

# Magnitude of the smoking problem, knowledge, attitude and practice among family members of primary school students

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## ABSTRACT

**BACKGROUND:** smoking is a very important public health problem, urgently requiring immediate and effective measures due to its harmful effect on health. The purpose of this study was to collect baseline information about the magnitude of smoking problem, knowledge, attitude, and practice among family members of primary school students in the northwest region of Iran.

**METHODS:** of 55 680 primary school students (the 3<sup>th</sup>, 4<sup>th</sup> and 5<sup>th</sup> grades), 7.1% (n=3 954) were selected using randomized multi-stage cluster sampling. Data collection was conducted in April, May, and June 2011, by means of a self-administered two-page questionnaire.

**RESULTS:** a total of 3 954 students (57.6% boys and 42.3% girls) with the mean age of 10.46±1.09 years were evaluated. According to our data, the prevalence of cigarette smoking among fathers was more than other family members (27.1% versus 17.8%) whereas the prevalence of water pipe smoking among fathers and other family members was almost similar (9.2% and 9.7% respectively). None of the smoking type was prevalent among mothers (cigarette: 1% and water pipe: 1.1%). Considerable numbers of all students under study had been exposed to secondhand smoke at home (cigarette: 19.8% and water pipe: 7.7%).

**CONCLUSIONS:** considering our findings, two procedures recommended to prevail the problem are to provide greater education about hazards of tobacco consumption among students and their family; and to legislate new laws by officials to ban tobacco use at home.

*Key words:* Cigarette; Family members; Smoking; Water pipe

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## INTRODUCTION

Smoking is a very important public health problem, urgently requiring immediate and

effective measures; due to its harmful effect on health [1]. Use of tobacco is the second major cause of death in the world and reduced life expectancy. World Health Organization (WHO)

estimated that there are about 100 million smokers in the world [2]. Most of the studies and policies focus on the industrial cigarette smoking control, while water pipe tobacco smoking has spread worldwide. Many water pipe smokers believe that, relative to cigarettes, water pipes are associated with lower smoke toxicant levels and fewer health risks [3], but it seems water pipe tobacco smoking is not a safe alternative to cigarettes [4]. Water pipe and cigarette smoke contain some of the same toxicants. In addition, water pipe use may be associated with greater toxicant exposure because of longer use episodes and more and longer puffs lead to inhalation of 100 times more smoke than a cigarette [5]. This knowledge gap has become particularly salient in the past decade with the global rise in water pipe use [6-8], which commonly occurs outdoors as well as in homes, restaurants, bars, and cafés. On the other hand, over the past decades formidable evidence has been built about the nature and health effects of secondhand cigarette smoke. Furthermore, through “involuntary” or “passive” smoking, occupants of these spaces may be exposed to significant levels of hazardous substances issuing from the water pipe. It has been previously found that mainstream smoke (MS) from the water pipe delivers large quantities of nicotine, particulate matter, CO, polycyclic aromatic hydrocarbons (PAH), volatile aldehydes and ultrafine particles to the user [8-10]. Indeed, recent studies have found elevated pollutant levels in indoor environments where water pipes were smoked [8-11]. So, exposure to secondhand smoke from water pipe smoke poses a serious health risk to non-smokers [4]. It seems that children of these families are innocent victims of the side-stream smoke.

Smoking behaviors vary by age, educational level, economic status, gender, race/ethnicity, and geographic location. Results from national surveys in the United States have consistently shown substantial variation in smoking prevalence as well as cigarette consumption rates by these factors [12]. In Iran, the prevalence of smoking is 27.2% among men and 3.4% among women [13], but sufficient information on this domain is not available in the northwest of Iran. A study in Ardabil province showed that more than one third of the students in one of Ardabil universities were water pipe users [14]. Another study conducted on athletes

showed that 14.7% and 10.5% of athletes were habitual and recreational users respectively, and 24.4% of non-smokers stated they were in exposure of water pipe smoke [5]. Considering the addictiveness of water pipe and the long history of water pipe smoking in the northwest region of Iran, it seems that we are facing a difficult situation in terms of strategy planning and campaigning for water pipe smoking control compared to cigarette smoking control. So, it is very interesting to study the prevalence of smoking among family members of primary school students in the northwest region of Iran to know the size of this problem. The purpose of this study was to collect baseline information about the magnitude of the smoking problem, knowledge, attitude, and practice among family members of primary school students in the northwest region of Iran and develop a more nuanced understanding of these phenomena.

## METHODS

### Population, sample and data collection

The current study is a survey conducted among 55 680 primary school students of Ardabil province in the northwest of Iran. Seven point one percent of population randomly participated in this study (n=3 954). All comprehensive schools in Ardabil province were eligible for the study. Technically, the sampling procedure adhered to the following scheme: 19 main geographical districts in the north, south, east, west and center of Ardabil province were selected for sampling. As the next step, random selection of the schools in the strata was performed. The probability of schools being selected was proportional to the number of schoolchildren enrolled in the specified grades in the strata. In the schools, cluster sampling was used where the primary sampling unit was the class. All schoolchildren in the selected classes attending the schools on the day of the survey were eligible to participate. Data collection was conducted in April, May and June 2011, by means of a self-administered two-page questionnaire. The information was gathered by trained interviewers via face to face questioning in the classroom. Headmasters of the schools and representatives of the parents were notified in advance of the survey by a letter and schoolchildren gave verbal

consent to complete the questionnaire. Before completing the questionnaires, students were thoroughly informed by expert technicians regarding the objectives of the project. Students were also reassured about the confidentiality of their information. The questionnaire did not ask for the students' first or last name. However, small number of respondents did not provide answer to one or two questions. Such non-responders were less than one percent.

### Variables and measures

The questions focused on gender, age, school status, number of family members and students' replies for the following issues: (1) kind of smoking, (2) exposure to secondhand smoke (3) exposure to parents' smoking, (4) knowledge towards smoking (5) and, place of smoking.

### Statistical analysis

All statistical analyses were carried out with the use of SPSS package, version 18.0. Descriptive data were summarized by means of standard deviation or percentages. Owing to scarcity in "I do not know" response, we ignored it and used Chi-square test to compare differences. The significance level was set at  $P < 0.05$ .

## RESULTS

In this study a total of 3 954 questionnaires were completed out of which 42.3% belonged to girls and 57.6% belonged to boys. Participants were in the 3<sup>th</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grades and their mean age was  $10.46 \pm 1.09$  years. Table 1 shows the frequency distribution of the families. Four-member families comprised 49.8% of all observed families. Relative frequency distribution of students' knowledge about cigarette and water pipe smoking among family members is shown in Table 2. According to the data, cigarette smoking was more prevalent among fathers (27.1%), whereas, water pipe smoking was more common among other family members (9.7%). Prevalence of use among mothers showed huge discrepancy than other family members (cigarette: 1%

and water pipe: 1.1%). However, students' responses show that most of family members are significantly not cigarette or water pipe users ( $P < 0.05$ ).

Response of students about the health risks of smoking, type of parental smoking at home, and disapproval of smoking at home are shown in Table 3. Unfortunately, data indicate 19.8% and 7.7% of students are secondhand users at their home. Majority of students are aware of health risks of smoking, although the knowledge of most students about the risks of water pipe is less than that of cigarette (cigarette: 90.5% and water pipe: 86.6%).

We compared responses in all items ignoring "I do not know" response because of scarcity of this type of response. Interestingly, all items showed significant differences ( $P < 0.05$ ). Furthermore, more than 85% of students show their disapproval of any type of smoking at the home.

## DISCUSSION

In this study, magnitude of the smoking problem, knowledge, attitude, and practice among family members of primary school students in the northwest region of Iran were evaluated. In Iran, the prevalence of smoking was reported to be 27.2% and 3.4% among men and women, respectively [13]. Although according to students' statements water pipe and cigarette use among all family members is significantly low ( $P < 0.05$ ), it does not decrease the significance of situation.

In our study and according to statements of students, prevalence of cigarette smoking among fathers was more than other family members (27.1% versus 17.8%), whereas the prevalence of water pipe smoking among fathers and other family members was almost similar (9.2% and 9.7%, respectively). None of the smoking types were prevalent among mothers (cigarette: 1% and water pipe: 1.1%) (Table 2). There are two main possible explanations for paucity of use among mothers in our population: first, there are more social opportunities for fathers and other male family members compared to mothers as a part of female population to access water pipe and cigarette [14]. For example, in Iran, going to many water pipe-included cafés is banned for females and cigarette smoking is not an acceptable social behavior out of home. Secondly, in terms of prevention of any possible dangers in fetus

TABLE 1

RELATIVE FREQUENCY DISTRIBUTION OF THE NUMBER OF FAMILY MEMBERS		
NUMBER OF FAMILY MEMBERS	PERCENT	NUMBER
3	6.9%	274
4	49.8%	1 968
5	25.3%	999
6	9.3%	367
7	4.3%	169
8	2.3%	89
9	1.0%	41
10	0.7%	27
11	0.3%	12
12	0.2%	7
Total	100.0%	N=3 954

TABLE 2

RELATIVE FREQUENCY DISTRIBUTION OF STUDENTS' KNOWLEDGE ABOUT SMOKING FAMILY MEMBERS (N=3 954)				
FAMILY MEMBERS	RESPONSE (%)			P VALUE (FOR YES AND NO RESPONSE)
	YES	NO	DON'T KNOW	
<u>Cigarette smoking</u>				
Father	27.1	70.5	2.5	P<0.001
Mother	1	97.5	1.5	P<0.001
Other	17.8	78.7	3.6	P<0.001
<u>Water pipe smoking</u>				
Father	9.2	87.2	3.5	P<0.001
Mother	1.1	96.7	2.1	P<0.001
Other	9.7	85.7	4.6	P<0.001

health, most mothers are forbidden to smoke.

According to our data, prevalence of water pipe use is more common among other family members compared to fathers and mothers. It is due to the fact that water pipe is usually a social hobby in Iran, served in gatherings and consequently, it is more common among younger ages [15]. The majority of family members, apart from fathers and mothers, were young generation interested in this type of accessible hobby, possibly in the absence of other beneficial recreations.

Furthermore, there are some worrisome data about secondhand use of cigarette and water pipe. According to our results, despite the fact that the use of cigarette and water pipe among all family members is significantly low (P<0.05), considerable numbers of all students under study

had still been exposed to secondhand smoke at home (cigarette: 19.8% and water pipe: 7.7%). A lot of studies [16-22] reported high exposure to secondhand smoke among students. 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 [23]. In addition, exposure to secondhand smoke from water pipe smoke poses a serious health risk to non-smokers [4]. These data indicate serious hazards for young generation owing to smoke at home.

According to Table 3, fortunately the majority of students were aware of hazards of cigarette and water pipe smoking (90.5% and 86.5%, respectively) (P<0.05). Most of the students were unhappy about smoking at home

TABLE 3

## RELATIVE FREQUENCY DISTRIBUTION OF RESPONSE AMONG STUDENTS ABOUT THE HEALTH RISKS OF SMOKING, TYPE OF PARENTAL SMOKING AT HOME AND DISAPPROVAL OF SMOKING INSIDE THE HOME

QUESTIONS	RESPONSE (%)			P VALUE (FOR YES AND NO RESPONSE)
	YES	NO	DON'T KNOW	
<u>Smoking at home</u>				
Cigarette	19.8	80.1	---	P<0.001
Water pipe	7.7	92.2	---	P<0.001
<u>Health risks of smoking</u>				
Cigarette	90.5	7.5	2	P<0.001
Water pipe	86.5	8	5.5	P<0.001
<u>Disapproval of smoking at home</u>				
Cigarette	93.6	6.4	---	P<0.001
Water pipe	86.4	13.5	---	P<0.001

especially of water pipe. Although many water pipe smokers believe that water pipes have lower smoke toxicant levels and fewer health risks [3] compared to cigarettes, studies indicate smoke constituents of water pipe contains large amounts of known carcinogens such as hydrocarbons and heavy metals [10-24]. For example, a single machine-smoked hookah session produces approximately 50 times the quantities of carcinogenic 4- and 5-membered ring PAHs compared to a single cigarette smoked using the Federal Trade Commission (FTC) protocol [10]. It seems that long-period use of water pipe compared with cigarette is the main cause of higher disapproval among

students.

## CONCLUSIONS

Owing to known harmful effects of tobacco to students' health and regarding our findings, we suggest two main procedures to attenuate the problem: first, to provide greater education about hazards of tobacco consumption among students and their family. Second, to legislate new laws to ban tobacco use at home before other family members by officials and to limit the use to the outdoor and far from family members, especially children.

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