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Abstract

Background: Tobacco use among women in Qatar is currently low. However, the risk of exposure to second-hand tobacco smoke among them is a pressing concern because of the high prevalence of tobacco use by men.

Aims: To describe the prevalence and risk factors for second-hand tobacco smoke exposure at home and at workplaces, schools, cafes, and restaurants in Qatar.

Methods: We analysed data from a population-based survey of 7921 adults aged ≥ 18 years, conducted in Qatar between March and December 2019. The study used multilevel cluster selection and comprised government employees and university students.

Results: Among the participants, 19.3% (n = 1219) reported that smoking was allowed in their homes, 3.1% (n = 196) said it was allowed in the workplace or school, and 3.3% (n = 204) said it was allowed in cafes and restaurants. Among the women, 22.8% (n = 589) allowed smoking inside their homes, including 51.8% (n = 130) of tobacco users and 38.5% (n = 553) of those who lived with a tobacco user. Living with and being a tobacco user significantly predicted the likelihood of reporting second-hand tobacco smoke at home.

Conclusion: Second-hand tobacco smoke exposure in the home is a health concern for women and children in Qatar. This study provides baseline data for tobacco control policies and programmes, particularly in relation to the promotion of smoke-free home environments.

Keywords: smoking, tobacco use, cigarette, second-hand, women, children, home, Qatar

Citation: AlMulla A; Kouyoumjian S; Maisonneuve P; Cheema S; Mamtani R. Exposure to second-hand tobacco smoke in Qatar: results from a population-based study. East Mediterr Health J. 2022;28(11):813–822. https://doi.org/10.26719/emhj.22.082
Received: 10/11/21; accepted: 11/08/22

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Introduction

Tobacco use is one of the most significant preventable causes of death worldwide and a modifiable risk factor for noncommunicable diseases (1). The World Health Organization (WHO) estimates that > 8 million people die annually from tobacco use. Second-hand tobacco smoke exposure causes 1.2 million deaths annually (2), mostly among women and children (3). Globally, tobacco smoking and second-hand smoke incur substantial healthcare costs and loss of productivity through morbidity and premature mortality from cardiovascular diseases, chronic respiratory diseases, and type 2 diabetes mellitus. This is true for the Gulf Cooperation Council countries: Bahrain, Kuwait, Oman, Saudi Arabia, Qatar, and the United Arab Emirates (4, 5).

Tobacco use among adults in Qatar decreased from 36.7% in 2003 to 25.2% in 2021 (6, 7). Qatar ratified the WHO Framework Convention on Tobacco Control (FCTC) and consequently introduced several antitobacco control measures, such as: strengthening tobacco legislation; reinforcing public smoking bans; introducing tobacco taxation; expanding smoking cessation services; and increasing prevention awareness to discourage people from smoking. The Tobacco Control Center, WHO Collaborative Center, in Hamad Medical Corporation, Qatar, have aligned with the Qatar National Vision of 2030 and the Qatar Ministry of Public Health Strategy of 2018–2022 to work relentlessly towards further reduction in the prevalence of

tobacco use.

Although tobacco use is currently low among women in Qatar (9.2%), tobacco use among men is high (36.6%) (6), and the risk to women from second-hand smoke exposure is a pressing concern. Tobacco use, including second-hand smoke exposure, increases women's risk of noncommunicable diseases, such as cardiovascular disease, chronic obstructive pulmonary disease, and cancer, as well as premature delivery, stillbirth, low birth weight infants, sudden-infant death syndrome, and acute lower respiratory infections (8, 9). In Qatar, prevalence data on second-hand tobacco smoke exposure among women is limited to the 2013 Global Adult Tobacco Survey (GATS) (10). WHO recommends the development of proactive and effective public health interventions to control tobacco use; therefore, research is needed to determine the potential risk of second-hand tobacco smoke exposure for women (11) and whether this should be a public health concern in Qatar.

The objectives of this study were to: (1) report the prevalence of second-hand tobacco smoke exposure inside the home, workplaces/universities, and café/restaurants in Qatar; (2) determine second-hand tobacco smoke exposure inside the home among women (tobacco users and nonusers) living with a smoker; and (3) identify key factors associated with second-hand tobacco smoke exposure.

Methods

Study design, population, and sampling

We used data from a nationwide, population-based cross-sectional study of adults aged ≥ 18 years (nationals and expatriates) conducted in Qatar during March to December 2019. The study reference population of government employees and university students was formed using multilevel cluster selection. The government employees were selected from the health sector, ministries, and government authorities and units, and the students were selected from 4 government universities, to achieve a fair representation of Qatari adults. The study's research design was based on a systematic process to ensure replicability. The study protocol was approved by the Institutional Review Board, Medical Research Center, Hamad Medical Corporation, Qatar. The details of the methodology have been published previously (6).

Data collection

Data were collected using a self-administered ques-tionnaire consisting of a country-adapted summarized version of GATS. The questionnaire was administered with attention to protocol adherence by trained staff to guarantee a unified procedure. Study participants were provided with an envelope that included the questionnaire along with an information sheet describing the study. To ensure anonymity and confidentiality of responses, the respondents were asked to

complete the questionnaire and return it in a sealed envelope. The questionnaire included questions on: key demographic characteristics; use of all tobacco products including cigarettes, waterpipe or shisha, medwakh (traditional Arabic pipe), and cigars; whether smoking was allowed in the home (proxy for second-hand smoke exposure), workplaces/universities, cafes/restaurants; participant's attitude towards the ban on tobacco sales to minors, ban on tobacco smoking in workplaces/cafes/restaurants, and raising the price of tobacco.

Sample size and data analysis

The sample size for the survey was 7921, with an overall survey response rate of 89.7%. Data were analysed for complete responses about second-hand tobacco smoke in the home, workplaces/universities, and cafes/restaurants, and second-hand tobacco smoke exposure in the home among women. Data analysis was performed using SPSS version 27. Sample characteristics were expressed as number (%) or mean and standard deviation. The outcome variable was allowing smoking at home because this was a potential route for second-hand tobacco smoke exposure in the home among women. We used the Chi square test to evaluate the association between tobacco smoking at home and demographic characteristics including: monthly income; current tobacco use; living with a smoker at home; knowing that breathing other people's tobacco smoke causes illness in nonsmokers; banning the sales of tobacco to individuals aged

Results

Second-hand tobacco smoke exposure

Overall, 19.3% of participants (n = 1219) reported living in a household where smoking was allowed inside the home: this represented 16.9% (n = 630) of male and 22.8% (n = 589) of female participants (Table 1). When participants were asked what best described the rules inside workplaces/universities, 3.1% (n = 196) reported that smoking was allowed, 41.5% (n = 2589) that it was not allowed, and 55.4% (n = 3459) that it was allowed in designated areas. When participants were asked about what best described the rules inside cafes/restaurants that they visited frequently, 3.3% (n = 204) reported that smoking was allowed, 39.0% (n = 2425) that it was not allowed, and 57.8% (n = 3596) that it was allowed in designated areas.

Second-hand tobacco smoke exposure inside the home among women

A total of 2585 women reported on smoking rules in their homes (Table 1). Of these, 22.8% (n = 589) said smoking was allowed in their homes: 85.8% (n = 488) on a daily versus 14.2% (n = 81) on a nondaily basis (results not shown).

Less than a quarter of Qatari women (22.3%) and non-Qatari women (23.8%) reported that tobacco smoking was allowed in their homes (Table 2). Among women aged 18–24 years, 25.3% allowed smoking inside the home, which was higher than in other age groups. Tobacco smoking was allowed in the home by 25.8% of women with secondary or less education; 23.4%

of married women; 27.8% of women with monthly income of 5000–10 000 QR; 51.8% of women who were current tobacco users; 38.5% of women who reported having a smoker in the home; 24.4% of women with health problems; and 22.0% of women who thought that breathing other people's tobacco smoke caused illness in nonsmokers. Smoking was allowed in the home by 22.2% of women who thought that banning sales of tobacco to individuals aged

Multivariable logistic regression

Multiple logistic regression was performed to assess the impact of 10 significant variables identified in the bivariate analysis on the likelihood that women would allow smoking/second-hand smoke in the home (Table 3). The full model was found to be statistically significant, $\chi 2$ (9, N = 2139) = 82.75, P

Only 4 of the independent variables made a significant contribution to the model. The strongest predictor for allowing tobacco smoking and second-hand tobacco smoke in the home was having a member of the household who was currently using tobacco products [adjusted odds ratio (AOR) 25.68; 95% confidence interval (CI) 16.56–39.82]. The next strongest predictor was if the female participant was herself a tobacco user (AOR 4.26; 95% CI 2.85–6.35). However, women who thought that increasing the price of tobacco products would reduce consumption were less likely to allow smoking in the home (AOR 0.71; 95% CI 0.54–0.92). Women who thought banning tobacco sales to minors was important were less likely to allow smoking in the home (AOR 0.60; 95% CI 0.35–1.0), with borderline significance compared with those who disagreed. Among female tobacco users, having a smoker in the household was a risk factor for allowing smoking and second-hand tobacco smoke in the home (AOR 10.37; 95% CI 5.10–21.10). However, those who supported banning tobacco in restaurants were less likely to allow smoking in the home (AOR 0.52; 95% CI 0.27–1.0). Female nonusers of tobacco living with a smoker and who supported banning tobacco sales to minors were less likely to allow smoking in the home (AOR 0.51; 95% CI 0.29–0.90).

Discussion

Tobacco use among women in Qatar is currently lower than global (20%) and regional rates (up to 30%) (9). In a previous population-based study, we found that tobacco use was significantly lower among Qatari women (3.0%) than non-Qatari women (19.7%) (6). Similar to GATS 2013, the proportion of tobacco use was almost 7 times less among Qatari than non-Qatari women (0.6% vs 4.6%) (10).

In Qatar, tobacco use by women had low social acceptability and stigma (7). Shisha smoking among women is more socially acceptable than tobacco smoking, and is a potential gateway for tobacco use (9,12,13). The low prevalence of tobacco use among Qatari women is likely associated with the dominant cultural norm that can be preserved and even strengthened

through additional public awareness interventions. For instance, healthcare professionals can play a crucial role in increasing awareness among communities about the health risks of tobacco smoking, encouraging them to quit, or discouraging them from starting (14). A recent study found that healthcare workers in Qatar were promoting a culture that contributed to adopting nonsmoking behaviour by providing tobacco counselling and cessation interventions (15).

This study is the first to explore second-hand tobacco smoke exposure at the community level in Qatar. We found that 19.3% of adults were exposed to tobacco smoke at home. This was higher than the GATS results (16.8%) (10), but lower than worldwide exposure to second-hand smoke among female nonsmokers (35%) (16,17), as well as being lower than in other studies conducted in the region (18–20).

Understanding the factors that allow tobacco use indoors will help inform the development of tailored primary prevention interventions that take into consideration the unique gender-specific motivations associated with allowing or prohibiting tobacco use inside the home (21). The strongest predictors of second-hand smoke in the home were having a member of the household who uses tobacco products, and if the women themselves were tobacco users, as reported in other studies (17,22,23). While this may seem intuitive, in a setting where research on smoking behaviour is nascent, it is important to be able to document smokers who are smoking in their homes and outside. Although only 22.8% of women reported that smoking was allowed in the home, 85.8% reported potential daily exposure to second-hand tobacco smoke in their homes. This reflected suboptimal efforts to ---enforce smoking rules and maintain a smoke-free environment in the home, and/or that women did not have the power to negotiate smoke-free spaces, even within their own homes.

Designated smoking areas, which are not in line with smoke-free environments described in WHO FCTC Article 8, are a potential source of second-hand tobacco smoke, because the smoke spreads widely, both vertically and horizontally, from the designated area (24). Therefore, designated smoking areas do not provide effective protection from second-hand tobacco smoke and should not be allowed. GATS 2013 showed that 12.0% of adults who worked indoors were exposed to second-hand tobacco smoke in the workplace (10). We found that only 3.1% of adults reported that smoking was allowed in the workplace/university and 41.5% reported that smoking was not allowed, but 55.4% reported smoking in designated areas only. GATS 2013 reported that 25.9% of adults were exposed to second-hand tobacco smoke in restaurants (10), whereas we found that only 3.3% reported that smoking was allowed in restaurants but 57.8% reported that it was allowed in designated areas. There remains an urgent need for comprehensive tobacco use and second-hand tobacco smoke exposure monitoring at the national level, as recommended by WHO FCTC (25).

A lot of national tobacco control legislation has been enacted recently in Qatar, but our findings indicated that laws aimed at establishing smoke-free environments in public places may not have been effectively implemented and enforced. An example is Law no. 10 of 2016 on the control of tobacco and its derivatives in Qatar (26), which outlines the prohibition of smoking in enclosed public spaces. Other measures include a smoking ban in vehicles with children under the age of 18 years, large fines if an individual is caught smoking in an enclosed public space, and licence cancellation for cafes. The Tobacco Control Center has been providing tobacco cessation services over the telephone, including in-depth counselling, treatment planning, follow-up sessions, and psychological support for behaviour modification (27). Strengthened tobacco control has also formed part of Qatar's strong measures to contain the spread of COVID-19. Shisha smoking has been prohibited since the beginning of the pandemic. Although shisha smoking is perceived as lower risk than cigarette smoking, elevated levels of particulate pollution were found in the waterpipe cafes in Doha, Qatar, endangering air quality and public health (28). This highlights the importance of continuing to monitor shisha smoking trends and increasing awareness of its harmful health effects and subsequent exposure to second-hand tobacco smoke.

In this study, supporting an increase in the price of tobacco was predictive of not allowing smoking in the home. Female tobacco users supporting a tobacco ban in restaurants, and nonusers living with a smoker, and who were concerned about selling tobacco to minors, were also less likely to allow smoking in the home. Importantly, these findings relate to attitudes and perceptions toward tobacco control that may effectively influence smoking-related behaviour (29). This emphasizes the need for strengthening health-related knowledge and planning effective health education programmes in family settings. The Government of Qatar should continue to take effective measures to change attitudes to smoking by promoting and enacting smoke-free legislation, to change social norms towards nonsmoking, so that second-hand tobacco smoke in the home and other smoking-related behaviours are not allowed (30).

Unlike other Gulf Cooperation Council countries, the economic cost of smoking and second-hand tobacco smoke in Qatar is estimated to be low (4, 20). There is no projected increase in tobacco use across Qatar or expansion of tobacco-related activities (such as tobacco sponsorship of sporting events), and within the FCTC framework, Qatar has committed to adopting effective measures for tobacco control (6, 10). However, our findings highlight the need for additional education and preventive programmes to emphasize the importance of maintaining a smoke-free home environment. In Qatar, antitobacco education and awareness are still not included as an integral part of the curriculum in schools and colleges. The Tobacco Control Center is predominantly responsible for the provision of smoking cessation services and raising public awareness of the dangers of tobacco use, to prevent its uptake among adolescents, particularly young women. The Center also discourages indoor smoking and exposure to second-hand tobacco smoke, because starting smoking disproportionately affects

the health of women and children. Currently, the COVID-19 pandemic has accelerated the shift of these antitobacco health promotion activities online and on social media.

Further research is needed to understand the role that awareness, decision-making, self-efficacy, empowerment, and social status play in women's ability to limit their exposure and that of other household members to second-hand tobacco smoke (17). Our finding that 25.3% of women aged 18–24 years reported that smoking was allowed in the home highlights the opportunity to focus on prevention of tobacco-related illnesses among women of reproductive age and their unborn children. Integration of tobacco control programmes that focus on second-hand tobacco smoke into Qatar's maternal and child health programme could be a cost-effective strategy to educate women about the dangers of tobacco use and benefits of quitting.

Increased levels of awareness of the health risks, increased exposure to antitobacco messaging, and increased surveillance could lead to a significant increase in the adoption of household smoking bans, especially among households with no smokers (31, 32). Greater adoption of smoking bans could potentially influence the community and change acceptance of tobacco use and second-hand tobacco smoke exposure (25). There is clearly a need for education on the risks of all forms of tobacco use, bans on tobacco advertising, protection against second-hand tobacco smoke, and increased support for quitting. It is also important to empower women to take a leading role in tobacco control, and to encourage men to take greater responsibility in protecting women and children from their personal tobacco use.

The current study adds to an emerging body of evidence on female second-hand tobacco smoke exposure in Qatar. A strength of this study was the use of data from a representative sample based on a systematic sampling technique with a large sample size using a modified version of a standardized and validated questionnaire. The limitations of our study were mainly related to the self-reported nature of the data collected because this may have underestimated smoking prevalence (33). However, the reliability of the self-report of second-hand smoke exposure was strengthened by use of a self-administered survey to assure privacy and confidentiality because sensitive issues to the local Qatari context were discussed (34). Other limitations were the cross-sectional design and lack of data from nonresponders. However, these limitations were counterbalanced by the methodological advantages.

Conclusions

Our findings make an important contribution to the current understanding of second-hand tobacco smoke exposure in Qatar. While the reported prevalence of second-hand tobacco smoke in the home was low (22.8%), the current rate of exposure represents an increased risk

for women and children. Living with a tobacco user and being a tobacco user were associated with second-hand tobacco smoke exposure in the home environment. These findings could be helpful in guiding the development of contextualized sex-specific primary prevention and tobacco control interventions to promote tobacco-smoke-free homes. This is a useful starting point for understanding tobacco-related behaviour and decision-making among women in Qatar, and could help to control exposure to tobacco in Qatar and beyond.

Acknowledgement

We thank the Medical Research Center in Hamad Medical Corporation in Qatar for funding this research (MRC-Routine grant 01-17-073). We would like to thank Ross MacDonald, Librarian, Scholarly Contributions, Distributed eLibrary, Weill Cornell Medicine—Qatar for his editing services. The findings achieved herein are solely the responsibility of the authors.

Funding: This work was supported by the Medical Research Center in Hamad Medical Corporation Doha-Qatar (MRC-Routine grant 01-17-073).

Competing interests: None declared.

Exposition à la fumée secondaire de cigarette au Qatar : résultats d'une étude en population

Résumé

Contexte : La consommation de tabac chez les femmes au Qatar est actuellement faible. Cependant, le risque d'exposition à la fumée secondaire de cigarette parmi elles est une préoccupation urgente en raison de la forte prévalence du tabagisme chez les hommes.

Objectifs : Décrire la prévalence et les facteurs de risque du tabagisme passif dans les foyers et dans les lieux de travail, les écoles, les cafés et les restaurants au Qatar.

Méthodes : Nous avons analysé les données d'une enquête démographique portant sur 7921 adultes âgés de 18 ans et plus, réalisée au Qatar entre mars et décembre 2019. L'étude a utilisé la sélection en grappes à plusieurs niveaux et comprenait des employés du gouvernement et des étudiants universitaires.

Résultats : Parmi les participants, 19,3 % (n = 1219) ont déclaré qu'il était permis de fumer dans leur foyer, 3,1 % (n = 196) ont indiqué qu'il était permis de fumer sur le lieu de travail ou à l'école, et 3,3 % (n = 204) ont dit qu'il était permis de fumer dans les cafés et les restaurants. Parmi les femmes, 22,8 % (n = 589) autorisaient la consommation de tabac dans leur foyer, dont 51,8 % (n = 130) des fumeuses et 38,5 % (n = 553) de celles qui vivaient avec une personne consommant du tabac. Le fait de vivre avec une personne qui fumait et de consommer du tabac permettait de prédire de manière significative la probabilité d'exposition à la fumée secondaire dans le foyer.

Conclusion : L'exposition à la fumée secondaire dans les foyers est une préoccupation de santé pour les femmes et les enfants au Qatar. La présente étude fournit des données de référence pour les politiques et les programmes de lutte antitabac, notamment en ce qui concerne la promotion d'environnements domestiques sans tabac.

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