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ABSTRACT This study is designed to evaluate the prevalence of waterpipe tobacco smoking and its related factors among Iranian adults. This is a cross-sectional study carried out during 2013/14 in Tehran, Islamic Republic of Iran, among 1830 citizens aged over 15 years. Sampling was through Stratified multistage cluster sampling with proportional allocation within strata. Global Adult Tobacco Survey (GATS) questionnaire for waterpipe consumption was used for data gathering. Data were statistically analyzed by SPSS software. The prevalence of current waterpipe tobacco smoking was 17.6% .Waterpipe use prevalence in men was significantly more than women (24.2% vs. 11.3%). Multivariate analysis showed that age, sex, cigarette consumption, waterpipe consumption at home and ignorance of safety issues significantly influenced current waterpipe smoking (P = 0.001). Thus, prevalence of waterpipe smoking in Iranian adults is high and significant. Tackling waterpipe smoking should be considered in

tobacco control programmes. However, further studies in this field are needed.

Évaluation de la prévalence de la consommation de tabac par pipe à eau et de ses facteurs associés à Téhéran, République islamique d'Iran

RÉSUMÉ La présente étude est conçue pour estimer la prévalence de la consommation de tabac par pipe à eau et de ses facteurs associés dans la population adulte iranienne. Il s'agit d'une étude transversale, conduite entre 2013 et 2014 à Téhéran, en République islamique d'Iran, parmi 1830 citoyens âgés de plus de 15 ans. La technique utilisée était celle de l'échantillonnage en grappe stratifié à plusieurs niveaux avec allocation proportionnelle dans les strates. Le questionnaire de l'enquête mondiale sur le tabagisme chez les adultes pour la consommation de tabac par pipe à eau a été utilisé afin de collecter les données. Celles-ci ont été analysées sur le plan statistique à l'aide du logiciel SPSS. La prévalence de la consommation de tabac par pipe à eau au moment de l'étude était de 17,6 %, et était plus importante chez les hommes que chez les femmes (24,2 % contre 11,3 %). L'analyse multivariée a montré que l'âge, le sexe, la consommation de cigarettes, la consommation de pipe à eau à la maison et l'ignorance des questions de sécurité influençaient de façon significative la consommation de tabac par pipe à eau (p = 0,001). Par conséquent, la prévalence de la consommation de tabac par pipe à eau est élevée et significative parmi les adultes iraniens. La question de la consommation de tabac par pipe à eau devrait être traitée dans le cadre des programmes de lutte antitabac. Néanmoins, d'autres études dans ce domaine sont requises.

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Introduction

The waterpipe is an old method of tobacco smoking, its origin tracing back 4 centuries in the Middle East, but its use extends around the world (1). Waterpipe smoke contains many toxicants and carcinogens. There is evidence of waterpipe smoking-related conditions such as lung and cardiovascular diseases, complications of pregnancy, cancers, oral dysplasia and infertility (2–4). Despite the harmful effects, the prevalence of waterpipe smoking is increasing around the world, especially among the young (5). The main reason for this increase is that users perceive the waterpipe as a safer and less addictive alternative to other tobacco products (6,7).

Waterpipe smoking is now considered by the WHO as a general health problem (8). Waterpipe smoking prevalence should therefore be considered as a factor in tobacco control programmes (9–11).

There have been fewer studies on waterpipe smoking than on cigarette consumption. The Islamic Republic of Iran is a country in which waterpipe smoking has a historical origin. In recent years, the waterpipe use pattern has changed in the Iranian population. It seems that, compared with the past, waterpipe smoking is currently more commonly seen among the young and among women. According to a study from 2010, traditional restaurants were the first places where students experience tobacco, and the waterpipe was the first type of tobacco they used (12). The prevalence of tobacco smoking is 15% (13), although there are currently no comprehensive and representative studies on the prevalence of waterpipe smoking. The majority of studies on tobacco use study cigarette consumption rather than waterpipe smoking, and previous studies on waterpipe smoking have mainly been done on special groups. In order to better understand waterpipe consumption trends, find better ways to fight against it and design prevention and control programmes, we carried out this study to evaluate the prevalence of waterpipe smoking and its related factors in a broad population of Iranian adults.

Methods

This cross-sectional study was conducted in November and December 2014 on participants aged 15 years and over in Tehran.

Sample size was calculated using the following formula, assuming a 95% confidence interval ($Z1-\alpha/2 = 1.96$), precision of 0.03 ($d = 0.03$), $P = 0.5$.

Thus: $N = 0.5 \times 0.5 \times (1.962)/0.032 = 1067$

Considering a design effect of 1.5 and a missing rate of 15%, the total sample size was calculated as 1840.

Stratified cluster random sampling with proportional allocation within strata was used in this study. Tehran has 22 municipality districts in which there are several zones. A municipality

district was selected randomly from each geographical area of Tehran (north, south, east, west and centre). The following districts were selected: District No. 1 in the north, District No. 20 in the south, District No. 14 in the east, District No. 21 in the west and District No. 12 in the centre. After this, 2 zones were chosen randomly from each district. Each zone included 1 health centre with several health care workers. We chose 2 health care workers from each zone based on their experience in research programmes and volunteering. After informing them about the aims of the project, they were trained for data gathering.

Data collection was conducted by the healthcare workers under the supervision of the Tobacco Prevention and Control Research Centre. Five data collection teams were involved in this study, each consisting of a supervisor and 2 interviewers. A house in each zone was selected randomly, and in a clockwise direction all the surrounding homes were selected for sampling. After explaining the objectives of the project and obtaining consent, participants aged ≥ 15 years were interviewed.

Data gathering was carried out using the standard Global Adult Tobacco Survey (GATS) questionnaire (14). This has several sections and is designed to evaluate the tobacco smoking habits of adults based on each country's characteristics. One section is dedicated to waterpipe smoking habits. We used the questions of this section in addition to some optional questions about waterpipe smoking. After inserting some adaptations for the Islamic Republic of Iran, as follows: first, the questionnaire was translated to Farsi by a native speaker, fluent in English and familiar with health issues (forward translation). Second, the content was assessed by an expert team and after that an English language native translated it into English (back translation). Then the 2 English versions were compared. Finally, 4 waterpipe smokers were asked to give their comments on the questionnaire to ensure clarity, and the final version was used in the study.

Our study variables consist of current waterpipe smoking as the dependent variable, and sex, age, education level, marital status, cigarette smoking habits, knowledge about the harmful effects of waterpipe smoking and bans on waterpipe smoking in the home as independent variables.

Current waterpipe smokers are those who use the waterpipe daily or, if less frequently, have smoked waterpipe during the past 30 days. Another group, the lifelong waterpipe smokers, comprises those who have experienced waterpipe smoking, even as little as 1 puff, during their life. Non-waterpipe smokers are those who have never smoked a waterpipe in their life. All 3 groups could be cigarette smokers or not.

All data were analysed using SPSS, version 18. Qualitative variables were reported as percentages and quantitative variables as mean and standard deviation. Current and lifetime waterpipe smoking prevalence was calculated. For evaluating the association between selected variables and current waterpipe smoking, logistic regression was used. Unadjusted and adjusted odds ratios were calculated. In all analyses, $P \leq 0.05$ was considered statistically significant.

Results

A total of 1830 participants aged ≥ 15 years took part in this study, of whom 883 (48.3%) were male. The mean age was 33.7 (standard deviation 1.37) years. The number of current waterpipe smokers was 316 [17.6%; 95% confidence interval (CI): 15.8–19.2] and 409 (22.6%; 95% CI: 20.6–24.5) were in the lifelong waterpipe smoker category. Sex was a significant factor: 212 of the male participants (24.0%; 95% CI: 21.3–27.0) were current waterpipe users compared with 104 females (11.35%; 95% CI: 9.2–13.3) (P