Prevalence of Nicotine Dependence among Men Aged 21-60 Years in the Rural Field Practice Area of a Tertiary Care Hospital in Tamil Nadu, India

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Background: The World Health Organization (WHO) estimated that about 4 million deaths worldwide annually are attributable to tobacco use. Tobacco use is an important risk factor for numerous chronic diseases like cancer, diseases of the lungs, and cardiovascular diseases. Despite this, tobacco use is common throughout the world. Almost 150 million young people are known to use tobacco out of which a majority worldwide began this when they were adolescents. The complex mechanism of nicotine dependency makes it challenging to evaluate dependence or progress towards dependence. The objectives of the study were: (1) To assess the prevalence of nicotine dependence among tobacco users. (2) To study the correlates of nicotine dependence among rural population.

Methods: A cross sectional study was conducted using a predesigned and pretested structured proforma. The study was conducted among men of 21-60 years in field visit area of SRM medical college. Karl fagerstrom nicotine dependence questionnaire was used to assess dependence on nicotine.

Results: The overall proportion of smokers was 35%. The mean age of initiation of smoking was 20.09 years and the reason was peer pressure, duration of smoking was 11.98 years. 46% of smokers had intention to quit smoking, others gave a reason as addiction (51.6%) for not quitting. Significant association was found between tobacco use and socio-economic parameters such as age group, marital and socio economic status.

Conclusion: The proportion of smokers was 35%. Significant determinants of smoking were those aged more than 40 years, those of lower socio economic status.

Key Words: Smoking, Nicotine dependence, Rural area

INTRODUCTION

The World Health Organization has identified tobacco smoking and binge alcohol drinking as two of the leading risk factors for premature mortality worldwide [1,2]. Nicotine dependence has been recognized as one of the major public health problems facing the human race, both in the developing and the developed countries. It kills one person prematurely every six smokers globally and one in two long-term smokers – largely in low- and middle-income countries [3,4]. Nicotine dependence is a sign of the com-

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pulsive use of nicotine-containing tobacco, physiologic tolerance (needing to use increase amounts of nicotine to achieve desired effects), nicotine withdrawal upon discontinuation (symptoms: craving, irritability, anger, anxiety, depression, increased appetite) and continued use despite a lot of problems due to its use [5]. The presence of nicotine sustains tobacco dependence, which in turn causes devastating health problems, mainly including heart diseases, lung disease, cancers and reproductive disorders, and increased susceptibility to a variety of infectious diseases [6].

In India, 14% per cent of the population above age 15 smoke tobacco (24% for men and 3% for women) [7]. Smoking is already responsible for about 1 in 5 deaths for men and 1 in 20 deaths for women at ages 30-69 [8]. Tobacco related deaths are increasing in India, and account for approximately a sixth of the world's tobacco related deaths [9]. It has been estimated by WHO that by 2020, tobacco use will be responsible for 13.3% of all deaths in India [10]. Smoking alone accounts for 7 lakh deaths annually and 8-9 lakh deaths annually due to all forms of tobacco use/exposure, many of the deaths occur below 70 years of age (>50%) [11].

It has also been observed that the Tobacco demand in India has remained high and has shown no signs of declining. The 52nd round of the NSS on Morbidity and Private Health Expenditure collected information on current regular smoking and chewing of tobacco for all individuals aged 10 years and above. The survey estimated tobacco use prevalence among males to be at 51.3% and among females at 10.3% [9]. Evidence shows that around 50% of those who start smoking in the adolescent years continue to smoke for 15-20 years [12]. Hence, early recognition and treatment of nicotine dependence are pertinent for quitting policy and to avert diseases and deaths due to tobacco use. It was also found that highly addicted smokers make serious attempts to quit but are able to stop only for a few hours [13]. The objectives of the study were: (1) To assess the prevalence of nicotine dependence among rural population. (2) To study the correlates of nicotine dependence among rural population.

MATERIALS AND METHODS

To assess the proportion of smokers and determinants of smoking among the rural population, a cross-sectional study design was chosen and the sample size is 173, which is calculated using estimation technique with 5% level of significance and precision 20%. The sampling frame considered for the study was rural adult population of SRM Medical college. Convenient sampling was done and patients visiting the Rural health training centre were considered for the study. Informed written consent was obtained from each study subject.

1. Nicotine dependence questionnaire

It contained following six standard questions of the FTND. (i) How soon after you wake up do you smoke your first cigarette? (Within 5 min [3 points], within 6-30 min [2 points], within 31-60 min [1 point]; after 60 min [0 point]); (ii) Do you find it difficult to refrain from smoking in places where it is forbidden? (Yes [1 point], no [0 point]); (iii) Which cigarette would you hate most to give up? (The first one in the morning [1 point], any other [0 point]); (iv) How many cigarettes per day do you smoke? (10 or less [0 point], 11-20 [1 point], 21-30 [2 points], and 31 or more [3 points]); (v) Do you smoke more during the first hours after waking than during the rest of the day? (Yes [1 point], no [0 point]); (vi) Do you smoke even when you are ill enough to be in bed most of the day? (Yes [1 point], no [0 point]). A total score for nicotine dependence (FTND) were obtained, 0-3 were categorized as minimal dependent, 3-7 were categorized as moderate dependent and 7-10 were severe dependent.

RESULTS

Out of 173 subjects, the majority was males and belonged to the age group of 30-49 years. 63% of the subjects were married, most of the subjects were hindus. 47% subjects were illiterate.

The overall proportion of smokers was 35.2%. About 82.0% smokers were smoking bidi. The mean age of initiation of smoking was 20.09 years and duration of smoking was 11.98 years. 46% of smokers had intention to quit

smoking and majority quoted health problems as a reason for their intention to quit (73.3%). Among those who had no intention to quit smoking, majority quoted the reason as addiction (51.6%).

On assessing the factors affecting the initiation of smok-

Table 1. Distribution of subjects as per the Karl Fagerstrom Nicotine Tolerance and dependence

Karl Fagerstrom questionnaire	No.	Percentage (%)
Level of dependence		
0-3	30	49.2
4-6	20	32.8
7-10	11	18.0
How many times do you consume tobacco		
≤ 10	46	75.4
11-20	15	24.6
How soon after you wake up do you smoke/chew your first tobacco (min)		
0-5	21	34.4
-30	10	16.4
31-60	13	21.3
> 60	17	27.9
Do you find it difficult to refrain from smoking/chewing in places where the use of tobacco is not allowed (e.g., hospitals, government offices, cinemas, libraries, etc.)?		
Yes	35	57.4
No	16	42.6
Do you smoke/chew tobacco more during the first hours after waking than during the rest of the day?		
Yes	32	52.5
No	29	47.5

ing, it was found that the majority 36% of the study population had started smoking due to peer pressure. Nearly 23 % started to smoke to get relief from work tension. A meager 3 % smoked to keep them awake during work. Similarly 3% of the population also tried smoking out of curiosity. Due to the influence from movies a minor 1.7% was initiated into smoking.

Table 1 shows Karl Fagerstrom Nicotine Tolerance and dependence. It was found that 50.8% of tobacco users were moderate to severe nicotine dependent. Among the users, 57.4% found it difficult to refrain from smoking/chewing in places where the use of tobacco is not allowed (e.g., hospitals, government offices, cinemas, libraries, etc.). About half (52.5%) of the users smoked or chewed tobacco more during the first hours after waking than during the rest of the day.

Significant association was found between tobacco use and socio-economic parameters such as age group, marital and socio economic status. The tobacco use was significantly more in more than 40 years of age ($p < 0.001$). Those who are of lower socio economic status had significantly higher prevalence of smoking ($p = 0.027$) (Table 2).

DISCUSSION

Several studies have documented a positive relationship between tobacco consumption and low socioeconomic status. Consistent with earlier studies, this study found that lower

Table 2. Determinants of smoking among study subjects

Parameter	Sub category	Smoking		Chi square value	p value
		Yes	No		
Age group	≤ 20	10 (14.3%)	60 (85.7%)	25.72	<0.001
	21-39	23 (41.8%)	32 (58.2%)		
	≥ 40	28 (58.3%)	20 (41.7%)		
Marital status	Unmarried	15 (23.4%)	49 (76.6%)	6.22	0.013
	Married	46 (45.1%)	63 (54.9%)		
Education	PUC	5 (29.4%)	12 (71.6%)	0.51	0.927
	High school	10 (32.2%)	21 (67.8%)		
	Primary school	16 (36.4%)	28 (63.6%)		
	Illiterate	30 (37.0%)	51 (63.0%)		
Socio Economic Status	Lower lower	19 (46.3%)	22 (53.7%)	9.21	0.027
	Upper lower	20 (46.5%)	23 (53.5%)		
	Lower middle	15 (23.1%)	50 (72.9%)		
	Upper middle	7 (29.2%)	17 (70.8%)		

the education, higher the prevalence of tobacco consumption, while overall tobacco use falls as education level rises. NFHS (2005) showed that 77.8% of tobacco use is seen among illiterates as compared to 52.9% among literates [9]. Hence, education is an important factor to be considered in any tobacco control programme. According to NFHS-3 smoking tobacco use in Karnataka, among men is 27.9%, 28.7% in rural and 26.7% in urban. In a prevalence survey of tobacco use in Karnataka and Uttar Pradesh, the overall prevalence of ever use of any kind of tobacco was 29.6% in Karnataka and 34.6% in Uttar Pradesh [14]. The average age at initiation of tobacco use was 20.87 years. Those who started with addiction are more common in the 11-20 years (53.7%) and 21-30 years (38.6%) age-groups. According to NFHS-3, 2007, increase in tobacco use was particularly large among young males aged 15-24 years and among low wealth index [9].

Smoking of tobacco was found to be the most common type of this adverse habit in males while its chewing was found to be more common in females [15]. Similarly, in another study that was conducted, it was seen that only 1.45 per cent (n = 4) of the respondents had never ever smoked or consumed tobacco. Almost one third of the study population, that is, 33.09 per cent (n = 91) had started smoking at the age of 14 or 15 years while 28.36 per cent (n = 78) had started at 16 or 17 years [16].

Tobacco use in India has been higher among males than among females in India. However, the male-female gap was lower in the case of use of smokeless tobacco. The use of smokeless tobacco was equally high among middle-aged and elderly males and females. This indicates that adult females in India were as vulnerable as males, and at a high risk of using smokeless tobacco, especially in the higher age groups. With an increase in age, the odds of using tobacco significantly increase in India. Smoking and dual use of tobacco among males were more common in the younger and middle-aged adults [17]. Age has been found to be an important determinant of tobacco use in earlier studies [18,19]. Tobacco use was found more common among the uneducated people in the country. Education was one of the most important determinants of tobacco use irrespective of the type of use. Uneducated males and females in India were at a higher risk of using tobacco. This can often be

attributed to less knowledge and awareness among the uneducated people. Being poor was significantly associated with a higher risk of use of smokeless tobacco among males, and use of smokeless tobacco and dual use of tobacco among females in India. The relation between these socioeconomic markers and tobacco consumption is similar to relations observed in developed countries and other studies done in previous decades in India [18,20].

CONCLUSION

The proportion of smokers among migrant construction workers was 36.2%. Significant determinants of smoking were those aged more than 40 years, those of lower socioeconomic status, and those married. Despite the awareness and legislation regarding the awareness of harmful benefits of smoking, there are still many numbers of smokers. Although the limited sample size may affect the external validity of the study, this provides an idea about substance use among construction workers and we recommend future studies on people working in the various unorganized sectors,

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