

A Study Of The Prevalence, Pattern And Health Effects Of Passive Smoking In A Slum Area Of Ahmedabad City

Dr. Sheetal Vyas*, Dr. Himanshu Nayak, **

*Professor & Head, **Assistant Professor, Department of Community Medicine, AMC MET Medical College, Ahmedabad-380008.

Abstracts: Background: According to WHO, Passive smoking/ Environmental tobacco smoke (ETS) carries serious risk especially for children & those chronically exposed. Objectives: To know the pattern of smoking, proportion of household passive smokers, subjective and health effects amongst passive smokers. Methods: The present study is a cross sectional study carried out in Shankar Bhuvan na Chhapara slum area of the Ahmedabad by using a pre-designed and pre-tested proforma. A house to house survey was carried out to collect the information as per the format. Those households which were having at least one active tobacco smoker in any form, were included in study and all members of such households were surveyed. Results: Total 118 houses out of 250 total houses had at least one smoker in them and were covered in the survey. Total population surveyed was 683 out of which 131 were smokers and 552 were non-smokers. The ratio of active versus passive smokers in the survey population was 1: 4.21. The mean age of smokers was 45.24±12.97 years whereas mean age of passive smokers was 20.13±14.44 years. The mean active smokers per family were 1.11 and passive smokers per family were 4.72. Firewood and kerosene were the most common fuels and majority of houses had no separate cooking area. Bidi was most commonly smoked stuff. Majority were chronic smokers and smoking on average 20.16±14.28 items per day. Amongst the subjective feelings unpleasant smell was present in 74% of respondents on acute exposure to tobacco smoke and coughing was the most common immediate symptom experienced by the passive smokers. Sixty nine percent children of less than 5 years of age had history of repeated Acute Respiratory Tract Infections as per mothers. Conclusions: Women and children are the victims of the exposure to ETS and indoor air pollution due to use of Bio-mass fuel and substandard housing add to this problem. Over and above that the immediate adverse subjective feelings amongst passive smokers are un-noticed and not given importance. All these are bared by the passive smokers constantly multiple times a day and may affect their mental health. The damage to physical health is a well known fact. [Vyas S et al NJIRM 2012; 3(3) : 85-89]

Key words: Smoker's profile, Passive smoking, Effects of passive smoking, Bio-mass fuels, Environmental Tobacco Smoke.

Author for correspondence: Dr.Himanshu Nayak, Department of Community Medicine, AMC MET Medical College, Ahmedabad- 380008.E- mail:drhknayak@yahoo.co.in.

Introduction: Introduction: Tobacco is unique in terms of its current and projected future impacts on global mortality. If current trends continue, the number of people killed by tobacco use will be more than triple to 10 million annually by the year 2020¹. While high smoking rate among men are nearly universal, the same is not true for women and children. Tobacco smoke contains a wide range of toxic vapors and particles that when inhaled are injurious to the smoker himself (active smoking) and to those around him (passive smoking)². Non smokers inhale Environmental Tobacco smoke (ETS), the combination of side-stream and mainstream smoke exhaled by active smokers. Where male smoking prevalence exceeds female smoking prevalence, one useful index is husband's

smoking status as an estimate of ETS exposure for wives¹.

The acute health effects of passive smoking among healthy adults include headaches, nausea, and irritation of the eyes and nasal mucous membranes³. Almost all forms of smoking products such as cigarettes and 'Bidis' used in different States were found to be significantly associated with COPD. In non-smokers, especially women, exposures to indoor air pollution from domestic combustion of solid fuels were an important factor. More significantly the exposure to environmental tobacco smoke (ETS) was an established cause for COPD⁴. ETS produces an increased risk of development of acute lower respiratory tract irritation, asthma, and acute lower respiratory tract

infections in children exposed in the home⁵. The effects on children include pneumonia, bronchitis and bronchiolitis in young children; chronic middle ear effusion; increased frequency and severity of attacks among asthmatics; possible induction of asthma in previously asymptomatic individuals; small reductions in lung function; and symptoms of upper respiratory tract irritation. In nonsmoking adults, ETS exposure is associated with irritation of the eyes, nose, and throat, and with wheezing, symptoms of bronchitis, shortness of breath, and decreased lung function⁶. Other health effects due to long term exposure like Coronary Heart Diseases, peripheral vascular diseases and cancers are well documented facts.

The amount of ETS exposure of a non-smoker is influenced by the number of smokers in the indoor environment, the intensity of smoking, the duration of exposure, the volume of the indoor environment, the ventilation characteristics, and the breathing pattern and activity of the non-smokers. Homes, workplaces and public places are all sources of ETS exposure specially the home for women and children in many societies¹. Children's exposure to ETS is involuntary, arising from smoking mainly by adults, in places where they live, work and play. Added to this is the indoor air pollution by the use of fire-wood, kerosene and cow-dung flakes as cooking fuel and poor housing where kitchens are not separate and a corner in the living area is used as a cooking space.

In view of this the current study was carried out with following aims and objectives:

- To know the burden and pattern of smoking in the study population
- To know the gender specific smoking pattern
- To know the prevalence of passive smoking among women and children
- To know the health hazards and subjective feelings amongst passive smokers.
- To co-relate the findings with selected socio-demographic variables

Material and Methods: The current study was carried out in one of the slum areas namely Shankar bhuvan ka Chhapara of the Shahpur ward in the Ahmedabad City of Gujarat State in India. The Ahmedabad city is divided in to 43 election wards each having population of 80,000 to 100,000. The

population in each ward is heterogeneous where people with different socio-economic status reside in different categories of accommodation facilities. There are 250 houses in the foresaid slum area out of which 118 households, which did match the inclusion criteria were surveyed. All the persons in the covered houses were included in the study irrespective of their smoking status. Inclusion Criterion for the study was those households in which at least one person was smoking tobacco may be in any form (cigarettes/ Bidi).

Exclusion Criteria were those households where there were no smokers in the family and those families which did not want to be a part of our study

A pre-designed and pre-tested proforma was used for the collection of information from the selected household. A pilot study was carried out by initial survey of 20 household to check the instrument and thereafter the main survey was conducted. A house to house survey was carried out so as to cover the whole area and each household fitting in the inclusion criteria was surveyed using the pre-designed and pre-tested format. Interview of all available family members was carried out and revisits were paid to meet the remaining members so that all the family members could be interviewed. In case of children the information was collected with the help of available parent. It took roughly 30 minutes time to cover one household. Study period extended from August 2007 to November 2007.

Result: Distribution of study population showed the total 683 population surveyed in 118 households hence the average family size was 5.83 with the standard deviation of 1.91. The sex ratio of the surveyed population was 841female/1000 male. Out of total population, 131 (19.2 %) were smoking one or other form of tobacco whereas 552 (80.8%) were non-smokers and were exposed to the Environmental Tobacco Smoke. The ratio of active versus passive smoker in the survey population was 1: 4.21. Majority i.e. 87 (66.4%) of the smokers belonged to the age group of 35-54 years and were males whereas majority of the passive smokers were in the age group of 0-24 years (70.1%) and females predominated in this group as 304 (55.1%)

were females. The mean age of the smokers was 45.24 ± 12.97 years while mean age of the non-smokers was 20.13 ± 14.44 years.

This difference in the mean age was statistically highly significant ($z=19.46$, $p<0.01$) suggesting that passive smokers were mainly children and younger age group people. 123 (33.15%) males were smoking one or the other stuff as against 8(2.56%) females who were smoking tobacco in one or other form. However in the smoker group the males predominated females with M: F of 15.4:1. The difference in prevalence of smoking between males and females was statistically highly significant ($z=11.76$, $p<0.01$) (Table-1)

Table 1: Age and sex-wise distribution of survey population:

Characteristics	Smokers (n=131)		Non- smokers (n=552)	
	N	%	N	%
Age (Years)				
0-4	-	-	58	10.5
5-14	-	-	173	31.3
15-24	3	2.3	156	28.3
25-34	16	12.2	65	11.8
35-44	42	32.1	52	9.4
45-54	45	34.3	34	6.2
55-64	12	9.2	7	1.3
65-74	8	6.1	5	.9
75-84	5	3.8	2	.3
Sex				
Male	123	93.9	248	44.9
Female	8	6.1	304	55.1

63 (53.4%) of the families were having 3-5 passive smokers in the family with mean number of 4.72 ± 1.876 . Majority of households were having single active smoker in the family (106, 89.8%) with the average number of 1.11 ± 0.341 per family. Firewood and Kerosene were the most common fuel used by the family with 105 (88.9%) families using them for cooking purpose and which could further deteriorate quality of the indoor air. Added to this was the problem of non availability of separate cooking area as formal kitchen which only 38 (32.2%) houses were having (Table-2).

Table 2: Family profile of survey population:

Characteristics	No. of families=118	Percentage
No. of non-Smokers		
0-2	13	11.0
3-5	63	53.4
6-8	40	33.9
9-11	2	1.7
No. of Smokers		
1	106	89.8
2	11	9.4
3	1	.8
Type of fuel used		
Firewood	49	41.5
Firewood and kerosene	30	25.4
Kerosene	26	22
LPG	9	7.7
LPG, kerosene	4	3.4
Cooking Space		
Separate	38	32.2
Not separate	80	67.8

Regarding the type of stuff used by the smokers 120 (91.6%) were using Bidi alone and few in combination with other materials however in them also Bidi was the predominant stuff. As far as duration of smoking is concerned 42 (32.1%) were smoking one or other material since 16-25 years with the mean duration of smoking of 21.32 ± 13.8 years. Number of the items smoked per day were 21-30 in 51 (39%) smokers followed by 0-10 items in 46 (35.2%) of smokers. Mean number of items smoked per day was 20.16 ± 14.28 (Table-3)

Subjective feelings like unpleasant smell and discomfort were the most perceived things when non-smokers were exposed to ETS (however children less than 5 years were excluded while estimating this hence $n=494$ is mentioned).the other subjective feelings amongst passive smokers were irritation of eyes, throat and nose. 169 (30.6%) suffered from coughing bouts on sudden exposure to ETS. History of the other ETS related morbidities like asthma, chronic bronchitis, LRTI and Pneumonia and middle ear disease was also obtained for the last one year and results are mentioned above however they could not be quantified in absence of difficulty in estimating the quantity of ETS inhaled

and the effect of other confounding factor leading to indoor air pollution. However, 169(30.6%) respondents were getting acute bouts of coughing on sudden exposure to ETS.

Table 3: Smokers Profile in the survey population:

Characteristics	Smokers (n=131)	Percentage
Type of Stuff		
Bidi	120	91.6
Cigarette	7	5.3
Bidi+Cigarette	1	0.8
Bidi+Cigar	2	1.5
Cigar	1	0.8
Duration in Years		
0-5	22	16.8
6-15	24	18.3
16-25	42	32.1
26-35	25	19.1
36-45	13	9.9
46-55	3	2.3
> 56	2	1.5
No. of items per Day		
0-10	46	35.2
11-20	18	13.7
21-30	51	39
31-40	4	3
41-50	10	7.7
51-60	1	0.7
>60	1	0.7

Table 4: Subjective Symptoms/ Feelings and other morbidities in the passive smokers

Subjective feeling/ Symptoms	Yes (%)	No (%)
Unpleasant Smell (n=494)	420(85.02)	74 (14.98)
Discomfort (n=494)	382 (77.3)	112 (22.7)
Irritation of eyes (n=552)	151 (27.4)	401 (72.6)
Irritation of throat (n=552)	329 (59.6)	223 (40.4)
Irritation of nose (n=552)	102 (18.5)	450 (81.5)
Asthma (n=552)	6 (1.1)	546 (98.9)
Chronic Bronchitis (n=552)	4 (.7)	548 (99.3)
LRTI and Pneumonia (n=552)	0 (0)	552 (0)
Coughing (n=552)	169 (30.6)	383 (69.4)
Middle ear disease (n=552)	7 (1.3)	545 (98.7)
H/O Repeated Acute Respiratory Infections	40 (69)	18 (31)

The mothers of the children less than five years were asked about repeated bouts of Acute respiratory tract infections amongst them and 40 (69%) gave positive response to the question (Table-4).

Each subjective feeling was given 0 score if not present and 1 score if it was present in the respondents. The range of total score was from 0-5. The difference in mean score between males and females was statistically highly significant ($z=2.62$, $p<0.01$) suggesting that females had more adverse subjective feelings on exposure to ETS. The mean of the subjective score was also calculated for all the ages and the score showed increasing trend with the increasing age. The children of less than 5 years of age were excluded from estimation of subjective scores (Table-5).

Table 5: Sex and Age versus scores of subjective feelings

Characteristics	Mean Subjective score	Standard Deviation
Sex		
Male	2.47	1.4
Female	2.78	1.44
Age (Years)		
5-14	2.35	1.57
15-24	2.57	1.48
25-34	2.86	1.25
35-44	2.96	1.37
>45	3.52	.29

Discussion: The effects of smoking on health both short-term and long-term have been documented in various studies. In the present study the prevalence of passive smoking was 80.8% whereas Yang et al reported the prevalence of passive smoking in nonsmokers as 53% in 1996 and 52% in 2002⁷. In the present study the majority of the passive smokers were belonging to the age group 0-24 years where as in a study by Han et al amongst Chinese women population, majority were in the age group of 30-50 years and 97.5% respondents had a thinking that passive smoking is harmful to health 70.0% open windows when someone smokes around her, but only 16.9% ask the smokers do not smoke around her forwardly⁸.

In the surveyed population 2.56% females were current smokers and 33.15% males were current smokers. In a study by Jindal et al 2.1% females and 28.5% males were ever smokers⁹. In Sri Lanka 48% of males and 2% of females over 15 years of age were smokers¹⁰. Ever-smoking rates in males and females aged 15 and over were 66.0% and 3.1% respectively in a study by Yang et al⁷. Cohen et al¹¹ reported that 67% of the males and 1% of the females, over the age of 15, smoked 1 or more Cigarettes or Bidi each day. In the present study Bidi was the commonest amongst all the stuffs smoked and similar observation was made by Jindal et al⁹. As reported by W.H.O, 83% of people in the lower classes smoke bidis rather than the more expensive cigarette¹⁰. The mean number of items smoked per day was 20.16 (± 14.28) which was higher than that reported by Jindal et al which reported 14 (± 11.5)⁹ and WHO chronicle which reported that Thailand population smokes an average of 10 cigarettes a day¹⁰.

From the present study it can be concluded that a substantial proportion of population in India has current smoking habit with higher prevalence among males than females. Further, Passive smoking is mainly the problem of younger population and females which may lead to immediate subjective feelings but which definitely has long term health affects both affecting physical as well as mental health of those involved. More than that, those younger age group passive smokers may pick up smoking habit from the much older active smoker. More focused quit tobacco programs involving specific sections of the population need to be emphasized.

Conclusion: Women and children are the victims of the exposure to ETS and indoor air pollution due to use of Bio-mass fuel and substandard housing add to this problem. Over and above that the immediate adverse subjective feelings amongst passive smokers are un-noticed and not given importance. All these are barred by the passive smokers constantly multiple times a day and may affect their mental health. The damage to physical health is a well known fact.

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