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Brief Report

Prevalence of Environmental Smoke Exposure in Households with Children in Jodhpur District, India

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ABSTRACT

Aim: The present study assessed the prevalence of child exposure to environmental tobacco smoke (ETS) among families with smoking members. **Methods:** Secondary analysis was conducted on data from a survey done in Jodhpur district (Rajasthan) on substance use in 11459 households. Frequency of smoking by residents in households with children below 10 years of age was ascertained. **Results:** About 24.5% of children were exposed to ETS. Among surveyed households about 40% had at least one tobacco user and 22.9% at least one smoker. About 86.9% of smokers reported dependent use of tobacco. Among smoking households, 82.7% had at least one child below 10 years of age. Almost all (99.3%) of these households reported daily smoking by members and 55.4% the use of more than 20 cigarettes per day. **Conclusions**: Tobacco users should be advised about how to limit children's ETS exposure and policy formulation on tobacco control programmes should take this aspect of tobacco use into account.

Key words: Environmental Tobacco Smoke (ETS) Exposure, Prevalence, Children

INTRODUCTION

Involuntary smoking generally refers to the exposure of non-smoking individuals to environmental tobacco smoke (ETS) caused by smoking of parents and significant others. A survey on the prevalence and pattern of ETS exposure of children (up to 14 yrs old) in Greece showed that 73% were exposed to ETS.[1] Similarly, high exposure to ETS was reported in US households with children (<18 years).[2] A population based survey in Nordic countries reported that ETS situation was worst in Denmark and Iceland, where children were exposed to ETS in almost half of all households with children; and 90% of households containing daily smokers.[3] About three fourths of adolescents living in Boston, USA reported exposure to ETS during the preceding week.[4]

Indian studies have recorded the adverse impact of ETS exposure on birth weight and respiratory system of children (cancer, upper respiratory infections, bronchial asthma, etc.).[5-7] However, the magnitude of ETS exposure on children has not been explored in India. We report a secondary analysis of survey data on prevalence of ETS exposure in children in smoking households in the general population of Jodhpur district.

METHODS

The data were collected as a part of a general population survey in Jodhpur district (240 areas: 213 rural, 27 urban) in Rajasthan from October 1999 through October 2000. The survey used a multistage sample design that represented the civilian, non-institutionalized population of the district.[8] A structured instrument that contained sections on tobacco, alcohol, opioid and

cannabis use;[9] was employed to collect data from key informants/heads of households (N=11,459). Current drug use referred to the respondent's substance use status in the 30 days preceding the day of the interview.

The households with tobacco users (oral and smoking forms) and current smokers were identified. Estimations of their smoking status, frequency and number of cigarettes smoked, and dependent use (based on DSM-III-R) was determined. The number of children below the age of 10 years in households having at least one smoker was used to arrive at ETS exposure estimates.

RESULTS

About a quarter (24.5%) of 26303 children belonged to households having at least one smoker. Nearly two fifths of the households (N=4549) reported tobacco consumption (any product). Among tobacco using households about 16.7% reported exclusive chewable tobacco use, while 22.9
% reported current use of cigarettes/bidis (with or without chewable tobacco). Among smoking households, 86.6% had dependent users.

Most smokers were in the age group of 31-40 years, belonged to rural areas, were employed and married. More than a quarter of smokers reported concomitant opium use. Smokers were significantly more likely to be older ($\chi2=368$, df,=4 p=.001), rural ($\chi2=124.8$, df=1, p<.001), employed ($\chi2=1614.8$, df=2, p<.001), married ($\chi2=235$, df=2, p<.001) and opium users ($\chi2=790$, df=1, p<.001).

Table 1: Profile of smokers and non smokers

	Smokers N=2625	**Non Smokers[a] N=8834**	**Chi square, degrees of freedom, probability**
Age			
Upto 20 years	90 (3.4)	1318 (14.9)	$\chi2=368$ (df=4)***
21-30 years	595 (22.7)	2590 (29.3)	
31-40 years	813 (31.0)	2211 (25.0)	
41-50 years	558 (21.3)	1299 (14.7)	
≥51 years	569 (21.7)	1416 (16.0)	
Urbanization			
Rural	2470 (94.1)	7599 (86.0)	$\chi2=124.8$ (df=1)***
Urban	155 (5.9)	1235 (14.0)	
Employment status			
Unemployed	66 (2.5)	186 (2.1)	
Employed	2293 (87.4)	3861 (43.7)	$\chi2=1614.8$ (df=2)***
Others	266 (10.1)	4786 (54.2)	
Marital Status			
Unmarried	74 (2.8)	1027 (11.6)	
Married	2432 (92.6)	7095 (80.3)	$\chi2=235$ (df=2)***
Married but single	119 (4.5)	712 (8.0)	
Concomitant Opium use			
Yes	708 (27.0)	619 (7.0)	$\chi2=790$ (df=1)***

[a] include chewable tobacco users *** p<0.001

The breakup of smoking households with children below 10 years in terms of number of children was as follows: no children - 17.3%, 1-2 children - 36.4%, 3-4 children – 34.5% and 5 or more children -11.8%. Almost all (99.4%) smoking households reported daily use of tobacco. Three fourths (74.6%) of these households reported the use of >10 cigarettes/bidis per day (55.4% reported the use of >20 cigarettes/bidis per day).

DISCUSSION

ETS essentially comprises of a blend of side-stream smoke released from the burning end of a cigarette and the smoke exhaled by a smoker. It has over 4000 gaseous and particulate chemical compounds. On an average, a smoker of one pack of cigarette is estimated to contribute about 20 mg/m^3 of indoor air particles in 24 hours.[10] Concentrations of several toxic substances in the side-stream smoke are actually higher than in the mainstream smoke, although the dilution by room air markedly reduces the inhaled concentration. Despite several anti tobacco legislations and curbs on public smoking imposed by different countries around the world as also India, ETS exposure remains a serious health issue.[11]

The prevalence of ETS exposure in children aged less than 10 years in Indian households (from the general population) with at least one smoker was 24.5%. The rate was somewhat lower than the 35% ETS exposure reported in a US study, however, the latter study covered children up to 18 years of age. Five sixths (86.9%) of smoking households with children below 10 years of age reported dependent use of tobacco and three fourths (74.5%) use of >10 cigarettes per day. These rates are alarmingly high.

As this report is based on secondary analysis of data, we could not ascertain whether the tobacco use occurred inside or outside homes and did not estimate urinary cotinine levels (a quantitative biomarker of exposure) in children. Hence, we cannot comment on the level of children's ETS exposure.

All children and adolescents have the right to grow up in an environment protected from the negative consequences of smoking.

It is suggested that clinicians looking after tobacco users should advise them on how to limit children's ETS exposure. Research on

identification of actionable culture-specific determinants of ETS exposure, including risk perception and communication would be useful for raising strong but client friendly awareness campaigns. Information on parent smoking behaviors can also form the basis for policy formulation on tobacco control programmes and serve as important indicators for their evaluation.

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