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RESPIRATORY AND ORAL MORBIDITY IN TOBACCO CONSUMING YOUTH OF NORTH INDIA.

Community Medicine

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ABSTRACT

Background: India is facing a high burden of tobacco related diseases with 1/5th of tobacco attributable deaths occurring in India. The current study assess tobacco use and related morbidity In Indian youth.

Methods: This cross-sectional study assessed tobacco use and related morbidity using a semi-structured interview schedule, clinical examination and peaked expiratory flow volume in 811 young males in Kalyanpuri, New Delhi, India.

Results: Prevalence of tobacco ever-use 31.3%, with 39.6% consuming smokeless tobacco, 32.9% consuming smokeless with smoking forms and 27.6% only smoking forms. Current tobacco users had significantly higher proportion of dry cough, productive cough, morning cough, dyspnoea, fever, body-ache, heart burn, teeth discoloration and dental cavities. PEFR was significantly higher in tobacco users.

Conclusion: This study shows high prevalence of tobacco use and related morbidities. There is a need to address this as a public health priority and design innovative intervention strategies to discourage rampant tobacco use.

KEYWORDS

Tobacco, Youth, Respiratory morbidity, Oral morbidity

Introduction:

Tobacco use, in all its forms, continues to be one of the commonest forms of substance abuse around the world, including India. As estimated by the WHO, around 5 million people die a premature death, each year, due to the use of tobacco, mostly in the form of cigarette smoking (1). As a consequence of the addiction acquired in youth in the majority of cases, many of these deaths will occur in the productive years of adult life.

Currently about one- fifth of all worldwide deaths attributed to tobacco occur in India, more than 8,00,000 people die and 12 million people become ill as a result of tobacco use each year. The deaths attributable to tobacco in India are expected to rise from 1.4% of all deaths in 1990 to 13.3% by 2020 (2).

Health problems in the youth do not cause much mortality. However, the morbidity it causes in the form of cough, sputum production, wheezing and dyspnoea (or shortness of breath) due to tobacco smoking is significant on its own account. The health consequences of tobacco chewing during adolescence include leukoplakia, gum recession, nicotine addiction teeth discolouration, halitosis, oral cavities and increased risk of becoming a cigarette smoker in the future.

In India, like in other developing countries, the most susceptible time for initiation of tobacco is during youth i.e. in the age group of 15-24 years. Some start tobacco use as young as 10 years but the majority of users start using tobacco in 15-24 years age. Tobacco habit is far more prevalent in males in compared to females. This signifies the importance of identifying this age group as prime target for promotion and preventive interventions. Though hospital based studies on tobacco morbidity and various forms of tobacco consumption have been done earlier, community based studies are few.

Thus, the current study examines health effects by tobacco use in young males in urban area of Delhi, India. This study will provide a broader community based understanding of the problem.

Materials and methods:

This cross-sectional study was conducted in Kalyanpuri, a resettlement colony in New Delhi, India. The study included males aged 15-24 years residing in the study area at the time of survey.

From previous study (3), the prevalence of respiratory symptoms in ever smoker was 13.9%, which would require a sample size of at least 735 subjects to estimate the prevalence of respiratory symptoms with 2.5 % absolute precision and with 95% confidence. We planned to collect data from at least 800 subjects (with non-response rate 10%).

The area has 11 blocks (No. 11 to 21) with a total population of nearly 34000 (ICDS Survey 2007). The total population of 15-24 years aged males were nearly 4000 (as per population: male ratio in Delhi Census 2001) (4). There are 4700 houses (180 to 500 houses in each block). Every 5th house (total 940 houses) was selected by the systematic random sampling method in each of the 11 blocks of the area to cover sample size of 800 subjects. From each of the selected houses, all males of 15-24 years aged were selected. Who did not consent or not available at three visits were excluded from the study.

A semi structured interview schedule was designed translated into Hindi and pretested to elicit information on tobacco use and health problems in study subjects.

Subjects were classified in to Tobacco ever users /never (or non) users/ current users as per the definitions used in GYTS (Global youth tobacco survey) (5). 'Ever users' were defined as anyone who had used tobacco even once in any form at any point in a lifetime. 'Never users' were those who had never used tobacco. 'Current users' were those who had used tobacco in any form during the 30 days preceding the survey and 'past users' were defined as ever users who were not current users.
History of relevant respiratory and oral symptoms was enquired in all subjects. Their duration and frequency was also noted. Clinical examination also conducted to assess health problems in all subjects. The blood pressure was measured in the right arm of the study subject (who was seated for 5 minutes before the measurement) using mercury sphygmomanometer in sitting position. Height was recorded using a non-stretchable PVC measuring tape by making the study subject stand bare feet on a firm and level surface. Weight (in kilograms) was recorded by using spring balance. PEFR (**Peak expiratory flow volume)** was measured by using mini-Wright Peak Flow Meter (mWPFM).

Data was coded, analyzed, and statistically evaluated using SPSS (Statistical Package for Social Sciences, version 20.0). P-values were calculated for each predictor variable using chi-square test for categorical variable and student t test for continuous variable. Significance was determined for a P-value ≤ 0.05. No missing data was found during the analysis.

The study is approved by the institutional (Lady Hardinge Medical College, New Delhi) ethics committee. A written consent was sought from the eligible persons. Further information was given to persons who consented to take part in the study, and the participants were free to leave the study any time if they desired to do so.

Results:

All the males in the 15-24 years age group in these houses were enlisted. Total population of 940 sample houses was 6959; of these 860 (12.34%) were male youth. Of the 860 enlisted male youth 49(5.6%) either did not consent or not available at three visits were excluded. 811 male youth were enrolled for the study and were interviewed, clinically examined and investigated.

Most of the participants (90.8%) were Hindu, rest were Muslims (7%) and very few were Sikh and Christian (2.2%). Most of the participants were married (83.8%). More than half (53.9%) of the participants live in nuclear family. And mostly (76.8%) belong to Upper Lower socioeconomic status according to Kuppuswami scale.
Details of Magnitude of tobacco use is explained in Table 1.

Table 1: Magnitude of tobacco use among study subjects

Tobacco Use	15-19 years (n=393)	20-24 years (n=418)	Total (n=811)
Non User	307 (78.1 %)	250 (59.8 %)	557 (68.7 %)
Ever User	86 (21.9 %)	168 (40.2 %)	254 (31.3 %)
Current User	66 (16.8 %)	159 (38.0 %)	225 (27.7 %)
Past User	20 (5.1 %)	9 (2.2 %)	29 (3.6 %)

Most common form of tobacco consumed, was smokeless (89, 39.6%) among study participants. Followed by 32.9 % (74) participants were consuming smokeless and smoking form concurrently. Tobacco as smoking form was consumed by 27.6% (62) participants.

Most of tobacco users were experiencing respiratory symptoms more in frequency as compared to non-users as explained in Table 2. All the results are statistically significant (p<0.05).

Table 2: Tobacco related reparatory symptoms among study subjects

Symptoms	Current users			Non Users (n=557)	p value#
	Smoker (n=62)	Chewer (n=89)	Both (n=74)		
Dry cough	7 (11.3%)	2 (2.2%)	9 (12.2%)	9 (1.6%)	<0.001
Productive cough	7 (11.3%)	2 (2.2%)	7 (9.5%)	10 (1.8%)	<0.001
Bodyache	7 (11.3%)	4 (4.5%)	7 (9.5%)	7 (1.3%)	<0.001
Dyspnoea	6 (9.7%)	2 (2.2%)	7 (9.5%)	10 (1.8%)	<0.001
Morning cough	5 (8.1%)	3 (3.4%)	7 (9.5%)	16 (2.9%)	0.014
fever	5 (8.1%)	2 (2.2%)	6 (8.1%)	6 (1.1%)	<0.001
Heart burn	4 (6.5%)	2 (2.2%)	6 (8.1%)	5 (0.9%)	<0.001

*multiple responses

χ^2 test was applied in between group current tobacco users and non-users

Means systolic blood pressure is significantly higher (student t test, p-value <0.05) in tobacco-users (mean= 126.45 mm Hg, SD=6.8 mm Hg) as compared to Non-users (mean= 124.98 mm Hg, SD=6.2 mm Hg). Mean Diastolic blood pressure was also higher (tobacco-users: mean=82.25 mm Hg, SD=5.23 mm Hg; non-users: mean=81.74 mm Hg, SD=3.21 mm Hg) in tobacco-users but it was statistically non-significant (on student t test, p-value >0.05).

Oral diseases (table 3) were found to be more common in current tobacco users and few of them (Discoloration of teeth and Dental cavities) were statistically significantly higher is tobacco-users.

Table 3: Oral diseases related to tobacco use among study subjects

Oral Diseases	Current users			Non Users (n=557)	p value
	Smoker (n=62)	Chewer (n=89)	Both (n=74)		
	No. (%)	No. (%)	No. (%)	No. (%)	
Discoloration of teeth	7(11.3%)	26(29.2%)	25(33.8%)	28 (5.0%)	<0.001
Dental cavities	11(17.7%)	20(22.5%)	19(25.7%)	77(13.8%)	<0.05
Halitosis	4 (6.5%)	13(14.6%)	12(16.2%)	49 (8.8%)	>0.05
Abrasion of teeth	3 (4.8%)	5 (5.6%)	2 (2.7%)	13 (2.3%)	>0.05
White patch over gums	0 (0%)	1 (1.1%)	1 (1.4%)	0 (0%)	-

*multiple responses

χ^2 test was applied in between group current tobacco users and non-users

Mean Peak expiratory flow rate (PEFR) was found to be lower in current smoker (mean=363.97 Lt/min, SD=31.62 Lt/min) as compared to non-users (mean=379.21 Lt/min, SD=28.58 Lt/min) as results were statistically significant (student t test, p-value <0.001).

Discussion:

In present study nearly one third (31.3%) study subjects had used tobacco sometime or other (ever users). Whereas 68.7% of the subjects had never used tobacco. Most of youth who had ever used tobacco continued to use tobacco and had consumed tobacco in last one month (current users-27.7%), only 3.6% were past users.

Similar results were observed by other studies also. NHFS 3 also reported prevalence of tobacco use as 27%, for the same age group in Delhi (6). Kumari R et al (2005) in male medical students in Lucknow found current users were 28.8% (7). In GATS (global adult tobacco survey) current tobacco use among 15-24 years males was 27.4% (8).

Not many studies are available on health effects of tobacco use on youth in India. In current studym, tobacco related symptoms were more common among current tobacco users (16.4%) as compared to non-users (7.4%) and the differences were statistically significant. Dry cough was found to be more common among subjects using both forms (12%) as well as smokers (11%) as compared to tobacco chewers (2%). These results were similar to the results obtained in the other studies. Meidinger et al (2006) in 18-25 years individuals in Switzerland, in their study reported that respiratory symptoms were significantly higher in smokers compared to never smokers (wheezing 16% vs. 7%, wheezing without cold 9% vs. 4%, exercise dyspnoea 15% vs. 10%, regular cough 35% vs. 10% and regular phlegm 15% vs. 2%) with dyspnoea, cough and sputum production being the common symptoms among smokers in both the studies (9). Lam, Chung et al (1998) in 12-15 years in Hong Kong also found in their study found significant linear trends between smoking and the prevalence of throat and nose problems, cough and phlegm, and wheezing with the odds ratio after adjusting the confounding factors ranging from 1.35 to 4.84 (10). Urrutia et al (2005) in 20-44 years in Western Europe also found respiratory problems to be significantly higher in smokers than non-smokers (11).

The present study found the mean BMI to be lower among current users (20.23 kg/m^2) as compared to non-users (20.65 kg/m^2), the difference again being statistically significant. Meidinger et al (2006) in 18-25 years individuals in Switzerland reported lower BMI in smokers as compared to never smokers (9). Pednekar M et al (2006) from a study in people over 35 years in Mumbai reported that all forms of tobacco use was associated with a low BMI which supports the results obtained in this study (12).

Mean systolic BP in current tobacco users (mean= 126.45 mm Hg, SD=6.8 mm Hg) was statistically significantly higher as compared to non-users (mean= 124.98 mm Hg, SD=6.2 mm Hg), whereas the mean diastolic BP, though higher in current users, the difference was not statistically significant. The findings were in accordance with Pandey et al (2009) (13) (in over 15 years individuals in rural Faridabad) and Westman et al (1995) (14). In their respective studies found similar results with the mean systolic and diastolic pressure being significantly higher in exclusive smokeless tobacco users than non-users. Gupta et

al (1997) in their article stated that multivariate logistic regression showed that smoking or tobacco use was independently associated with hypertension in both males and females (15).

Oral diseases were more common in current users (50.7%) as compared to non users (26.9%). In present study, the relationship between tobacco use and discoloration of teeth and dental cavities was found to be significant. The mean PEFR (Peak Expiratory Flow Rate), when compared between smokers (mean=363.97 Lt/min, SD=31.62 Lt/min) and tobacco non users (mean=379.21 Lt/min, SD=28.58 Lt/min) was found to be lower in current smokers and difference was statistically significant. The findings were in conformity with Qureshi KA et al (2004), who conducted a study over 15 years individuals in 2 villages in Kashmir found that in PEFR was significantly lower in smokers as compared to non-smokers (16).

Conclusion:

Present study highlighted the high prevalence of tobacco use in 15-24 years males. They were also high prevalence of tobacco related health problems. Therefore, intervention programs to discourage the use of tobacco in any form should be a public health priority.

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