Demographic Factors Affecting Cigarette and Waterpipe Smoking in Hormozgan, Iran

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Abstract

Background: Tobacco consumption is one of the major public health concerns worldwide which can have adverse effects on human health. An awareness of the status of tobacco consumption and identification of its affecting factors constitute the first step in tobacco control programs. The aim of this study was to investigate the prevalence of cigarette and waterpipe consumption among residents in Bandar Abbas in Hormozgan province.

Materials and Methods: In general, 853 residents of Bandar Abbas were chosen through the cluster sampling method and by referring to their houses and interviewing them. Data were analyzed by the chi-square test, along with the odds ratio (OR) with a confidence interval (CI) of 95%.

Results: The prevalence of cigarette and waterpipe consumption in men and women was 14.8% and 0.9%, as well as 5.6% and 5.4%, respectively. Male gender (OR = 18.26; 95% CI: 6.58-50.65), marital status of those married once (OR = 2.91; 95% CI: 1.24-6.85), academic education (OR = 0.48; 95% CI: 0.25-0.93), father's diploma and above (OR = 0.35; 95% CI: 0.15-0.83), mother's diploma and above (OR = 0.36; 95% CI: 0.13-0.99) were associated with cigarette smoking. The other related factors were employee (OR = 1.99; 95% CI: 1.20-3.30), self-employed (OR = 3.13; 95% CI: 1.87-5.24), and age (OR = 12.57; 95% CI: 2.86-53.24 for age ≥ 50 years). No significant relationship was found between demographic factors and tobacco smoking.

Conclusion: Cigarette and waterpipe smoking is a multidimensional health problem and has a close relationship with different demographic and social factors. Planning for enhancing health and mitigating the damages resulting from tobacco consumption is essential for promoting healthcare.

Keywords: Cigarette, Waterpipe, Tobacco, Hormozgan, Demographic characteristics

Introduction

Tobacco consumption as smoking cigarettes or waterpipes is a major public health concern (1-3). Globally, one in every five 13-15-year-old teenagers per day, and about one-third of adults smoke cigarettes (1, 3). According to the latest report of the World Health Organization, tobacco consumption annually claims the lives of more than 8 million people (4,3); more than 7 million of these mortalities are related to direct consumption of tobacco, and about 1.2 million of them occur among non-cigarette smokers, who are exposed to secondhand smoke of cigarette (3, 5). Tobacco consumption is the main cause of 90% of lung cancers, 40% of other cancers, 50% of cardiovascular diseases, 75% of respiratory diseases, 12% of annual mortalities rate, and 30% of mortalities that occur within the age range of 30-50 years (6). In addition to cigarettes, tobacco is used in other different ways such as waterpipes. Iran, India, and Turkey are the top users of waterpipes (6, 7). Furthermore, global statistics show that today waterpipe smoking has changed into a common social phenomenon among the youth (6). According to the results of a national plan of health and disease in Iran, the tendency to smoke waterpipes has been ascending among the age group of 15-24 years over recent years (6). Compared to cigarettes, waterpipe has more dramatic effects on health. Studies have demonstrated that waterpipe consumption generates 100 times more fume than a cigarette, and this fume contains large amounts of carcinogenic materials such as hydrocarbons and heavy metals. Waterpipe consumption is associated with important conditions, including cardiovascular diseases, infectious diseases, oral cancer, lung cancer, diminished respiratory function, systolic and diastolic hypertension, palpitations, and diminished fertility (6, 8-10).
The risks associated with waterpipe consumption are more serious in women than in men (7, 10, 11). Waterpipe consumption in women is related to the risk of premature menopause, diminished bone density, infertility, ectopic pregnancy, increased risk of mortality and perinatal complications, restrictions of intrauterine growth, and increased chromosomal deviations (12).

In Iran, the prevalence of waterpipe consumption has had an ascending trend when compared with other geographical regions in previous years; this lifelong prevalence of tobacco consumption among men and women is 20%-24% and 2%-4% respectively. In some other studies, the prevalence of the consumption of waterpipe has been reported as 1.7-10.9% and 0.16%-8% among men and women, and statistics among women have been reported as 16.8%, 14.8%, and 10.3% in Sistan province, Bushehr, and Hormozgan province, respectively (5).

Hormozgan province is the southernmost province of Iran located near the Persian Gulf and ranks third in terms of waterpipe consumption (12). So far, the literature has mentioned various reasons for the tendency to consume cigarettes and other tobacco derivatives. The most important ones include a history of alcohol consumption in the family, stressful events of life, high-risk behaviors and peer norms, low self-esteem, high negative emotions, impaired familial function, and poor bonds between parents and children, poor problem-solving skills and low self-efficacy, symptoms of neuroticism, low psychology, depression, anxiety, and poor self-control. Furthermore, various other factors such as different attitudes and beliefs about the fewer harms of waterpipe compared to cigarettes, easy access to it, low preparation cost compared to other types of tobacco products, misconceptions about it being risk-free, social approval, and availability of different tastes contribute to the growing prevalence of consumption (6, 7). Age, gender, tobacco consumption, presence of a waterpipe smoker in the family, and level of education are other factors affecting waterpipe consumption.

Considering different studies, teenagers and the youth have a greater tendency to consume waterpipes due to its pleasant aroma with different tastes in the market and lower social stigma compared to cigarettes (8).

In spite of many continuous attempts for reducing cigarette consumption, an ascending trend has been observed in the use of tobacco products such as waterpipes. Waterpipe consumers believe that its addictive effect is less than that of cigarettes, and it is less harmful to the health, and as such preventive attempts have mostly focused on cigarette smoking. Although the youth are aware of the negative consequences of cigarettes, many individuals (more than 8%) younger than 18 years begin to smoke cigarettes; in other words, having a positive image of a cigarette smoker can facilitate cigarette smoking among teenagers (13).

Therefore, this study sought to determine the effect of demographic factors (age, gender, marital status, level of education, and occupation) on the extent of cigarette and waterpipe consumption among men and women in Hormozgan province. Moreover, the effect of lifestyle-associated behaviors such as stressful events of life and level of perceived anxiety and stress on cigarette and waterpipe consumption was examined, along with the difference of the predictors of tobacco consumption versus cigarette consumption.

Materials and Methods
Statistical Population
The participants in this study consisted of individuals > 15 years living in Bandar Abbas in 2017. The sampling framework of this research was multistage cluster sampling. In the first stage, the clusters were considered from different urban regions. Next, one point was randomly chosen inside each cluster, and houses with the same distance around that point were investigated, and two people (preferably one man and one woman) were selected from each household to be included in the sample.

Data Analysis Method
Frequency and percentage, as well as mean and standard deviation, were used for data description for qualitative and quantitative variables, respectively. Subsequently, the chi-square test was used to explore the relationship between demographic variables and cigarette plus waterpipe consumption.

In this study, the relationship between independent and dependent variables was tested using the chi-square test by presenting the odds ratio (OR) with a 95% confidence interval (CI). Cigarette and waterpipe consumption was considered as the response variable. The independent variables of these models included gender, age, marital status, level of education, the father's level of education, the mother's level of education, and occupation.

Results
The sample examined in this study included 853 individuals above 15 years of age living in Bandar Abbas city. The demographic characteristics of the participants in this study are presented in Table 1.

Out of all participants in this study, 47 (5.5%) and 67 (7.9%) cases smoked waterpipes and cigarettes, respectively. The prevalence of waterpipe consumption, cigarette consumption, and the pattern of concurrent waterpipe and cigarette smoking is shown in Figure 1.

To examine the relationship between demographic variables and cigarette consumption, the Chi-square test was used, along with the presentation of the OR with a CI of 95% (Table 2).

The chance of cigarette smoking increased with aging: the 21-35-year-old individuals had 77% higher odds, the 36-50-year-old had about 7 times, and those > 50 years had about 12 times more odds of cigarette smoking.
compared to 20-year-old and younger individuals ($P<0.001$). Men smoked cigarettes by about 18 times greater than women ($P<0.001$). Those with a diploma and individuals with academic degrees smoked 53% and 52% fewer cigarettes compared to those with education below diploma ($P=0.014$). A father’s diploma and above reduced the odds of cigarette smoking by 65% ($P=0.006$). The results also showed that a mother’s diploma and above could lower the odds of cigarette smoking by 64% ($P=0.04$). Employees would smoke cigarettes twice more than other jobs ($P=0.008$). Those with freelancing jobs smoked by about 3.13 times compared to other jobs ($P<0.001$). Housewives smoked cigarettes 91% less compared to other jobs ($P<0.001$). Finally, those who had gotten married once smoked 2.91 times more cigarettes compared to single individuals ($P=0.011$).

To evaluate the relationship between demographic variables and waterpipe consumption, a Chi-square test was applied, along with the presentation of OR with a 95% CI (Table 3). Based on the results, no significant relationship was found between demographic factors and waterpipe consumption in the tested sample. The results revealed that the odds of waterpipe smoking diminished with aging, though this difference was not statistically significant. Further, housewives consumed waterpipe 33% more than other jobs, which was not significant either. Single individuals had 62% more odds of waterpipe consumption compared to those that have gotten married once, though again this difference was not significant.

**Discussion**

Based on the results, out of 853 participants living in Bandar Abbas in Hormozgan province, 5.5% smoked cigarettes and 7.9% smoked waterpipes. These findings indicate that the extent of cigarette consumption among the residents of Bandar Abbas is considerably lower than the rate of cigarette consumption in other cities (14). For example, the prevalence of cigarette consumption in Zahedan, Urmia, and across intercountry is 22%, 5.12% (16), and 25%, respectively (17). Furthermore, the prevalence of cigarette smoking in Hormozgan province has been lower than its prevalence in the USA (24%), central Europe (29%), and southern Asia (12%) (17).

The research results also demonstrated that the prevalence of cigarette smoking has been 18 times higher in men than in women. The reason for the hired cigarette smoking in men compared to women (14.8% vs. 0.9%) can be more responsibilities of men in society and the resulting daily stresses (1). In addition, women have more restrictions on cigarette consumption since cigarette smoking is considered a social plight, and women consider it a shameful and unsuitable behavior, while it is considered a normal and neutral behavior for men (18), Which is in line with the findings of Varmaghani et al (19), Masjedi et al (20), Abdolrahim and Jawad (21), and Assari et al in the United States (22). Considering waterpipe consumption, no significant difference was found between the two genders (men: 5.6% and women 5.4%). This can be due to recent social transformations in Iran and the world. Indeed, waterpipe consumption is now common even in public places and restaurants and is considered collective entertainment. Thus, even married women alongside their spouses smoke waterpipes (23).

Based on the findings, those who had gotten married once would consume cigarettes three times more than single individuals. Men are the major consumers of cigarettes and 7.9% smoked waterpipes. These findings indicate that the extent of cigarette consumption among the residents of Bandar Abbas is considerably lower than the rate of cigarette consumption in other cities (14). For example, the prevalence of cigarette consumption in Zahedan, Urmia, and across intercountry is 22%, 5.12% (16), and 25%, respectively (17). Furthermore, the prevalence of cigarette smoking in Hormozgan province has been lower than its prevalence in the USA (24%), central Europe (29%), and southern Asia (12%) (17).

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cigarettes; this can be due to the psychological pressures and stresses of life alongside the family which are on the shoulder of men in the culture of Iran, which corroborates with the findings of Masjedi et al across Iran (20) and Abdulrahim & Jawad across Western Asia Arabian countries (21).

Based on the results of this study, generally, the prevalence of cigarette consumption grows with increasing age, which is in line with the results of other studies in Iran and worldwide (20,22).

### Table 2. Association Between Demographic Factors and Cigarette Smoking in Participants

| Variable     | Category   | Total | No. of Cigarette Smoker (%) | No. of Non-smoker (%) | OR (95% CI)      | P Value |
|--------------|------------|-------|----------------------------|-----------------------|------------------|---------|
| Age (y)      | ≤20        | 99    | 2 (2.0)                     | 97 (98)               | 1                |         |
|              | 21-35      | 427   | 15 (3.5)                    | 412 (96.5)            | 1.77 (0.40-7.85) | <0.001  |
|              | 36-50      | 225   | 29 (12.9)                   | 196 (87.1)            | 7.18 (1.68-30.69)|         |
|              | ≥ 50       | 102   | 21 (20.6)                   | 81 (79.4)             | 12.57 (2.86-55.24)|         |
| Gender       | Female     | 426   | 4 (0.9)                     | 422 (99.1)            | 1                | <0.001  |
|              | Male       | 427   | 63 (14.8)                   | 364 (85.2)            | 18.26 (6.58-50.65)|         |
| Education    | Under diploma | 341 | 38 (11.1)                  | 303 (88.9)            | 1                |         |
|              | Diploma    | 285   | 16 (5.6)                    | 269 (94.4)            | 0.47 (0.26-0.87) | 0.014   |
|              | Graduated  | 227   | 13 (5.7)                    | 214 (94.3)            | 0.48 (0.25-0.93) |         |
| Father's education | Under diploma | 675 | 61 (9.0)                  | 614 (91.0)            | 1                | 0.006   |
|              | Diploma and graduated | 178 | 6 (3.4)                    | 172 (96.6)            | 0.35 (0.15-0.83) |         |
| Mother's education | Under diploma | 730 | 63 (8.6)                  | 667 (91.4)            | 1                | 0.040   |
|              | Diploma and graduated | 123 | 4 (3.3)                    | 119 (96.7)            | 0.36 (0.13-0.99) |         |
| Job          | Unemployed | 148   | 6 (4.1)                     | 142 (95.9)            | 1                | 0.464   |
|              | Employee   | 247   | 29 (11.7)                   | 218 (88.3)            | 1.99 (1.20-3.10) | 0.008   |
|              | Self-employed | 183 | 29 (15.8)                 | 154 (84.2)            | 3.13 (1.87-5.24) | <0.001  |
|              | Housewives | 275   | 3 (1.1)                     | 272 (98.9)            | 0.09 (0.03-0.28) | <0.001  |
| Marital status | Single    | 181   | 6 (3.3)                     | 175 (96.7)            | 1                | 0.011   |
|              | Ever married | 672 | 61 (9.1)                   | 611 (90.9)            | 2.91 (1.24-6.85) |         |

Note: No.: Number; OR: Odds ratio; CI: Confidence interval.

### Table 3. Association Between Demographic Factors and Waterpipe Smoking in Participants

| Variable     | Category   | Total | No. of Waterpipe Smoker (%) | No. of Non-smoker (%) | OR (95% CI)      | P Value |
|--------------|------------|-------|----------------------------|-----------------------|------------------|---------|
| Age (y)      | ≤20        | 99    | 6 (6.1)                     | 93 (93.9)             | 1                |         |
|              | 21-35      | 427   | 22 (5.2)                    | 405 (94.8)            | 0.84 (0.33-2.14) | 0.464   |
|              | 36-50      | 225   | 16 (7.1)                    | 209 (92.9)            | 1.19 (0.45-3.13) |         |
|              | ≥ 50       | 102   | 3 (2.9)                     | 99 (97.1)             | 0.47 (0.11-1.91) |         |
| Gender       | Female     | 426   | 24 (5.4)                    | 402 (94.6)            | 1                | 0.874   |
|              | Male       | 427   | 23 (5.6)                    | 404 (94.4)            | 0.95 (0.53-1.72) |         |
| Education    | Under diploma | 341 | 25 (7.3)                   | 316 (92.7)            | 1                |         |
|              | Diploma    | 285   | 13 (4.6)                    | 272 (95.4)            | 0.60 (0.30-1.20) | 0.157   |
|              | Graduated  | 227   | 9 (4.0)                     | 218 (96.0)            | 0.52 (0.24-1.14) |         |
| Father's education | Under diploma | 675 | 37 (5.5)                  | 638 (94.5)            | 1                | 0.950   |
|              | Diploma and graduated | 178 | 10 (5.6)                    | 168 (94.4)            | 1.03 (0.50-2.11)|         |
| Mother's education | Under diploma | 730 | 40 (5.5)                  | 690 (94.5)            | 1                | 0.924   |
|              | Diploma and graduated | 123 | 7 (5.7)                     | 116 (94.3)            | 1.04 (0.46-2.38) |         |
| Job          | Unemployed | 148   | 8 (5.4)                     | 140 (94.6)            | 0.98 (0.45-2.13) | 0.951   |
|              | Self-employed | 247 | 13 (5.3)                   | 234 (94.7)            | 0.94 (0.49-1.80) | 0.840   |
|              | Business   | 183   | 8 (4.4)                     | 175 (95.6)            | 0.74 (0.34-1.62) | 0.448   |
|              | Housewives | 275   | 18 (6.5)                    | 257 (93.5)            | 1.31 (0.72-2.43) | 0.362   |
| Marital status | Ever married | 672 | 33 (4.9)                   | 639 (95.1)            | 1                | 0.143   |
|              | Single     | 181   | 14 (7.7)                    | 167 (92.3)            | 1.62 (0.85-3.10) |         |

Note: No.: Number; OR: Odds ratio; CI: Confidence interval.
The lower prevalence of cigarette smoking at younger ages can be due to the prohibitive role of parents in cigarette smoking among teenagers (1). The results suggested that diplomas and higher levels of education of parents would contribute to the reduction of cigarette consumption in individuals by about 65%, emphasizing the essential role of parents in controlling cigarette consumption. The findings of the present study conform to those of Assari et al in the United States in this regard (22). However, waterpipe has been approved as a familial entertainment in society, thus this research observed that the education of parents had no significant effect on reducing or increasing waterpipe consumption. Different studies in both developed and developing countries reported that the prevalence of cigarette and waterpipe smoking has changed into a social phenomenon among the youth, and its age of onset is decreasing (6, 24). This has especially changed into a complex issue. Recent studies suggest the rapid increase in the prevalence of waterpipe consumption, especially among teenagers and youth worldwide, and currently, the eastern Mediterranean regions (including the Middle East countries and North Africa) are considered the top users of waterpipe consumption worldwide with the highest prevalence (25).

According to the results of the current study, those with diplomas and higher levels of education, due to awareness of the harms of cigarette consumption showed lower cigarette and waterpipe smoking compared to individuals with lower levels of education. It is in line with the findings of Abdulrahim and Jawad in Arabian countries, including Syria, Lebanon, Jordan, and Palestinian (21), as well as those of Garret et al (26) and Assari et al in the United States (22).

Furthermore, cigarette consumption was higher by about 15.8% and 11.7% in those with freelancing jobs and employees due to occupational pressures, as well as more stress and anxiety, when compared with unemployed women and housewives. Jung et al in South Korea also observed similar results when analyzing the relationship between job and cigarette consumption (27). In this research, housewives, in comparison to other occupations, also consumed 33% more waterpipe. Although this value is not statistically significant, it is an alarm for the health of society in future generations. This is because these women spend most of their time at home and alongside their children, and their waterpipe smoking behavior can be internalized in their children and subsequent generations inappropriately.

Conclusion
The results of this study showed that cigarette and waterpipe consumption is a multidimensional health problem and has a close association with various demographic and social factors. This indicates the necessity of planning for enhancing health and mitigating the damages resulting from tobacco consumption in healthcare. Nevertheless, the extent of cigarette and waterpipe consumption has been lower in this study not only in comparison with previous years in the same province but also compared to its rate in most Iranian and foreign studies.

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Authors’ Contribution
Study design: AG, HG, HT, Methodology: AG, HG, BK, HA, Formal Analysis: AG, HG, Resources: BK, HA, AP, Data Curation: AG, HG, Writing—Original Draft Preparation: AG, HG, HT, Writing—Review and Editing: All authors discussed the results and commented on the final manuscript, Visualization: AG, HG, Supervision: AG, HG, Project Administration: AG, HG, HT.

Conflict of Interest Disclosures
The authors declare no competing interests.

Informed consent
Individuals had filled Informed Consent form and declared their consent to participate in the study.

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