

The intergenerational transmission of tobacco habit: Role of parents and the family

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ABSTRACT

Introduction: Tobacco pandemic has become one of the greatest public health challenges of all time. The socio-environmental factors prevailing at home have been identified as one of the most important causes of adopting smoking and other types of smokeless tobacco. **Objectives:** The present study was conducted to find out the prevalence and pattern of tobacco use in the patients registered in the clinic and to study the role of parental and family influence on tobacco use. **Materials and Methodology:** This cross-sectional study was performed in a Tertiary Care Hospital in Delhi. The study included all 307 patients who were registered in a cardiac clinic between January and December 2014. The history of tobacco use in siblings, offspring, and parents was taken from these patients. Pedigree profiles provided detailed information about tobacco use in the family. The association between the use of tobacco among parents and tobacco habits was assessed by odds ratio and Chi-square test. **Results:** Among the patients, 48% were tobacco users and family history of tobacco use was present in 81% of users. Odds ratio of tobacco use in parents, offspring, siblings, and three generations was 3.477, 1.987, 2.626, and 7.626 than that of nontobacco users. **Conclusion:** Previous anti-smoking campaigns have concentrated much of their effort on discouraging individuals from smoking with the aim of creating a nonsmoking generation. This approach does not take sufficient account of the fact, reconfirmed by our findings that children are influenced by the behavior and attitudes of adults, especially their parents.

Keywords: Intergenerational transmission, role of parents, tobacco use

Introduction

Excessive use of tobacco has led to a pandemic-like situation all over the globe.^[1] Tobacco is the single most preventable cause of death and disability. The World Health Organization estimates that for every 6 s, somebody dies from a tobacco-related disease globally,^[2] and this deadly habit is mainly learnt at home.^[3] The socio-environmental factors prevailing at home have been identified as one of the important causes of adopting smoking and other types of smokeless tobacco.^[4]

Identification of predictors for the initiation of tobacco use is essential to curb the issue. Like genetically linked disease

run in families, tobacco users in families also tend to influence their siblings and relatives for initiation of tobacco. Role of family covers a bigger arena than society, peers, and other reasons for the initiation of tobacco use.^[4] The first lesson of smoking and tobacco consumption is usually learnt at home from a parent or a grown-up sibling, especially if the habit is acquired at an early age before 18 years.^[5] Reports have shown that initiation of tobacco use during adolescence causes more tobacco dependence.^[6] During their formative phase, kids who see their parents, elders, and siblings smoking or chewing tobacco become inquisitive, and their minds get primed and conditioned to initiate smoking, at quite a young age. Once the habit of tobacco consumption is acquired at young age, it is difficult to get rid of it because of its addictive nature. One not only inherits the habit of smoking from parents/elders, but also passes on the baton to the next generation.

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^[4] Addiction is instigated at family level such as cultural and religious beliefs.^[7]

Although several nation-wide prevalence studies such as the National Family Health Survey and Global Adult Tobacco Survey report the proportion of population using tobacco products in India, role of family has not been discussed much.^[8,9] Moreover, the degree of inheritance of smoking practices from parents and further continuation in those practices in the offspring has not been studied previously. Study on the role of family practices for initiation of tobacco use is lacking in India and abroad. We hypothesized that tobacco use is associated with family practices and can influence tobacco use behavior in the family. This study was conducted to determine the prevalence and pattern of tobacco use in the patients registered in the clinic. An attempt was also made to examine the role of parental and family influence on tobacco use. Findings will stimulate and inform the creation, implementation, evaluation of targeted dependence prevention, and cessation strategies and programs.

Materials and Methodology

This cross-sectional study was performed in a Tertiary Care Hospital in Delhi. The study was conducted between January 2014 and December 2014 and included all 307 patients who were registered in a cardiac clinic. In the present study, all the patients who came to the cardiac clinic during the study period and were eligible, as per inclusion criteria of the study, were included and no sampling was done. Only the adult patients (more than 18 years of age) attending the clinic were interviewed. The history of tobacco use in siblings, offspring, and parents was taken from these patients only.^[8] Patients who were unwilling to participate and those who were unable to respond to the questions (due to hearing problem or any other reason) were excluded. Written informed consent was obtained from the respondents after explaining the nature and objectives of the study in their local language. The study was approved by the Institutional Review Board and Institutional Ethics Committee of Jamia Hamdard.

Data were collected by interview method using pretested and predesigned semi-structured pro forma having questions pertaining to sociodemographic details, tobacco use, and history of tobacco use in family and siblings. Pedigree profiles provided detailed information about tobacco use in family. Pedigree assessment gives us an opportunity for early lifestyle intervention in young asymptomatic siblings.^[10]

Subjects were interviewed about their tobacco status. They were classified as current tobacco users (use tobacco regularly for within 1 month before examination) and nontobacco users (had never used tobacco). Those who were using smokeless and smoked tobacco were considered to be using both. Ex-smokers were those who had quit smoking for more than 6 months. Those who took alcohol more than 5 times in a week were classified as regular users and those took only on occasions were classified

as occasional alcohol users. The data were analyzed using SPSS 22 IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. Use of tobacco was considered as dependent variable and its use in parents, siblings, and offspring was taken as an independent variable. Magnitude of association was assessed by odds ratio. Chi-square test was done to assess significance; $P < 0.05$ was taken as significant.

Results

There were 307 patients who attended the cardiac clinic at the Tertiary Care Hospital in Delhi. There were 196 (64%) males and 111 (36%) females. Among them, 65% were Hindus. The average age of the participants was 47.78 ± 16.3 years. Median age group of the study population was 48 years. Of the 307 patients, 108 (35%) were tobacco users and 161 (52%) patients were nonusers of tobacco. Among the tobacco users, 38 (13%) patients managed to quit smoking or using other forms of tobacco after counseling, so they were categorized as ex-users of tobacco [Table 1]. Mean age at initiation of smoking in the study population was 18 years.

In the overall study population, 15% of the patients were using cigarette, 7.9% were consuming bidi, 14% were taking smokeless forms of tobacco, and 10.7% were using mixed form whereas 52.4% were not using any form of tobacco. Gender-wise analysis of the use of various forms of tobacco revealed that 79% of females were not using tobacco in any form whereas 5.3% were using cigarettes, 5.3% were taking bidi, 8.7% and 1.8% were taking smokeless tobacco and mixed forms, respectively. Majority (64%) of males used smoked and smokeless forms of tobacco [Table 2].

To examine the hypothesis that tobacco habit runs in families, the family history, the practice of this habit in parents, siblings, and offspring of the tobacco users and nontobacco users were evaluated. Table 3 shows the distribution of patients as per their

Table 1: Profile of patients who attended the clinic

Variables	n (%)
Gender	
Male	196 (64)
Female	111 (36)
Religion	
Hindu	199 (65)
Muslim	100 (33)
Others	8 (2)
Age group	
<20	4 (1)
20-34	67 (22)
35-50	87 (28)
>50	149 (49)
Tobacco use	
Tobacco users	108 (35)
Nontobacco users	161 (52)
Ex-tobacco users	38 (13)

tobacco use profile and family practices of those who were using tobacco. Among tobacco users, the family history of tobacco use was present in 81% and one of the parents of 63.8% was using tobacco. Out of all tobacco users, 65% had siblings who were using tobacco. Offspring of 61.6% were using tobacco. Thus, family practices related to tobacco use varied widely among the tobacco users and nonusers.

In the study population, both mother and father were using tobacco in 8% of families. History of tobacco use by fathers was seen in 42 (52%) and 14 patients (3%) had a history of tobacco use by mothers compared to 36% with a history of tobacco use by none. The use of tobacco among either of the parents in tobacco users was higher than in nontobacco users and it was statistically significant [Table 4]. All the 36 patients who reported a history of tobacco use by their mothers were tobacco users. Nearly, 65.8% of tobacco users reported that their fathers also used tobacco. Odds ratio of tobacco use was 9.7 (5.422–17.445) times more in the participants whose either of the parents was tobacco users than the nonusers.

The entire distribution of tobacco products has been shown in Table 5. The trend of use of various tobacco products in participants and siblings were found to be similar. Percentage of use of smokeless tobacco and cigarette was seen to increase

in offspring and siblings. The percentage of nonusers were found to be nearly same in parents, siblings, and offspring of the participants.

Among the patients, 16% were regular alcohol users and 27.4% were occasional users. Out of the 146 tobacco users, 82 (56%) were alcohol users. A significant association was found between the practices of smoking and alcohol [Table 6]. Among the 82 patients with tobacco and alcohol use, 61 (74.3%) had a family history of alcohol with tobacco use.

Discussion

In this study, half of the patients were found to be tobacco users and among tobacco users, the family history of tobacco use was present in the majority and in more than half of the participants, there was a history of tobacco use by parents.

This study is one of the few studies which has studied the entire spectrum of tobacco habit in three generations that included bidi smoking, cigarette smoking, and use of smokeless tobacco or both. Smokeless tobacco is socioculturally considered to be more acceptable. For example, a teenager will think twice before smoking in front of his parents, but will not hesitate to chew gutka or pan masala. In some cases, parents may also share the smokeless form of tobacco with siblings and offspring. Among tobacco habits, chewing tobacco, consuming pan masala, gutka,

Table 2: Distribution of patients as per the different forms of tobacco used and as per their gender

Type of tobacco use	Male (%)	Female (%)	Total (%)
No	70 (36.2)	91 (79.8)	161 (52.4)
Cigarette	40 (20.8)	6 (5.3)	46 (15)
Bidi	19 (9.9)	5 (4.4)	24 (7.9)
Smokeless tobacco	33 (17)	10 (8.7)	43 (14)
Mixed	31 (16.1)	2 (1.8)	33 (10.7)
Total	193 (100.0)	114 (100)	307 (100)

$\chi^2=57.28$; $P<0.0001$

Table 3: Distribution of patients as per their tobacco use profile and family profile

Family parameters	Tobacco users (n=146), n (%)	Nonusers (n=161), n (%)	OR	CI	P
Family history of smoking	118 (81)	68 (42)	5.764	3.436-9.669	$\chi^2=47.98$ $P<0.0001$
History of tobacco use in parents	93 (63.8)	54 (34)	3.477	2.173-5.563	$\chi^2=27.9$ $P<0.0001$
History of tobacco use in siblings	96 (65)	68 (42)	2.626	1.652-4.174	$\chi^2=17.01$ $P<0.012$
History of tobacco use in offspring	90 (61.6)	72 (45)	1.987	1.259-3.134	$\chi^2=8.79$ $P<0.003$
History of tobacco use in three generations	98 (67)	34 (21)	7.626	4.568-12.731	$\chi^2=66.11$ $P<0.0001$
No one in family used tobacco	23 (16)	93 (58)	0.136	0.079-0.235	$\chi^2=57.48$ $P<0.0001$

OR: Odds ratio; CI: Confidence interval

Table 4: Relationship of tobacco practices with parents

Tobacco practices in parents	Nontobacco users (161), n (%)	Tobacco users (146), n (%)	OR	CI	P
No	93 (57.7)	18 (12.3)	9.725	5.422-17.445	$\chi^2=66.51$
Either of the parents	68 (42.3)	128 (87.7)			$P<0.0001$

OR: Odds ratio; CI: Confidence interval

Table 5: Profile of different forms of tobacco use in families of the study population

Profile in users	Cigarette (%)	Bidi (%)	Smokeless (%)	Both (%)	Nonusers (%)	Total (%)
Parents	22 (15)	25 (17)	25 (17)	21 (14.3)	54 (36.7)	147 (100)
Siblings	30 (18.4)	16 (9.6)	26 (15.9)	24 (14.6)	68 (41.5)	164 (100)
Offspring	34 (20.6)	8 (5)	32 (20)	16 (10)	72 (44.4)	162 (100)
Participants	46 (15)	24 (7.9)	43 (14)	33 (10.7)	161 (52.4)	307 (100)

Table 6: Distribution of patients as per their tobacco use profile and alcohol using practices

Tobacco use	Alcohol use			Total
	No (%)	Regular user (%)	Occasional (%)	
No	110 (68.3)	5 (3.1)	46 (28.6)	161
Yes	46 (41.8)	36 (32.7)	28 (25.5)	110
Ex-users	18 (50.0)	8 (22.2)	10 (27.8)	36
Total	174 (56.7)	49 (16.0)	84 (27.4)	307

$\chi^2=45.58$; $P<0.0001$

and other smokeless tobacco are socially sanctioned behavior. Therefore, its control is more difficult compared to smoking, which is seen as contempt by elders. However, when parents smoke or use tobacco products, they are not in a position to restrain their offspring.^[4]

Tobacco and alcohol addictive habits are reported to be acquired at an early age in family surroundings. In our study, the mean age of initiation of tobacco habit was 18 years of age. Alcohol use and tobacco use go hand in hand. Our study also reveals that increased frequency of drinking was also associated with tobacco use. Ozawa *et al.* also observed that an increase in drinking frequency resulted in less likelihood of smoking cessation.^[11] This finding raises an issue that with the growing percentage of tobacco use, alcohol intake will also increase and vice versa. Therefore, the need is to address both the issues together.

In our study, 45.5% of the patients were tobacco users and 81% of those who were using tobacco had a positive family history. This finding highlights an important fact that habit of tobacco use runs in families. All children want to imitate parents from early childhood. Parents generally have much longer and more frequent contact with their children than any peer claiming to have influence over them. Most parents usually remain throughout one's adolescence, while peers or best friends change frequently. Rezaeetalab *et al.* in their study done on 3000 high school children also found that incidence of smoking among high school students significantly correlated with the incidence of smoking among family members ($P < 0.001$).^[12] In another study, Talay and Altin have also observed that smoking rates seem to be influenced by smoking habits of family members.^[13] These findings call for action to target anti-tobacco messages toward the family. Use of smokeless tobacco among parents and their effect on siblings and offspring has not been described much by Western authors; the reason being smokeless tobacco is mainly consumed in the Indian subcontinent.

Paternal and maternal tobacco use had a significant impact on tobacco habits. Ozawa *et al.*^[11] found that paternal and maternal smoking had a significant impact on whether or not a child would quit smoking as compared to a child that had paternal and maternal nonsmokers. Shamsuddin and Haris^[4] and Dwivedi *et al.*^[4] also showed that effect of the father's smoking habit on the child's current smoking habit is significant, even after controlling for other familial and nonfamilial factors, including parental supervision, academic performance, reported influence of cigarette advertisement, and having friends who smoked. Our study also showed that among tobacco users, 65.8% reportedly had a history of tobacco use by fathers.

Bders in a review has suggested that parental influence might include other factors such as parents' approval or disapproval of smoking, their involvement in free time supervision, their manner, and extent of communication on health-related issues.^[15] The most dominant role is played by mother in early initiation of smoking or tobacco use by offspring. The logic behind such

hypothesis is that if a mother has been smoking, the fetus passively inhales nicotine and carbon monoxide through placenta while in mother's womb.^[16] Soon after delivery, the baby is again subjected to passive smoking while in the lap of the mother during breastfeeding or otherwise. The visual impact on brain during immediate neonatal period, i.e., seeing one's own mother smoking, is something which has not been studied extensively, but one can safely surmise that such children will emulate smoking much earlier than those whose mothers have not been smoking during pregnancy and subsequent period. It has also been observed that the brain of the fetus whose mother is a smoker gets primed for nicotine craving and smoking during their adolescence.^[17,18] The resultant effect is that most offspring of such parents would adopt smoking early and be the victims of premature coronary artery disease and other tobacco-related diseases. The combined ill-effect of maternal smoking/passive smoking is not only epigenetic and priming to the fetus, but also adventurous and fascinating, finally resulting in addictive habit as early as 6 or 7 years of age.^[4] Overall, maternal smoking was more strongly associated with youths' regular smoking than paternal smoking in the present study. These results suggest that efforts to decrease the burden of tobacco smoking among youths may be more efficient if focused on families rather than on individuals.

There were certain limitations in the study. In the present study, we could only interview patients who had come to the clinic and history of tobacco use in siblings or parents, and offspring could only be elicited by asking them; therefore, there can be recall bias. As it was self-reported, the data could not be validated. The study was a hospital-based study, so the participants may not be representative of the general population. This limits the generalizability of the findings observed in the present study.

Conclusion

The results of this study expand our understanding of the influence of parental tobacco use and intergenerational transmission of this habit. The study also throws light on how tobacco users in the family tend to influence offspring and siblings. An attempt has been made to quantify the degree of intergenerational transmission of tobacco habit. The data provide an exact estimate of the burden of tobacco use by an individual that can be attributed to tobacco use habits of the parents. A deeper understanding of this transmission of tobacco use will provide further insight into the avenues of prevention, in particular, family-based interventions and those that emphasize assisting parents in cessation efforts that will not only reduce the parent's use, but also likely reduce uptake of tobacco use in subsequent generations. The study also addresses the fact that problem of tobacco use and alcohol use needs to be targeted together to bring a gigantic change in lifestyle diseases. Previous anti-smoking campaigns have concentrated much of their effort on discouraging individuals from smoking with the aim of creating a nonsmoking generation. This approach does not take sufficient account of the fact, reconfirmed by our findings that children are influenced by the behavior and attitudes of

adults, especially their parents. The most effective way to stop children smoking may be to discourage smoking among adults in the family. Future health education efforts should not consider children in isolation, but rather as a part of a society in which smokeless tobacco and tobacco smoking is still an acceptable adult behavior.

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Conflicts of interest

There are no conflicts of interest.

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