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## Comparison of Clinic Visits among Children of Smoking and Non-Smoking Families

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### ABSTRACT

**Background:** Complications of cigarette smoking are of the major obstacles of a society. Both active and passive smoking cause various forms of diseases in men, women and children. Since almost one third of the world's population are children under 14 years of age, preventing the unwanted health consequences of involuntary smoking can help in improvement of health as well as the health level of the society.

**Materials and Methods:** In cooperation with the "Iran Statistics Center" and by using PPS method a number of families required for the study were selected among 22 districts of Tehran. After obtaining a consent, a questionnaire was filled out by a physician through interviewing the families randomly.

**Results:** In this study, 214 families were questioned out of which 129 had at least one smoker member in their family (60.2%). A total number of 825 individuals were studied (including 270 men, 281 women and 274 children under the age of 14), out of which 87 men (32.2%), 42 women (14.9%) and overall 129 subjects (23.4% of the population over the age of 14 and 15.6% of the general population) were smokers. The mean number of visits to the physician by the children of all families was  $3.7 \pm 1.8$  per year. This number was  $2 \pm 0.9$  and  $4.7 \pm 1.56$  in the non-smoking and smoking families respectively ( $p=0.000$ ). Mean exhaled CO level of a non-smoker or passive smoker of a smoking family was  $20.2 \pm 5.8$ ; whereas this rate was  $6.6 \pm 3.5$  in a non-smoker member of a non-smoking family ( $p=0.000$ ).

**Conclusion:** Comparison of the number of visits does not significantly indicate the disease-inducing role of passive smoking but only that these visits are more in families that smoke. (*Tanaffos* 2006; 5(4): 47-52)

**Key words:** Child, Visiting a physician, Passive smoker

### INTRODUCTION

Tobacco smoking is one of the main causes of morbidity and mortality in the world. Active smoking

of an individual, exposes other people in close proximity to the smoker to cigarette smoke.

This is called passive or involuntary smoking. In general, there are 3 billion passive smokers in the world out of which 700 million are children (1). According to the health survey done in 1990, 14.6% of the individuals older than 15 years of age smoke

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(27.2% of men and 3.4% of women). This rate was 12.5% of the total population in the year 2000 (25% of men and 2.5% of women) (2).

Cigarette smoke has 2 parts: side stream smoke and main-stream smoke. Main-stream smoke is inhaled into the lungs via puffing while side stream smoke rises off the tip of a burning cigarette. Side stream smoke contains several times more harmful chemicals than main-stream smoke because it does not pass through the cigarette filter. The concentration of chemicals and nitrosamines in side stream smoke is 50 times greater than that of the main-stream smoke (3). A non-smoker in a very smoky room inhales as much nitrosamines and carbon monoxide in an hour as he would by actually smoking one filtered cigarette (4). Children of these families and the household workers are innocent victims of the side-stream smoke. The incidence of lung infections (bronchitis, pneumonia), otitis media, and asthmatic symptoms are higher in children with smoking parents. By being exposed to cigarette smoke, these children may develop asthma attack or worsening pulmonary symptoms (5).

Sudden death syndrome in neonates has shown to be correlated with passive smoking. There is also a possibility of spontaneous abortion, low birth weight, and premature birth of babies in mothers whose husbands are smokers (6).

Also, non-smoker individuals who work with smokers suffer pulmonary complications and have a 3-times greater chance of developing lung cancer. The rate of coronary attacks is also higher in them(7). Health effects of involuntary smoking varies from allergy (ocular irritation, eye burning and itching) to heart or cerebrovascular attacks (8). They also have a 30% increase in the risk of heart diseases. Additionally, one third of lung cancer patients are these passive smokers as well. Cervical cancer is also seen in females exposed to second hand smoke (9).

Tobacco use by the parents during pregnancy or after delivery is associated with a wide range of diseases in children from allergy, lung infection and otitis media to lymphocytic leukemia and lymphoma (10).

All these factors are responsible for increased referrals number to the physician by passive smokers as compared to non-smokers. As no such study has been conducted in Iran, we decided to evaluate the effects of second-hand cigarette smoke on non-smoking children.

## **MATERIALS AND METHOD**

This was a cross-sectional analytical study. To determine the sample size we decided to perform a pilot study. Two districts of Tehran (district 7 and 14) were chosen because there were health houses and clinics for quitting smoking in these two districts.

Our pilot study was performed on 100 families. The questionnaires were assessed and the primary data regarding the number of smokers and number of children in their family as well as number of visits to the physician were collected. At the same time, by going to the Iran Statistics Center and explaining the objectives of the study to the authorities, we made some arrangements to use the Tehran map and addresses selected for the study by the statisticians by using the PPS method (choosing the sample size based on the population of each district) and the analysis was performed after calculating the sample size.

Accordingly, 100 families were evaluated and a total number of 398 people were questioned. There were 58 smoking families (88 people equal to 22.1% of the under study population and 32.2% of the study subjects over 14 years of age). There were 124 children (under 14 years of age) in these families out of which 84 were living in smoking families. During the last 12 months, 354 visits had been made to the

physician by children under 14 years of age.

Two hundred families were selected for the study. Considering the total number of families in each district, the number of samples required in each district was calculated by using the PPS method.

We randomly selected one geographical site in each district. By going to the selected zone we continued to move upward interviewing the residents in the houses on our right until reaching the calculated sample size. It must be mentioned that we only interviewed families who had children.

We also ensured the families regarding the secrecy of the information and explained the benefits of the study in improving the health status of their children.

Data were collected via questionnaire (WHO and International Union Against Tuberculosis and Lung Disease) containing general information regarding the smokers and number of visits of the children to the physician and were entered in the computer and analyzed by SPSS software, Chi square test and t-test with the regression and significance level of  $p < 0.05$ .

## RESULTS

### *General information regarding the families:*

In most families (64.5%) the mother answered the questions (Table 1).

**Table 1.** Relative frequency distribution of the one who was questioned in smoking and non-smoking families in Tehran in 2003.

The one who was questioned	Number	Percentage
Mother	138	64.5
Father	39	18.2
Child	13	6.1
Others	24	11.2
Total	214	100.0

Table 2 shows the frequency distribution of the families. Four-member families comprised 39.7% of all under study families.

**Table 2.** Relative frequency distribution of the number of family members in smoking and non-smoking families in Tehran in 2003.

Number of family members	Number	Percentage
2	43	20.1
3	25	11.7
4	85	39.7
5	52	24.3
6	1	0.5
7	6	2.8
8	2	0.9
Total	214	100.0

A total number of 825 people were studied including 270 men, 281 women and 274 children (Table 3); out of which 87(32.2%) men and 42(14.9%) women were current smokers.

In this table it is also demonstrated that 15.6% of the total study population and 23.41% of those over 15 years of age were smokers.

Overall, 274 children were studied out of those, 156 cases (56.9%) were living in smoking families while 118 cases (43.1%) had non smoking families.

**Table 3.** Relative frequency distribution of the number of smokers and non-smokers in families in Tehran in 2003

Person	Smoker	Non-smoker	Total
Male	87	183	270
	32.2%	67.8%	100%
Female	42	239	281
	14.9%	85.1%	100%
Total	129	422	551
	23.41%	76.58%	100%
Child		274	274
		100%	100%
Total study population	129	696	825
	15.6%	84.3%	100%

Table 4 indicates that the youngest smoker was 21 yrs. old while the oldest was 84. Mean age was  $44.1 \pm 14.1$  years and the maximum age observed

during questioning was 33 years. Also, most cases were in the age range of 31-40 years (27.7%).

**Table 4.** Relative frequency distribution of the age of smokers in smoking families in Tehran in 2003.

Age range	Number	Percentage
21-30	14.9	23
31-40	27.7	43
41-50	24.5	38
51-60	19.8	31
Over 61 years	12.2	19
Total	154	100

In the community, mean ( $\pm$ SD) age of all children was  $4.9\pm(3.6)$  yrs. This figure was  $4.8 (\pm 3.5)$  and  $5.1\pm(3.8)$  in smoking and non-smoking families respectively.

**Information regarding the children:**

In this study, we questioned the number of out-patient visits to the physician during a period of one year. The highest number of visits was 4 per year (24.8%). 18.2% mentioned 2 out patient visits to the physician. In general, the mean number of visits was  $3.7\pm(1.8)$ . This rate was  $4.7\pm(1.5)$  and  $2\pm(0.9)$  in smoking and non smoking families respectively. Only 20 cases (10.5%) had been hospitalized during the previous year. The maximum and minimum levels of exhaled CO (PICO) were 30 and 10 respectively in passive smokers living in smoking families while these levels were 14 and 1 in non-smoking members of non smoking families. Also, mean levels of CO in passive smokers and non-smokers were  $20.2\pm(5.8)$  and  $6.69\pm(3.5)$  respectively.

**Analytical results:**

98.8% of the non-smoking families had less than 4 visits to the physician per year while this percentage in smoking families was 45% (Table 5).

**Table 5.** Relative frequency distribution of the number of visits to the physician by children during the last year according to the smoking pattern of Tehran families.

Family	Number of visits		Total
	$\leq 4$	$> 4$	
Non-smoking	84	1	85
	98.9%	1.2%	100%
Smoking	58	71	129
	45.0%	55.0%	100%
Total	142	72	214
	66.4%	33.6%	100%

P=0.000

53.4% of families with one smoker had less than 5 visits to the physician per year but 100% of families with 2 smoking members had more than 4 visits to the physician per year. In families with 3 smokers, 50% mentioned less than 4 visits while the other half recalled more than 4 visits to the physician during the last year (Table 6).

**Table 6.** Relative frequency distribution of the number of visits to the physician according to the number of smokers in families of Tehran.

Family	Number of visit		Total
	$\leq 4$	$> 4$	
No smoker member	84	1	85
	98.8%	1.2%	100%
One smoker member	55	48	103
	53.4%	46.6%	100%
Two smokers		20	20
		100%	100%
Three smokers	3	3	6
	50%	50%	100%
Total	142	72	214
	66.4%	33.6%	100%

P=00.0

Table 7 shows that 95.7% of families who smoked 10-20 cigarettes a day mentioned more than 4 visit to the physician during the last year. Also, 100% of children living in families smoking more

than 20 cigarettes a day had more than 4 visits to the physician.

**Table 7.** Relative frequency distribution of the number of visits to the physician by the children during the last year according to the number of cigarettes smoked daily in Tehran families in 2003.

Family	Number of visit		Total
	≤ 4	> 4	
Less than 10 cigarettes	3 10.7%	25 89.3%	28 100%
10-20	3 4.3%	68 95.7%	71 100%
More than 20		30 100%	30 100%
Non- smoking	83 100%		83 100%
Total	89 41.6%	125 58.4%	214 100%

## DISCUSSION

Considering the trend of smoking in the society, the importance of studying the subject of passive smoke is justified. Concerning the fact that there are 3 billion passive smokers in the world with one fourth of them younger than 14 years of age and most of these children are involuntarily exposed to the cigarette smoke even before birth the importance of this issue can not be over emphasized.

In this study, mostly mothers were questioned because usually mothers are more aware of what is going on in their family and could provide us with more information.

Overall, 214 families and a total of 825 members were studied. The mean number of family members in this study was 3.8 which is close to the figure 4.1 calculated by the "National Statistics Center" in 1996, and 3.9 announced in another pilot study. 274 children were studied and 37.9% of families had only one child. There were 85 non-smoking and 129 smoking families and 60.2% of smoking families had

only one smoker.

This indicates the various effects of smoke on passive smokers. This has also been pointed out in similar international studies (48.1%) (1, 12).

In this study, 32.2% of men and 14.9% of women were smoker. These figures are consistent with those given by the "Health Survey of the Ministry of Health" that reported the percentage of male smokers to be 27.2% in 1990 and 25% in 1999. But the frequency of female smokers was 3.4% in 1990 and 2.5% in 1999 (2), indicating that smoking has increased in women. Our statistical results regarding the prevalence of smoking is different with those obtained throughout the "health survey" by the Ministry of Health in which the percentage of smoking was reported to be 14.3% of the total population in 1990 and 12.5% of the population in 1999. Therefore, further investigations are required in this regard.

There were 274 children in this study out of which 43% were living in non-smoking families and 57% with at least one smoker. Also, 56% of children are living in smoking families with daily cigarette use.

A total of 129 outpatient visits to the physician and 20 hospitalizations per year were reported and 60% of these visits had been made by the smoking families. Also, all the 20 hospitalizations were in smoking families.

Referrals also correlated with the number of smokers in the families. 86.8% of smoking families had 4-7 visits to the physician while 97.6% of non-smoking families had less than 4 visits per year. The higher the number of smokers in a family the higher was the number of outpatient visits to the physician. More than 7 visits a year was only reported by the families with more than 3 smoker members.

Based on our study results, the number of visits to the physician by the children of smoking families is not only significantly higher than the non- smoking

families, but is also directly correlated with the number of smokers in their family as well as number of cigarettes they smoked. This has also been stated in many studies worldwide (13, 14). This is important because it indicates the harmful effects of breathing second-hand cigarette smoke. But this comparison is not indicative of the cause of these visits but goes to show a positive relationship with second-hand smoke. The cause of these referrals needs further investigation (15).

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