

## Comparison of Onset Age and Pattern of Male Adolescent Smoking in Two Different Socioeconomic Districts of Tehran, Iran

Fatemeh Rezaei<sup>1</sup>, Saharnaz Nedjat<sup>2</sup>, Banafsheh Golestan<sup>3</sup>, Reza Majdzadeh<sup>4</sup>

<sup>1</sup>MSc, Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, and Shiraz University of Medical Sciences, Shiraz, Iran.

<sup>2</sup>MD, PhD, Department of Epidemiology and Biostatistics, School of Public Health, and Knowledge Utilization Research Center (KURC), Tehran University of Medical Sciences, Tehran, Iran.

<sup>3</sup>PhD, Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

<sup>4</sup>DVM, MSc, PhD, Professor, Center for Community Based Participatory Research (CBPR), and Department of Epidemiology and Biostatistics, School of Public Health, and Knowledge Utilization Research Center (KURC), Tehran University of Medical Sciences, Tehran, Iran.

### Correspondence to:

Reza Majdzadeh, DVM, MSc, PhD, Professor, Center for Community Based Participatory Research (CBPR), and Department of Epidemiology and Biostatistics, School of Public Health, and Knowledge Utilization Research Center (KURC), Tehran University of Medical Sciences, Tehran, Iran.

Email: rezamajd@tums.ac.ir

Date of Submission: Jul 19, 2011

Date of Acceptance: Sep 10, 2011

## INTRODUCTION

Tobacco consumption is the major preventable cause of premature mortality and morbidity in the world. Approximately 5.4 million people every year die due to tobacco related diseases. If this trend does not change, this figure will be over 8 million in 2030. Vast majority of these deaths occur in developing countries.<sup>1</sup> Tobacco consumption was responsible for 4.83 million premature deaths worldwide in 2002, of which 2.41 and 3.83 millions occurred in developing countries and among males, respectively.<sup>2</sup>

Although smoking rates have declined in adults,<sup>3</sup> it is still high in adolescents and young adults.<sup>4</sup> Twenty-five percent of teens who smoke daily will be dependent on nicotine in their

adulthood.<sup>5</sup> Smoking in adolescents is a problem that also has an impact on physical growth.<sup>6</sup> The age at which adolescents start smoking will affect their health in older ages. Early onset of smoking during elementary school ages increases the chance of adulthood smoking.<sup>7</sup> Those started smoking at 16 years of age or less are two times more at risk of never quitting smoking in comparison with those who start later than this age.<sup>8</sup> In addition, nicotine addiction is more severe among those who start smoking earlier.<sup>9</sup> The age of smoking onset has an inverse relationship with the number of days that a person smokes and the number of cigarettes consumed.<sup>10</sup> Teens who smoke are more likely to be involved in illegal

## ABSTRACT

**Objectives:** One of the main strategies to prevent smoking is delaying onset of smoking in adolescents. Thus, identifying the age of smoking and smoking pattern in adolescents gives important knowledge for planning the intervention programs on smoking.

**Methods:** Students aged 13-15 years old living in the Northern and the Southern Tehran were selected through two separate snowball samplings. In each area six smokers were considered as the seeds and were asked to introduce a smoker friend. The sampling continued until one hundred study subjects were recruited in each area.

**Results:** Although in the area with wealthier socioeconomic status the age at which smoking started was one year more, the number of days of smoking, number of consumed cigarettes, not willingness to quit smoking, ease of access to cigarettes, mother and siblings smoking were more frequent. In contrast, seeing anti-smoking advertisements, father smoking, teachers smoking and education about the adverse effects of smoking were lower than the area with poorer socioeconomic status.

**Conclusions:** The community level interventions such as not selling cigarettes to juniors, quit smoking help and support, and education of families must be revised. The role of families, through the supervision and control over their children, and parents' avoidance of smoking should be emphasized.

**Keywords:** Cigarette smoking, Socioeconomic status, Urban disparity, Iran.

*Int J Prev Med* 2011; 2(4): 224-228

drugs and alcohol consumption, and deviant behaviors.<sup>11</sup> Global statistics shows that tobacco use among students aged 13-15 is more than 10%. In addition, nearly one of every four smoker-student starts cigarette before age 10.<sup>12</sup>

A study showed that 29% of high school students in Tehran are occasional smokers.<sup>13</sup> The prevalence of at least one smoking experience in Shiraz in the similar age group was 25.4%.<sup>14</sup> Other studies in Iran revealed that the other family members smoking influences adolescents smoking.<sup>10,15,16</sup> A qualitative study was conducted by the present article authors on factors affecting cigarette smoking in male adolescents in Tehran.<sup>17</sup> The present study was following the preceded qualitative study to quantify the previous identified factors. The question was whether in two areas of Tehran, with inequality in socioeconomic status, the onset age and pattern of smoking in adolescents are different.

## METHODS

The present article is the case wing of a case-control study assessing the factors affecting smoking. The former study about determinants of adolescents smoking was published elsewhere.<sup>18</sup> One hundred male students aged 13-15 living in the Northern Tehran and a similar number in a Southern district were selected through snowball sampling.

The 1<sup>st</sup> and 17<sup>th</sup> districts respectively in the Northern and Southern Tehran were chosen for the purpose of sampling in this study. Housing, educational, sport and park spaces per capita can show diversity of economic status between two districts. While in the 1<sup>st</sup> district people have 55.1, 1.6, 0.6, and 5.3 square meters of these spaces, respectively, inhabitants in the 17<sup>th</sup> district have 11.6, 0.5, 0.2, and 1.3 square meters of similar indices.<sup>19</sup>

Snowball sampling is used for selection of

individuals from hidden populations such as illegal drug users.<sup>20</sup> The study in each district started with six teenagers as the seeds. Each was asked to name one of his friends who was a smoker (who smoked cigarettes regularly or occasionally for fun during last month).

The study continued with the newly (secondary) subject who was introduced by the former (index) subject. If the second person was not willing to answer, the index person was asked again to introduce another friend and in case he failed to introduce a new case, the inquiry stopped.

The only exclusion criterion from the study was communication problems.

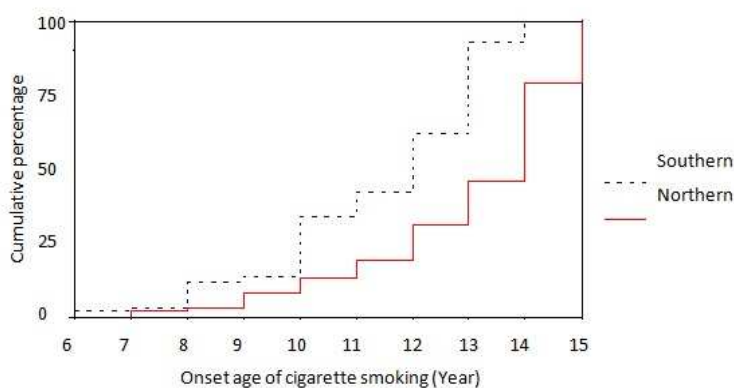
The questionnaire included data on demographics, family, school status and smoking behavior. Content and face validity of the questionnaire were judged by three content experts. Reliability of the questionnaire was assessed by a test-retest study on 20 individuals within two weeks and the result, an intraclass correlation coefficient of 0.79, as was mentioned in the parallel paper of this study, was acceptable.<sup>18</sup> Chi-square test for qualitative variables and student-t tests for quantitative variables were performed.

This study was reviewed and approved by the Ethic Committee of Tehran University of Medical Sciences. Questionnaires were filled without participant's names. Informed consents were obtained from the subjects before the study.

## RESULTS

Since the sample size in both the Northern and Southern districts was one hundred, numbers in the result tables show not only frequency of observations but also their percentages.

Figure 1, by length of vertical lines, shows that the highest percentage of smoking onset was at ages of 14 and 13 in the Northern and Southern parts of Tehran with 33 and 31 percents, respectively.



**Figure 1.** Cumulative frequency of age of smoking onset in male adolescents in the Northern and Southern districts of Tehran

The minimum onset age for smoking was seven in the North and six in the South. Cigarette smoking started earlier in the Southern district compared to the Northern one, mean and standard deviation were  $11.38 \pm 1.92$  in the South and  $13 \pm 1.94$  in the North. This difference was statistically significant ( $P < 0.001$ ).

Table 1 shows the pattern of smoking in the North and South of Tehran. In addition to the information given, it is good to know that the mean number of smoked cigarettes was eight times more in the North compared to the South (10.52 vs. 1.28 cigarettes).

Table 2 illustrates the status of families and the demographic indicators according to the districts. It should be noted that the mean and standard deviation of family size in the North and South were  $4.67 \pm 1.45$  and  $5.0 \pm 1.41$ , respectively, and were not significantly different ( $P = 0.10$ ).

## DISCUSSION

This study showed differences between higher and lower socioeconomic districts of Tehran regarding the age of smoking onset, access to cigarettes, the number of smoking days in the last month, number of cigarettes consumed in the last month, existence of smoker(s) in family and school education.

Several studies reported the pattern of smoking by adolescents, but to our knowledge there is no study which examines the pattern of smoking in the two areas with socioeconomic inequalities. The main limitation of this study could be the sampling method. Although snowball sampling improves participation of study subjects, all target population has not the same chance of participation in the study. Those who have more friends are more probable to be recruited in the study. If this characteristic, i.e. extraversion, influences distribution of the study variables, it could be a source of selection bias. On the one hand, there is no evidence regarding relationship of extraversion and the studied factors. On the other hand, snowball sampling is suitable to access to this study subjects. Since smoking in 13-15 year old adolescents is not socially desirable, the snowball sampling was selected.

Figure 1 shows the minimum age of smoking onset which was seven and six years in the North and South of Tehran. A study in Greece reported that 25.5% of boys started smoking when they were less than 10 years old.<sup>21</sup> Because 13 and 34 % of students in the Northern and Southern districts started smoking in less than 10 years old, training on the hazards of smoking during elementary school is seriously recommended.

**Table 1.** Comparison of variables defining pattern of smoking in 13-15 year old smokers in the North and South of Tehran

		Northern area (%) (n = 100)	Southern area (%) (n = 100)	p value
Ease of access to cigarettes	Yes	40	74	$\chi^2 = 23.58$ , $P < 0.001$
	No	60	26	
Seeing anti-smoking advertisements	Yes	86	94	$\chi^2 = 3.53$ , $P < 0.060$
	No	14	6	
Willingness to quit smoking	Yes	56	82	$\chi^2 = 1.87$ , $P = 0.170$
	No	44	18	
Tried to quit smoking cigarettes during the last year <sup>†</sup>	Yes	64	62	$\chi^2 = 0.09$ , $P = 0.870$
	No	36	38	
How to access cigarettes	Shops	89	82	$\chi^2 = 1.97$ , $P = 0.160$
	Other	11	18	
Number of days of smoking during last month	1-10	12	44	$T = 7.1$ , $P < 0.001$
	11-20	13	31	
	21-30	75	25	
Number of consumed cigarettes during last month	1	16	88	$T = 7.98$ , $P < 0.001$
	2-5	33	10	
	6-10	22	2	
	11-20	18	0	
	More than 20	11	0	

<sup>†</sup> Twenty four study subjects in the North and two in the South were not smokers during the last year and were omitted for this analysis. The information presented in the cells is percentages.

**Table 2.** Comparison of predisposing factors on cigarette smoking of adolescents in 13-15 year old smokers in North and South of Tehran

		Northern area (%) (n = 100)	Southern area (%) (n = 100)	p value
Father smoking	Yes	49	82	$\chi^2 = 24.09, P < 0.001$
	No	51	18	
Mother smoking	Yes	14	0	$\chi^2 = 15.05, P < 0.001$
	No	86	100	
Brother smoking	Yes	23	10	$\chi^2 = 6.13, P < 0.001$
	No	77	90	
Sister smoking	Yes	4	0	$\chi^2 = 4.06, P = 0.06$
	No	96	100	
Teacher smoking	Yes	75	92	$\chi^2 = 10.48, P < 0.001$
	No	25	8	
Education against smoking in school	Yes	31	45	$\chi^2 = 4.16, P = 0.04$
	No	69	55	
Divorced family	Yes	4	3	$\chi^2 = 0.15, P = 0.70$
	No	96	97	
Family size	≤ 3	13	7	T = -1.63, P = 0.10
	4-6	80	84	
	≥ 7	7	9	

Table 1 shows the significant differences between the Northern and Southern districts on access to cigarettes, smoking days and the number of cigarettes consumed in the last month. Therefore, cigarette smoking in the Northern district with higher socioeconomic status is more serious and the adolescents not only smoke more but also find cigarettes easier, despite the fact that cigarette smoking starts earlier in the Southern district in comparison with the Northern one.

The majority of subjects purchased cigarettes from the stores which means cigarettes are easy to access. Studies in Turkey<sup>22</sup> and Thailand<sup>23</sup> reported that 48.5% and 36.9% of smoker boys, respectively, bought cigarettes from the stores. Significant difference was shown between two districts regarding not selling cigarettes to adolescents. Report on two times more non-refusal for in purchasing cigarettes in Southern part shows relative ease of access to cigarettes in the North and failure of this community level intervention at least in the Northern Tehran. This figure was reported to be 94.7% in Greece<sup>21</sup> and 36.9% in Thailand.<sup>23</sup>

Around 90% of the study subjects in both areas expressed that they have seen anti-smoking advertisements, but unfortunately, these advertisements had no effect on them. The study in Greece similarly showed the corresponding figure as 89.9%. It is important to know that proportion of those who smoked cigarettes for 21-30 days in the last month was three times more in the Northern than the Southern district. In addition, percentage of those who smoked more than

10 cigarettes per day in the North was 29 vs. zero in the South. Eighty eight percent of smokers in the South smoked just one cigarette per day, while this was 16% in the north. None of study subjects in the Southern district reported consumption of more than 10 cigarettes per day. Therefore, the adolescents in wealthier part of the city smoked heavier.

Table 2 shows that smoking of mothers, fathers, teachers and brothers were statistically different in the two districts. Just smoking of sisters was less common and subsequently did not differ between the two groups. Previous studies showed a relationship between smoking of teenagers and their parents.<sup>24</sup> In addition, different studies reported similar association of adolescents smoking and having more than one smoker among family members.<sup>10,13,15,16</sup> Since not having smoker family members is a well recognized factor, families' education and preparing a non-smoking environment in the families might be an effective intervention. Association of teachers smoking is also well known.<sup>25</sup> More than half of the subjects in both areas never had training against smoking. Given the importance of teenagers' education on awareness and subsequent behaviors, conducting well prepared trainings is recommended.

## CONCLUSION

The onset age of smoking, how to access and ease of access to cigarettes, willingness to quit smoking, number of days which individuals



smoke, number of cigarettes consumed per day, presence of smokers in those around and school education were different in the Northern and Southern Tehran. It seems the existing prevention programs, especially not selling cigarettes to juniors, supporting and helping smokers to quit smoking and family education, should be revised in Tehran.

**Conflict of interest statement:** All authors declare that they have no conflict of interest.

**Source of funding:** This study was supported by Tehran University of Medical Sciences with the grant number 5749.

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