiative. Moreover, on organizational and government front, more effective means of anti-cigarette/tobacco advertisements and targeted campaigns need to be implemented to create awareness about health and environment related hazards of tobacco.

**Conflicts of interest:** None

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