The general population’s knowledge and awareness of smoking as a risk factor for urological diseases in the Western Region of Saudi Arabia

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ABSTRACT

Background: In Saudi Arabia, smoking is a significant public health concern. Cigarette smoking is the leading preventable cause of urinary bladder cancer and increases the risk of prostatic and renal malignancies. There have been a limited number of studies conducted on this topic in Saudi Arabia, especially in the Western Region.

Objectives: The current study aims to assess the knowledge and awareness of the general population in the Western Region of Saudi Arabia regarding smoking as a risk factor for urological diseases.

Methods: A cross-sectional study was conducted between February and October 2023, employing an online survey self-administered and disseminated through social media platforms. A method of sampling by convenience was utilized to enlist the participants for the study. Following approval from an Institutional Review Board, information was gathered from Saudi Arabian citizens and residents aged 18 or older residing in the western region.

Results: The study included a total of 850 individuals. Based on the gender distribution, 67% of the individuals were male, while 33% were female. The participants were surveyed regarding their smoking habits; out of the total, 70% identified as nonsmokers, 18% identified as smokers, and 12% identified as ex-smokers. 37% of respondents acknowledged that smoking posed a risk for bladder cancer, while 36.8% acknowledged that smoking posed a risk for kidney cancer. Gender exhibited a notable correlation with kidney cancer and erectile dysfunction (ED) (p < 0.05). Moreover, there was a strong correlation between smoking status and ED (p < 0.05).

Conclusion: The study revealed that only a small proportion of participants have sufficient knowledge of the association between smoking and the heightened susceptibility to kidney and bladder cancer. Therefore, it is necessary to increase awareness through the implementation of campaigns and the utilization of social media channels.

Keywords: Bladder cancer, kidney cancer, erectile dysfunction, smoking, Saudi Arabia, knowledge and awareness.

Introduction

Tobacco use is a significant public health problem in Saudi Arabia. It is a major contributor to mortality and morbidity [1], with a smoking prevalence of 21.4%. It is estimated that over 70,000 people in Saudi Arabia die each year due to smoking-related diseases [2,3]. Furthermore, smoking tobacco increases the risk of developing chronic illnesses, such as lung cancer, urological malignancies, heart disease, and pulmonary
The general population’s knowledge and awareness of smoking as a risk factor for urological diseases

40 disease [4]. According to the most recent nationally 41 representative study, 12.2% of Saudi Arabian adults 42 smoked in 2013 [5]. The prevalence of male smokers 43 was 27.9%, while that of female smokers was 2.9% [5]. 44 Smoking increases the risk of prostatic and renal cancer 45 and is the most significant avoidable cause of urinary 46 bladder cancer [6]. Bladder cancer has the highest 47 recurrence rate of all malignancies, the 8th most common 48 cancer among Saudi males. In addition, kidney cancer 49 is one of the most common malignancies, representing 50 4% of all malignancies [7-9]. Smoking increases the 51 risk of multiple urologic conditions, such as bladder 52 cancer, kidney cancer, and erectile dysfunction (ED) 53 [10,11]. The results of the systematic review included 54 four prospective cohort studies and four case-control 55 studies involving 28,842 participants suggesting that 56 the risk of ED increased by 51% for current smokers 57 and 20% for ex-smokers compared to never-smokers. 58 The results also suggest that the increased risk of ED 59 associated with smoking may decrease after stopping 60 smoking [11].

61 Few studies about the correlation between smoking 62 and urological diseases have been conducted in Saudi 63 Arabia. Therefore, our study aimed to assess the level 64 of awareness and knowledge among the population of 65 the Western Region of Saudi Arabia about the risk of 66 smoking on the urinary system and sexual functions.

67 Materials and Methods

68 Study design and participants

69 This descriptive cross-sectional study was conducted 70 in the Western Region of Saudi Arabia from February 71 to October 2023. The study population included adult 72 residents of the region aged 18 and above of both genders. 73 We excluded participants who refused to participate and 74 individuals who did not speak Arabic.

75 Sample size and ethical considerations

76 The sample size was calculated using the OpenEpi 77 website version 3.0 (AG, KM, 2013) based on the general 78 population of the western area of Saudi Arabia. To achieve 79 a 95% confidence interval and a 5% margin of error, 80 the sample size was calculated to be 385 participants. 81 However, to enhance the generalization of the results and 82 guarantee their accuracy, 850 responses were collected. 83 Ethical approval was granted by the Biomedical Ethics 84 Committee at the College of Medicine, Umm Al-Qura 85 University, Makkah, Saudi Arabia. This study was 86 submitted to the Umm Al-Qura University Institutional 87 Research Board for approval. Study activities did not 88 begin until approval was obtained.

89 Study tool and scoring

90 We aimed to develop a questionnaire that was simple, 91 concise, and easy to understand. Items in the questionnaire 92 were collected from previous similar studies, with some 93 modifications [12]. An online Arabic questionnaire was designed using Google Forms and shared randomly 94 via social platforms with the Makkah, Jeddah, and Taif populations. The questionnaire contained four sections: 95 a consent form, sociodemographic data, assessment of knowledge regarding smoking risk factors, and smoking status. A combined system of codes, numbers, and pseudonyms was established to ensure the confidentiality of participants’ information. Only the researchers had access to the data.

96 Statistical analysis

97 The data were analyzed using the Statistical Package for 98 the Social Sciences version 26. Chi-squared was used for categorical variables. p-value was considered statistically 99 significant if it was less than 0.05.

100 Results

101 A total of 850 participants were involved in this study. Table 1 shows the participants’ demographic characteristics. According to the gender distribution, 67% were males, and 33% were females. The age distribution was divided into five categories: 35% of the participants were 25-44, 30% were 18-24, 30% were 45-64, 4% were 65-84, and 0.2% were 85-95. Educational levels were distributed in eight categories: 53% had a bachelor’s degree, 23% had a high school degree, 9% had a diploma degree (One- or two-year course), 8.5% had a master’s degree, 4% had a master’s degree, and 2% had a PhD degree.

105 Table 1. Participants’ demographic characteristics.

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>568 (67)</td>
</tr>
<tr>
<td>Female</td>
<td>282 (33)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>260 (30)</td>
</tr>
<tr>
<td>25-44</td>
<td>294 (35)</td>
</tr>
<tr>
<td>45-64</td>
<td>261 (30)</td>
</tr>
<tr>
<td>65-84</td>
<td>33 (4)</td>
</tr>
<tr>
<td>85-95</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Elementary school</td>
<td>5 (0.6)</td>
</tr>
<tr>
<td>Middle school</td>
<td>18 (2)</td>
</tr>
<tr>
<td>High school</td>
<td>197 (23)</td>
</tr>
<tr>
<td>Bachelor</td>
<td>446 (53)</td>
</tr>
<tr>
<td>Masters</td>
<td>72 (8.5)</td>
</tr>
<tr>
<td>Diploma</td>
<td>80 (9)</td>
</tr>
<tr>
<td>Doctorate</td>
<td>30 (4)</td>
</tr>
<tr>
<td>Others</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Smoking status</td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td>149 (18)</td>
</tr>
<tr>
<td>Nonsmoker</td>
<td>598 (70)</td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>103</td>
</tr>
</tbody>
</table>
The general population’s knowledge and awareness of smoking as a risk factor for urological diseases

had a Ph.D., 2% had completed middle school, 0.6% had completed elementary school, and 0.2% reported other levels of education. Participants were asked about their smoking status: 70% were nonsmokers, 18% were smokers, and 12% were ex-smokers.

The participants’ knowledge of smoking as a risk factor for various diseases is summarized in Table 2. About 89% of the participants agreed that smoking was a risk factor for lung cancer, 84% agreed that smoking was a risk factor for chronic obstructive pulmonary disease (COPD), 82% agreed that smoking was a risk factor for heart disease, 72% agreed that smoking was a risk factor for mouth cancer, 63% agreed that smoking was a risk factor for stroke, 55% agreed that smoking was a risk factor for ED, 37% agreed that smoking was a risk factor for bladder cancer, and 36.8% agreed that smoking was a risk factor for kidney cancer.

The participants’ knowledge of the association of genitourinary disease with their demographic characteristics is shown in Table 3. The table shows that gender had a significant link to kidney cancer and ED (p < 0.05). Furthermore, smoking status was significantly associated with ED (p < 0.05).

Discussion

The inhalation of tobacco smoke is a significant risk factor for a wide variety of chronic diseases, including cancer, cardiovascular disease, and respiratory disease [1]. The increased consumption of tobacco smoke and the prolonged duration of smoking are associated with an elevated risk of multiple urological diseases, particularly bladder cancer [10]. The benefits of quitting smoking are well established. Therefore, quitting smoking at any age benefits health [1].

Based on the most recent study in 2013, 15.3% of adult Saudis smoke (28.8% of males and 1.9% of females) [5]. This study aimed to assess the awareness and knowledge of the Saudi population in the western region of Saudi Arabia regarding smoking as a risk factor for urological diseases and sexual functions. Our study found that a relatively low proportion of respondents (37% and 36.8%) knew that smoking was a risk factor for bladder and kidney cancer, respectively. This contrasts with the much higher proportion of respondents (89% and 84%) aware of smoking as a risk factor for lung cancer and COPD, respectively. These findings are consistent with previous studies [12-18]. However, a significantly higher proportion of respondents (55%) knew that smoking was a risk factor for ED. This finding is consistent with a previous study [18], which found that 60.9% of respondents were aware of this risk factor. Moreover, it is significantly higher than the findings of other studies [14,16], which have shown that awareness of smoking as a risk factor for ED is typically lower than awareness of smoking as a risk factor for other health conditions. Our study demonstrated that the knowledge of smoking as a risk factor for urological diseases was suboptimal among participants. A greater proportion of respondents knew that smoking could be a risk factor for major respiratory diseases, such as lung cancer and COPD; however, awareness of smoking as a cause of urological diseases was low.

The perception of smoking as a risk factor for kidney cancer and ED showed a statistically significant difference between men and women, consistent with some previous studies [12,13] but not with others [14-18]. Furthermore, smoking status was significantly associated with ED, consistent with some studies [14,16]. The perception of smoking as a risk factor for bladder cancer was not significantly associated with smoking status, which is consistent with the findings of several studies [12,17,18]. However, the findings of this study were inconsistent with those of other studies [14,16].

The perception of smoking as a risk factor for kidney cancer was not significantly associated with smoking status, consistent with the findings of some previous studies [13,16] but not others [14,18]. Bladder cancer showed no significant association with age, consistent with several studies [12, 14-17]. A previous study [18] showed a significant difference. However, no statistically significant association was found between kidney cancer and ED, consistent with the findings of previous studies [13,14,16]. Two previous studies [14,18] found a significant association between education level and ED, which is not consistent with our study and another study [16].
The general population’s knowledge and awareness of smoking as a risk factor for urological diseases

Limitations

All participants (850) were from the western region of Saudi Arabia. This study’s limited sample size will likely limit the findings’ generalizability. The uneven distribution of participants’ demographic characteristics limited the ability to compare participants’ knowledge across all demographic characteristics.

In the future, we propose to include different geographic regions in Saudi Arabia and increase the number of participants. This study’s findings suggest that the perception of smoking as a risk factor for the above-mentioned diseases is not influenced by gender, age, education level, or history of cancer. However, smoking status was a significant predictor of knowledge concerning smoking as a cause of these diseases.

Conclusion

This study aimed to measure awareness of smoking as a risk factor for urological disease and ED. The study findings showed that a minority of respondents were aware of smoking and the increased risk of kidney and bladder cancer; 55% of the participants were aware of the risk of ED associated with smoking. Knowledge about smoking and the risk of urological diseases is suboptimal compared to other conditions such as respiratory diseases, COPD, and lung cancer. Therefore, we recommend using social media platforms and conducting campaigns to increase awareness of smoking-related urological conditions.

List of Abbreviations

COPD Chronic obstructive pulmonary disease
ED Erectile dysfunction
Ph.D Doctor of philosophy

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

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None.

Consent to participate

Not applicable.

Ethical approval

Not applicable.

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References

14. Bjurlin MA, Cohn MR, Freeman VL, Lombardo LM, Hurley SD, Hollowell CM. Ethnicity and smoking status are associated with awareness of smoking related
The general population's knowledge and awareness of smoking as a risk factor for urological diseases


