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Original Research Article

Magnitude of exposure and perception of second hand smoking among rural population in Trichy, Tamil Nadu

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ABSTRACT

Background: India is one of the countries where tobacco use is highly prevalent. Tobacco use in the form of smoking is related to occurrence of multiple health related problems in smokers and also general population.
Methods: A community based cross sectional study was conducted among 360 adults residing in a rural area of Tiruchirappalli. Cluster sampling was used to select the study participants. A pretested semi-structured questionnaire was used to obtain information on tobacco use, exposure to environmental tobacco smoke (ETS), knowledge on its health effects and protection measures. Data was entered and analyzed using Epi info 7.2. The results were presented in the form of mean and percentage. Chi-square was used to find the association between the parameters and ETS. A p value of less than 0.05 was taken as significant.
Results: Mean age of the study group was 38.5±10.8 years. Proportion of males and females was 53.9% and 46.1% respectively. Two hundred and fifty five (70.8%) were non-smokers and 29.2% have ever smoked some form of tobacco product. Thirty seven percent of the non-smokers were exposed to Environmental Tobacco Smoke in the past 15 days and exposure was higher among males (46.7%) than females (31.3%) (χ^2 value=6.3; p=0.014). Public place was the most common place of exposure (25.5%) to ETS. Significantly higher proportion of smokers had correct knowledge on ill effects of ETS than smokers (χ^2 value=12.3; p= 0.0004).
Conclusions: Exposure to environmental tobacco smoke was significantly high in the study population. Either strict enforcement of laws or banning cigarette sale completely would help reducing the exposure to cigarette smoke which is an important risk factor for multiple non communicable diseases.

Keywords: Effects, Health, Prevalence, Tobacco smoke

INTRODUCTION

Tobacco use is one of the most important behaviour related risk factors which has worldwide prevalence and this public health problem is high particularly in low and middle income countries than high income countries.[1] Use of tobacco products have been attributed to multiple health problems in humans and tobacco is found to be an important and leading risk factor for many of the non-communicable diseases including coronary heart disease, lung cancer, stroke and other vascular events.[2,3] Not only the person who is using these products is affected but the individuals who are exposed involuntarily to the tobacco smoke are also under the risk of developing related health problems. The risk of occurrence of health problems including cancers is not less for involuntary smokers than smokers because the main stream and side stream smoke

to which a non-smoker is exposed has chemicals equivalent to the tobacco smoke to which a smoker is exposed.[1] No age is immune to the negative health effects of second hand smoke. It affects humans from intra uterine life till elderly population. The exposure to second hand smoke is associated with development of cardiovascular diseases, lung cancer among adults and asthmatic attacks, ear infections and higher risk of respiratory infections in children.[4-6] Environmental tobacco smoke (ETS) is considered to be carcinogenic due to the presence of humpty number of carcinogenic chemicals. Every year 6 million deaths occur due to tobacco use and one-sixth of these deaths occur among non-smokers due to involuntary exposure to tobacco smoke.[1] Any individual can get exposed to ETS in multiple places including public places, work place and their own household. Globally many countries have implemented multiple measures to prevent involuntary exposure to tobacco products like banning smoking in public places and creating smoke free zones. Yet only 18% of the world's population is protected against tobacco smoke through smoke free environment.[7] India has also implemented Cigarette and Other Tobacco products act (prohibition of advertisement and regulation of trade and commerce, production, supply and distribution) 2003, which prevents smoking in public places and gatherings.[8] Since non-smoker population is continuously exposed to tobacco smoke in the environment and considering the fact that ETS is harmful, it is important to assess the magnitude of exposure to tobacco smoke and the perception of this exposure among general population. This information is necessary to recommend modifications in the prevailing laws towards smoke free environment and also to suggest changes in the field level implementation of the programme. Hence the present study was planned to find out the exposure to ETS and perception of its health effects among rural population.

Objectives

1. To estimate the magnitude of exposure to environmental tobacco smoke (ETS) in rural population.
2. To find out the perception regarding health effects of ETS.

METHODS

A community based cross sectional study was done for a period of 3 months from July 2016 to September 2016 in the rural health training centre (RHTC) service area of the Chennai Medical College Hospital and Research Centre. This tertiary care teaching institute is located in the rural area of Tiruchirappalli district of Tamil Nadu. The study included adults aged more than 20 years residing in RHTC area for at least one year. There were 10 villages in RHTC service area and one village was selected randomly using lot method. A total of 360 families were residing in the selected village and all these families were included in the study. House visits were made by the study investigators and one adult member in each family was selected randomly for the study purpose. In the households where family members were not available during first visit, subsequent three visits have been made to ensure data collection. After obtaining informed written consent a pretested, structured, interviewer administered questionnaire was used for data collection. The questionnaire had 5 sections: 1. Socio-demographic details, 2. Tobacco use, 3. Exposure to ETS, 4. Knowledge on health effects and 5. Protection measures followed. Questions were focused on demographic details of the family, status of tobacco use by the respondent and other family members, exposure to second hand smoke by the respondent in past 15 days and place of exposure, the participant's perception regarding second hand smoke and its effects on health and the respondent's response to avoid the exposure to ETS. The collected data was entered and analyzed using Epi info version 7.2. The results were presented in the form of mean and percentages using a simple descriptive analysis. To assess the association between independent variables and SHS, chi-square test was performed.

RESULTS

Table 1: Socio-demographic details of the study participants.

Variables	Frequency	Percent
Age (years)		
20-29	83	23
30-39	110	30.5
40-49	97	27
50-59	54	15
≥60	16	4.5
Education status		
Primary school	74	20.5
High school	43	12.0
Higher secondary	61	17.0
Graduate	97	27.0
Postgraduate	4	1.0
Illiterate	81	22.5
Socio-economic status		
I	45	12.5
II	272	75.5
III	36	10
IV	7	2
V	Nil	
Total	360	100

A total of 360 individuals participated in this study. Of which 194 (53.9%) were males and the rest 166 (46.1%) were females. Mean age of the study participants was 38.5±10.8 years which ranged from 21 to 72 years. The study included 279 (77.5%) literates and among them majority were graduates (Table 1). One hundred and five

(29.2%) participants have ever smoked some form of tobacco product (cigarette, beedi, cigar etc) and the other 70.8% (255) were nonsmokers. Among the smokers the mean years of smoking was 16.5±8.6. Out of 105 smokers, 69.5% were current smokers and 30.5% were smokers in the past. The smokers were spending a minimum of 1% to maximum of 8.2% of their monthly income towards buying tobacco products. Among the smokers 32.4% felt that smoking gave them strength and 25.7%, 22.8%, 10.5, 9.5% said that smoking kept them brisk, happy, helped to concentrate on work and feel great respectively. Among the current smokers, 21(20%) have made attempts to stop smoking in the past 1 year. Of these individuals majority wanted to quit smoking due to health related problems in them and only 4 of them (19%) tried to quit smoking habit due to fear of health effects in their family members.

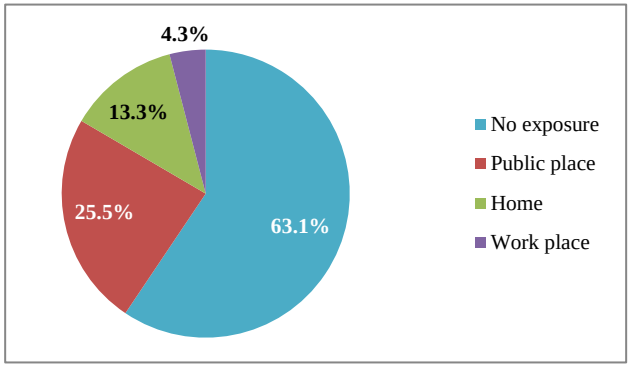

Figure 1: Place of exposure to ETS among non-smokers.

Among the participants non-smokers were enquired regarding their status of ETS exposure in the past 15 days in their work place, public places and home. Ninety four (36.9%) non-smokers were exposed to second hand smoke during the recall period of past 15 days. Among those who were exposed to SHS, 69.1%, 36.1% and 11.7% of the individuals were exposed to ETS at public place, home and work place respectively. Most common place of exposure to ETS among non-smokers was any public place (25.5%) followed by home (13.3%) and work place (4.3%) and the rest were not exposed to ETS (Figure 1). Statistically significant gender difference was observed among non-smokers for exposure to SHS. Males had higher exposure to ETS than females (Table 2). Among the smokers they were asked how many of them had smoked tobacco products when there was someone nearby in the past 15 days and almost two third (64.7%) said yes.

Sixty five percent of the study participants were not aware regarding the importance of environmental tobacco smoke. Thirty five percent of the participants were aware that smoking by one person may have harmful effects on others. Knowledge about second and third hand smoke was known to 35% and 22% of the participants respectively. There was a significant difference in the knowledge regarding harmful effects of ETS among smokers and non-smokers. Higher proportion of non-smokers (43.9%) were aware of the health effects of ETS than smokers (23.8%) (Table 3). This difference was observed for knowledge on all the health problems due to ETS including myocardial infarction, lung cancer, respiratory problems, stroke, and effects during pregnancy and childhood. Awareness regarding the health effects of ETS was high among males (52.5%) compared to females (39.2%) and this difference was not statistically significant (χ^2=1.86; p=0.17). Among non-smokers knowledge regarding health effects of ETS decreased significantly with increase in age with r value of -0.42 and p value of 0.000. There was a statistically significant increase in knowledge regarding ETS among non-smokers with increase in their per-capita income (r=0.45; p=0.000).

Table 2: Gender difference among nonsmokers in exposure to ETS.

	SHS exposure		Total	χ^2value	P value*
	No (%)	Yes (%)			
Male	49 (53.3)	43 (46.7)	92	6.03	0.014
Female	112 (68.7)	51 (31.3)	163		
Total	161 (63.1)	94 (36.9)	255		

*p value significant.

Table 3: Knowledge on health effects of ETS among smokers and non-smokers.

	SHS		Total (%)	χ^2 value	P value*
	Not harmful(%)	Harmful (%)			
Non-smokers	144 (56.5)	111 (43.5)	255 (100.0)	12.3	0.0004
Smokers	80 (76.)	25 (23.8)	105 (100.0)		
Total	224 (62.2)	136 (37.8)	360 (100.0)		

*p value significant.

Among the participants who were aware regarding the harmful health effects of environmental tobacco smoke, majority (35%) were aware that ETS may cause myocardial infarction. Among the participants 35% knew regarding the effect of ETS on lung cancer. Fifteen percent and 7% of the respondents were aware that ETS may lead to other health effects like respiratory problems and stroke for the individuals exposed to it. Effects of ETS on pregnant women and the growing fetus were known to 34% of the participants. Poor growth (25%), intra uterine death of fetus (12.5%) and congenital anomalies (8%) were believed to be the effects on growing fetus if pregnant women were exposed to ETS. Thirty four percent of the participants knew that the cigarette smoke would lead to health problems among children. Twenty three percent had an idea that ETS was the most important reason for repeated respiratory problems in their children. They also knew that ETS can cause lung cancer in children if they are constantly exposed to it. Seventy eight percent of the respondents (non-smokers: 86% and smokers: 67.4%) were aware that smoking in public places is banned in India. Majority (70%) got this information through mass media which included television, movies, newspapers and radio. When exposed to environmental tobacco smoke more than half of the non-smoker study participants (61.6%) tend to move away from the source of smoke and the rest 38.4% asked the smokers either to move to other place or to stop smoking in that place. When asked about the ways to reduce the habit of smoking, the respondents including current smokers said that the sale of tobacco products should be banned (32.5%), enforcement of laws should be strictly followed (35%) and price of the products should be increased (32.5%).

DISCUSSION

The present study included participants across wide range of age group between 21 to 72 years from rural population. Thus the study represented perception of health effects of environmental exposure to tobacco smoke from diverse group of population. Almost 77% of the study participants were literates which were higher than the National average of 74% in the 2011 census.[9] Forty three percent of the study participants were smokers. Mean years of smoking was 16.5±8.6 among smokers participated in this study. Proportion of smokers was 29.2% in the present study. Percentage of smokers was high in this study group compared to other studies done in India and the National average in 2010.[10-12] One-fifth of the smokers have tried to quit smoking habit. This proportion is less than the national average of 38%, identified through Global Adult Tobacco Survey.[13] Exposure to ETS was almost 37% among non-smokers in this study. Most common place of exposure was public place and this was contrary to the GATS report where most common place of exposure was home.[14] Exposure to ETS was high among males compared to females. Among smokers 65% used to smoke tobacco products while persons were around them. Thirty five percent and 22% of the study participants were aware about the ill-effects of second hand and third hand smoke respectively. This result was similar to the results reported by Gupta et al.[15] However the proportion of study population who were aware of health effects of ETS was less compared to a study done in North India were 45% of the participants agreed that SHS is harmful.[16] Non-smokers had higher knowledge on health effects of ETS than smokers. In their study, Singh et al and Shomar et al also observed higher level of knowledge among non-smokers than smokers.[16,17] Higher level of knowledge on ETS was noticed among males compared to females. Similar results were reported from analysis of GATS- India report.[18] Ban of smoking in public places was known to 78% of the participants. This proportion was much higher than the results presented by another Indian study.[19] Mass media was the source of information for more than two-third of the respondents. Most common measure followed by non-smokers to avoid SHS exposure was to move away from the site of smoking. One-third of the study participants felt that sale of tobacco products should be completely banned to reduce exposure to ETS and its adverse effects.

CONCLUSION

Exposure to environmental tobacco smoke was significantly high among the non-smoker study participants. Though non-smokers had good knowledge regarding harmful effects of smoking, a large group of them were exposed to tobacco smoke in the form of environmental exposure. Smokers were aware regarding ban of smoking in public places but they have not considered about the effects of harmful tobacco smoke on others which indicate the need for strict enforcement of laws on smoking. Only a small proportion of smokers who have tried to quit smoking have succeeded, which warrants the need for additional support and facilities to help quitting of smoking.

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