Prevalence of tobacco smoking among dental practitioners: A hospital-based study

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Abstract

Background: Consumption of tobacco is a prevalent public health problem in Saudi Arabia and worldwide. It remains one of the world's leading causes of preventable premature death and a public health concern. We aim to estimation the prevalence of tobacco smoking among dental practitioners working at the Security Forces Hospital in Riyadh, Saudi Arabia. Methods: A cross-sectional study was conducted in one of the largest government hospitals in Riyadh using a self-administered questionnaire. The study targeted dental practitioners including; oral and maxillofacial surgeons, orthodontists, periodontists, prosthodontists, endodontists, pediatric dentists, restorative dentists, general dentists, dental hygienists, dental assistants, and dental lab technicians. The study data were analyzed using the SPSS statistical software package. Results: Overall, 74 dental practitioners completed the study questionnaire; 54.1% were females. The age of study participants ranged between 24 to 56 years, while their mean age was 33.84 years. The prevalence of current smokers among the respondents was 25.67%. Of the participants, 9.45% were ex-smokers. Stress relief was the main reason for smoking (52.6%), followed by relaxation (31.6%). Most respondents agreed that dental practitioners should serve as role models (73%), and that health care practitioners should give advice or information about smoking cessation to patients (79.7%). Most participants had insufficient training about tobacco hazards (56.8%). Conclusion: The prevalence of tobacco smoking among dental practitioners included in this study was closer to that in previous studies. Furthermore, study participants lacked sufficient training about tobacco hazards and control.

Keywords: Dental practitioners, prevalence, Saudi Arabia, smoking, tobacco

Introduction

The consumption of tobacco is a prevalent public health problem in Saudi Arabia and worldwide. It remains one of the leading causes of preventable premature death. It is a public health issue, and the concern of it seen increasingly in the geopolitical, economic, social, and health contexts; these factors have played critical roles in the development and introduction of the current policy interventions for tobacco control worldwide. Furthermore, tobacco use had a significant risk of health problem including cancer, cardiovascular diseases, respiratory diseases and oral diseases.

In 2002, the Saudi Government introduced what was known as the National Tobacco Control Program. Later in 2005, efforts in the National Tobacco Control Program were intensified after Saudi Arabia joined the WHO’s Framework Convention for Tobacco Control (FCTC). The program focused on primary prevention and supported tobacco cessation. Also, the Kingdom of Saudi Arabia (KSA) has undertaken considerable efforts.
efforts to reduce the habit of smoking among individuals of all ages, at the state, community and individual levels. The dental practitioners have the unique opportunity and professional responsibility to play an essential role in tobacco cessation and in reducing the economic and social burden inflicted by tobacco use on dental and general health.

Consequently, healthcare workers should play a key role in reducing smoking rates, setting an example through their smoking habits, as well as through the development of overall public health policy. It is an ethical liability of healthcare practitioners to try to decrease stigmatizing messages of public health campaigns with empathic patient-clinician communication during clinical appointments. Amongst healthcare professionals, dental practitioners play a significant role in recognizing smokers. They have a considerable responsibility to fight tobacco use and to promote healthy oral conditions, as they may notice intraoral signs, such as odor, tooth stains, and oral hygiene problems, earlier than other health care professionals; hence, dental professionals are in a better position to present preventive care.

The harm from smoking can extend to healthcare practitioners. Many studies show the prevalence of smoking among healthcare practitioners, which also set a poor example for their patients. It is also apparent that healthcare professionals will help convince patients to avoid smoking if they are not smokers themselves. There are many studies done to estimate the tobacco prevalence and reason for using it, and a few studies related to Saudi Arabia. Our research focuses on Saudi Arabia by focusing on a particular group that can make a difference and plays an essential role in controlling tobacco prevalence.

Materials and Methods

This descriptive, cross-sectional survey was conducted using a validated self-administered questionnaire which was written in English among dental practitioners including oral and maxillofacial surgeons, orthodontists, periodontists, prosthodontists, endodontists, pediatric dentists, restorative dentists, general dentist’s dental hygienist, dental assistant, and dental lab technicians working at the Security Forces Hospital in Riyadh, Saudi Arabia. All dental practitioners working full or part-time at the Security Forces Hospital, in Riyadh and accepted to participate in the study were included, while those who refused to participate were excluded.

The questionnaire consisted of three parts. The first part included the demographic characteristics of the study participants. The second part included questions about current tobacco smoking. The third part included questions about tobacco control. Current smokers were asked about the forms of tobacco they use (cigarettes, waterpipe, or both), the reason for smoking, for how long, and the quantity they smoke. Current smokers were also asked if they smoke inside the hospital. Ex-smokers were asked about the reasons for quitting and the ways used for quitting. While the participants were filling out the questionnaires, the research assistant was available to answer questions, collect data, and check the questionnaires for completeness. Data collection was conducted from December 2019 through January of 2020.

Statistical analysis

Demographic characteristics including age, gender, nationality, number of years of education, and job title, were summarized using descriptive statistics, as appropriate. The Chi-Square test was used for testing relationships between categorical variables. All statistical comparisons were made using a 0.05 level of significance, and P values were two-sided. Data management and analysis were performed using the Statistical Package for Social Sciences (IBM SPSS version 23) program.

Ethical consideration

Ethical approval was obtained from the Al-Faisaliy IRB (IRB-062-18), and a permission to conduct the study was obtained from the Ethics Committee at the Security Force Hospital based on Al-Faisaliy IRB approval. A verbal consent was taken from each participant before filling in the questionnaire.

Results

Only 74 dental practitioners completed and returned the questionnaires. The prevalence of smoking was 35.1% (smokers & ex-smokers). The mean age and standard deviation (SD) of the study population were 33.84 ± 7.47 years, ranged from 24 to 56 years. The youngest smoker was 25 years old [Table 1].

Table 2 presents socio-demographic characteristics of the study participants according to smoking status. Regarding gender, the prevalence of current smoking among male dental practitioners was more than five folds that in females (21.66% versus 4.1), while the proportion of females who were never have smoked was double the proportion of males (44.6% versus 20.3%, P < 0.001). The prevalence of current smoking was higher across age categories since about 16.2% of those aged ≤53 being current smokers. The proportion of never smoking was slightly higher among younger than that among older age group (p = 0.430). A lower percentage of married dental practitioners (10.8%) were current smokers in comparison to (15%) of non-married practitioners, while a higher percentage of the married practitioners never smoked compared to non-married ones. However, these differences were not statistically significant.
Regarding academic degree, a higher non-significant prevalence of current smoking was reported among practitioners with a bachelor's degree (18.9%) in comparison to those reported in practitioners with a school diploma or postgraduate degrees, which were 4.1% and 2.7%, respectively. Current smoking was higher in those working full-time than in those working part-time jobs, but previous smoking was non-significantly higher among full-time workers than that in part-time workers (9.5% versus 0.0%). Concerning specialty, current smoking was more prevalent among general dentists than that among other specialties [Table 2].

The proportion of smoking was 25.7%. Furthermore, characteristics of smoking among dental practitioners, stratified by gender, are presented in Table 3. Duration of smoking was significantly associated with the male gender since no female current smokers have smoked for more than 5 years, while 75% of males among current males’ smokers have smoked for more than 5 years (p = 0.018). The frequency of smoking and smoking at work was generally more prevalent in males practitioners compared to females, but no significant differences were detected. No female practitioner has smoked E-cigarettes, shisha, or E-shisha in comparison to 18.8%, 43.8%, and 6.3% of males smokers, including current and previous smokers. These differences were not statistically significant with a P value >0.05.

Current smokers reported that stress relief (52.6%) and relaxation (31.6%) were the most common reasons for smoking at baseline. Furthermore, fewer respondents cited that daily addiction (26.3%) was reported to be reasons for smoking [Table 4].

Over 73.7% of smokers had previously tried to quit [Figure 1]. More than half of smokers mentioned that smoking is harmful to one’s health and cited this as the main reason to quit. In addition, self-help was used more among smokers who quit (47.6%) [Table 5].

Surprisingly, it was found that less than half of dental practitioners attended courses or lectures about the hazards of smoking [Table 6]. A significantly higher proportion of

| Characteristic | Current smokers n (%) | Previous smokers n (%) | Never smokers n (%) | Total n (%) | P |
|----------------|-----------------------|------------------------|--------------------|-------------|---|
| Gender         |                       |                        |                    |             |   |
| Male           | 16 (21.6%)            | 3 (4.1%)               | 15 (20.3%)         | 34 (46%)    | <0.001 |
| Female         | 3 (4.1%)              | 4 (5.4%)               | 33 (44.6%)         | 40 (54.1%)  |   |
| Age            |                       |                        |                    |             |   |
| ≤33            | 12 (16.2%)            | 6 (8.1%)               | 29 (39.2%)         | 47 (63.5%)  | 0.430 |
| >33            | 7 (9.5%)              | 1 (1.4%)               | 19 (26%)           | 27 (36.5%)  |   |
| Marital status |                       |                        |                    |             |   |
| Non-married**  | 11 (15%)              | 3 (4.1%)               | 20 (27%)           | 34 (45.9%)  | 0.479 |
| Married        | 8 (10.8%)             | 4 (5.4%)               | 28 (37.8%)         | 40 (54.1%)  |   |
| Nationality    |                       |                        |                    |             |   |
| Saudi          | 17 (23%)              | 7 (9.5%)               | 43 (58%)           | 67 (91%)    | 0.668 |
| Non-Saudi      | 2 (2.7%)              | 0 (0%)                 | 5 (7%)             | 7 (9.5%)    |   |
| The highest academic degree | | | | |   |
| High School diploma | 3 (4.1%) | 4 (5.4%) | 10 (13.5%) | 17 (23%) | 0.189 |
| Bachelor       | 14 (18.9%)            | 3 (4.05%)              | 23 (31.2%)         | 40 (54.1%)  |   |
| Postgraduate***| 2 (2.7%)              | 0 (0%)                 | 15 (20.3%)         | 17 (23%)    |   |
| Type of work   |                       |                        |                    |             |   |
| Full-time      | 16 (22%)              | 7 (9.5%)               | 41 (55.4%)         | 64 (86.5%)  | 0.778 |
| Part-time      | 2 (2.7%)              | 0 (0.0%)               | 6 (8.1%)           | 8 (10.8%)   |   |
| Other (intern) | 1 (1.4%)              | 0 (0%)                 | 1 (1.4%)           | 2 (2.7%)    |   |
| Specialty      |                       |                        |                    |             |   |
| Oral and maxillofacial surgeon | 0 (0%) | 0 (0%) | 3 (4.1%) | 3 (4.1%) | 0.109 |
| Orthodontist   | 2 (2.7%)              | 1 (1.4%)               | 2 (2.7%)           | 5 (7%)      |   |
| Periodontist   | 0 (0%)                | 0 (0%)                 | 1 (1.4%)           | 1 (1.4%)    |   |
| Prosthodontist | 1 (1.4%)              | 1 (1.4%)               | 1 (1.4%)           | 3 (4.1%)    |   |
| Endodontist    | 1 (1.4%)              | 0 (0%)                 | 4 (5.4%)           | 5 (7%)      |   |
| Pediatric Dentist | 0 (0%) | 0 (0%) | 7 (9.5%) | 7 (9.5%) |   |
| Restorative Dentist | 1 (1.4%) | 0 (0%) | 5 (7%) | 6 (8.1%) |   |
| General Dentist | 9 (12.2%)             | 1 (1.4%)               | 8 (10.8%)          | 18 (24.3%)  |   |
| Dental Hygienist | 1 (1.4%)             | 1 (1.4%)               | 1 (1.4%)           | 3 (4.1%)    |   |
| Dental Assistant | 1 (1.4%)              | 3 (4.1%)               | 13 (18%)           | 17 (23%)    |   |
| Dental Lab Technician | 3 (4.1%) | 0 (0%) | 3 (4.1%) | 6 (8.1%) |   |

**Non-married (Single, Divorced &Widowed). ***Postgraduate (Master, PHD & Board)
practitioners, who agreed about the statement “Health care practitioners should give advice or information about smoking cessation to patients,” were never smokers (58.1%) in comparison to 18% and 4.1% were current and previous smokers, respectively. Similarly, significantly higher proportions of practitioners, who agreed about statements “Dental practitioners should be involved in patient’s smoking cessation programs” and “Patient’s chances of quitting smoking increased if health care practitioners advise him or her to quit” were never smokers, in comparison to current and previous smokers. Moreover, those who agreed on the statement “By not smoking, health care practitioners can serve as role models for their patients and the people surrounding them.” Were more likely to be never smokers more than current and previous smokers. However, the difference was not statistically significant [Table 7]. On the other hand, 45 (60.8%) respondents were willing to advise their patients to quit smoking [Table 8].

Interestingly, 52.7% of the respondents said that smoking is not allowed at all in the workplace in the hospital, 9.5% of the respondents said that there is no policy to prohibit smoking, 21.6% said that smoking areas were available, 27% they did not know, and 4.1% preferred not to answer [Figure 2]. In addition, the mean age for respondents who reported that smoking is not allowed at all in the workplace was 33.6 years, and 69.2% were females.

## Discussion

This study estimated the prevalence of tobacco smoking among dental practitioners working at the Security Forces Hospital in Riyadh, Saudi Arabia. It also investigated the knowledge and attitudes of tobacco use and cessation among dental practitioners working at the same hospital. To our best knowledge, this is one of the few studies to report the prevalence of tobacco smoking among dental practitioners working in one of the largest government hospitals in Riyadh.

Our results showed that the overall prevalence of smoking among the respondents in our study was 35.1%, which are like previously reported results. Specifically, smoking rate among females was lower than that in males, where culture and tradition have a strong impact, and where women are historically stigmatized.

![Figure 1: Quitting behaviors](image)

### Table 3: Characteristics of smoking habit among the dental practitioners stratified by gender

| Variables                        | Gender      | Chi-square | P  |
|----------------------------------|-------------|------------|----|
| Smoking                          | Male        | Female     |    |
| Current smokers                  | 16 (47.1%)  | 3 (7.5%)   | 15.4 <0.001 |
| Previous smokers                 | 3 (8.8%)    | 4 (10%)    |    |
| Never smokers                    | 15 (44.1%)  | 33 (82.5%) |    |
| Duration of smoking              |             |            |    |
| <1 year                          | 1 (6.3%)    | 2 (66.7%)  | 8.3 0.018* |
| 1-5 years                        | 3 (18.8%)   | 1 (33.3%)  |    |
| >5 years                         | 12 (75.0%)  | 0 (0.0%)   |    |
| Frequency of smoking per day     |             |            |    |
| Once                             | 4 (25%)     | 2 (66.7%)  | 2.4 0.434 |
| 2-5 times                        | 5 (31.3%)   | 0 (0.0%)   |    |
| >5 times                         | 7 (43.8%)   | 1 (33.3%)  |    |
| Smoking at work                  |             |            |    |
| Yes                              | 8 (50%)     | 1 (33.3%)  | 0.28 0.596 |
| No                               | 8 (50%)     | 2 (66.7%)  |    |
| Type of smoking                  |             |            |    |
| Cigarette's smoking              | 7 (43.8%)   | 2 (66.7%)  | 0.28 0.596 |
| E-cigarettes smoking             | 3 (18.8%)   | 0 (0.0%)   | 0.67 0.414 |
| Shisha                           | 7 (43.8%)   | 0 (0.0%)   | 2.1 0.149 |
| E-shisha                         | 1 (6.3%)    | 0 (0.0%)   | 0.198 0.656 |
| Other types                      | 0 (0.0%)    | 1 (33.3%)  | 5.6 0.158 |

### Table 4: Reasons for smoking

| Reasons for smoking                      | Frequency | Percentage |
|------------------------------------------|-----------|------------|
| Stress relief                            | 10        | 52.6%      |
| Relaxation                               | 6         | 31.6%      |
| To better concentrate                    | 1         | 5.3%       |
| Habit (addiction)                        | 5         | 26.3%      |
| For leisure (enjoy smoking)              | 2         | 10.5%      |
| Re-energy                                | 1         | 5.3%       |
| Other reasons                            | 4         | 21.1%      |

### Table 5: Reasons for trying to quit smoking

| Reasons to quit smoking                      | Frequency | Percentages |
|----------------------------------------------|-----------|-------------|
| Knowledge of health hazards                  | 16        | 76.2%       |
| Advice from relatives, colleagues, or friends| 3         | 14.3%       |
| To discourage other smokers                 | 2         | 9.5%        |
| Warning by manufacturers or advertising      | 1         | 4.8%        |
| Other                                        | 2         | 9.5%        |
| Ways used for quitting                      |           |             |
| Traditional therapies                       | 3         | 14.3%       |
| Self-help material                          | 10        | 47.6%       |
| Counseling                                 | 2         | 9.5%        |
| Medication                                 | 4         | 19%         |
| Other                                       | 3         | 14.3%       |
| Difficulty to abstain from smoking at work  |           |             |
| Yes                                         | 10        | 38.5%       |
| No                                          | 16        | 61.5%       |
for using tobacco.[13,14] The prevalence of smoking was higher in men as compared to the women (P < 0.01), in line with the results of previous studies.[15,16]

In this study, the mean age for respondents who smoke was 32.12 years. Previous studies have indicated that the common smoking age is less than 40 years.[6,7,15] The main reason for smoking in our study was stress relief (52.6%). While the other reason was relaxation and habit (addiction) which was similar to the reasons of previous studies besides leisure time and friends.[11,12,16,17] Our study found that current smoking was highly prevalent among bachelor’s degrees 18.9%. Also, it was high among general dentists.

For instance, many studies addressed smoking in smokers for a long time, depending on the onset of Smoking.[9,12,13] Our study found that most of the respondents’ smoking period was more than five years and it was significantly associated with the male gender (p = 0.018).

The waterpipe was the most popular tobacco type, followed by a cigarette in the previous studies.[11,13,16] While in our study males and females’ smokers had a high preference for cigarettes (43.8% and 66.7%, respectively) followed by shisha which was used by males only.

In this study, 42.1% of tobacco smokers smoked more than five times a day and most of them were males (43.8%). While the previous studies showed that the daily smoker was higher in males than females,[18] and the majority of cigarettes smoker was a heavy smoker and smoked daily compared to pipe smokers was less regularly.[9,11,12,16]

Many smokers in previous studies expressed a desire to quit tobacco in the future.[16,17] The health factors followed by religion were important reasons to quit smoking in previous studies.[19] In a recent study, 74% tried to quit, and the main reason to do that was the knowledge of the health risk of smoking tobacco, and most of them did it by helping themselves.

In the WHO Eastern Mediterranean Region (EMR),[20] 70% and 83% of smokers, respectively, accepted that healthcare

| Table 6: Attendance of prior training/course regarding hazards of smoking or secondhand smoking |
|---------------------------------------------------------------|
| Attended training/course on hazards of smoking or secondhand smoking | Frequency | Percentage |
| Yes | 19 | 25.7% |
| No | 42 | 56.8% |
| I do not recall | 13 | 17.6% |

| Table 7: Smoking attitudes |
|-----------------------------|
| By not smoking, health care practitioners can serve as role models for their patients and the people surrounding them |
| Smoking attitudes | Current smokers n (%) | Previous smokers n (%) | Never smokers n (%) | Total n (%) | Chi-square | P |
| Agree | 13 (18%) | 4 (5.4%) | 37 (50%) | 54 (73%) | 3.37 | 0.498 |
| Unsure | 4 (5.4%) | 3 (4.1%) | 8 (10.1%) | 15 (20.3%) |
| Disagree | 2 (2.7%) | 0 (0%) | 3 (4.1%) | 5 (6.8%) |
| Health care practitioners should give advice or information about smoking cessation to patients |
| Agree | 13 (18%) | 3 (4.1%) | 43 (58.1%) | 59 (79.7%) | 11.6 | 0.024 |
| Unsure | 3 (4.1%) | 2 (2.7%) | 4 (5.4%) | 9 (12.2%) |
| Disagree | 3 (4.1%) | 2 (2.7%) | 1 (1.4%) | 6 (8.1%) |
| Patient’s chances of quitting smoking increased if health care practitioners advise him or her to quit? |
| Agree | 13 (18%) | 2 (2.7%) | 36 (48.6%) | 51 (68.9%) | 12.7 | 0.014 |
| Unsure | 3 (4.1%) | 4 (5.4%) | 12 (16.2%) | 19 (25.7%) |
| Disagree | 3 (4.1%) | 1 (1.4%) | 0 (0%) | 4 (5.4%) |
| Dental practitioners should be involved in patient’s smoking cessation programs? |
| Agree | 10 (13.5%) | 4 (5.4%) | 36 (48.5%) | 50 (76.6%) | 13.1 | 0.012 |
| Unsure | 3 (4.1%) | 1 (1.4%) | 11 (15%) | 15 (20.3%) |
| Disagree | 6 (8.1%) | 2 (2.7%) | 1 (1.4%) | 9 (12.2%) |
According to 21 In contrast, Natto and Almutham’s studies reported
Consequently, Saudi Arabia included
60.8%
[26]
[4,11,21]
[11,21,26]
[6,9,12,22]
[23]
[11,24,25]
Percentage
28.4%
. The economics of tobacco and tobacco
45
[2]
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8
Similarly, in
10.8%

There was a consensus among healthcare practitioners that
smoking is hazardous to health, consistent with previous
studies.[8] In contrast, Natto and Almutham’s studies reported
adequate information on e-cigarettes. Evidence shows that
cessation of tobacco not only decreases the incidence of a
variety of diseases, but also limits their development and improve
treatment outcome.[23] Consequently, Saudi Arabia included
improving the quality of life, healthcare services, and public
health services with a focus on obesity and smoking in the goals
of the 2030 vision.

Regarding tobacco cessation training, our findings indicate a lack
of proper training. Unfortunately, most of the participants in our
study denied attending any lectures or courses about the smoking
hazards (56.8%); this is also shown by previous studies.[11,24,25]
Furthermore, lack of knowledge of pharmacological therapies
and lack of access to smoking cessation resources were the
most significant barriers identified to the delivery of smoking
cessation interventions.[3]

The global FCTC was adopted by KSA in May 2005. As a
result, in public places such as government, educational and
health care facilities, smoking is prohibited.[2] According to
that many studies supporting regulations prohibiting the
smoking of healthcare professionals in hospitals, and they
also agree to prohibit in a public place, and tobacco selling
and advertisements should be banned,[11,21,26] despite this,
some smokers confirmed their smoking inside the hospital.[28]
69.2% of females in our study indicated that smoking is not
allowed at all in the hospital, while 50% of the smoker in our
study smoked during work hours and the majority of them
were males.

The relatively low response rate in this study could limit the
generalizability of the outcomes. Our sample size was small, and
only from one medical institution. For future, similar studies we
recommend more resources are available so that other hospitals
are surveyed as well.

### Conclusions

The prevalence of tobacco smoking among dental practitioners
was 35.1%, which was closer to that in previous studies with
higher prevalence among male participants. This study presents
an unfavorable picture of the dental practitioners who should
play a major role in promoting and assisting individuals in
smoking cessation. Furthermore, study participants showed a
favorable attitude toward tobacco cessation programs, especially
non-smokers compared with current and previous smokers.
However, they lacked sufficient knowledge and training about
tobacco hazards. Smoking cessation programs, awareness-raising,
and promoting anti-smoking attitudes in schools, colleges, and
universities are needed. In addition, studies should focus on the
effectiveness of smoking cessation interventions, prevention
strategies and covering all regions of Saudi Arabia.

### Authors contributions

FSA and MHR: contribute to the conception, design of the
work, and revising it critically for important intellectual content
and drafting the work.

ASA, RAA and SA: ASA, RAA, and SA: contribute to the
acquisition of the data.

FJ: Contribute to analysis, interpretation of data.

### Declaration of patient consent

The authors certify that they have obtained all appropriate
participate Dental practitioners consent verbally. A letter of
introduction was attached to each questionnaire, stating the
objectives of the study, emphasizing both the confidentiality
of the information and that the collected data will be used for
scientific purposes only will not be reported in the journal. The
questionnaire was confidential (no identification possible).

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### Conflicts of interest

There are no conflicts of interest.

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### Table 8: Smoking cessation practices among dental practitioners

| Advise patients to quit smoking | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Yes                            | 45        | 60.8%      |
| No                             | 21        | 28.4%      |
| I do not deal with patients    | 8         | 10.8%      |
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