



Perception and intentions to quit among waterpipe smokers in Qatar: a cross-sectional survey

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Objective: To evaluate the perceptions and attitudes of waterpipe (*shisha*) smokers in Qatar regarding the health risks associated with addiction and to determine their intentions to quit.

Methods: A cross-sectional survey was conducted among 181 self-reported waterpipe smokers. Participants were approached in public places as well as in shisha cafes in Qatar. The questionnaire included items related to perception, attitude and intention to quit. Both descriptive and inferential statistics were performed for data analyses, with $P \leq 0.05$ considered statistically significant.

Results: About 44% of the respondents believed that waterpipe smoking was safer than cigarette smoking, and more than 70% would not mind if their children became involved in waterpipe smoking. More than half of the current smokers wanted to quit smoking shisha at some point, and 17% identified health concerns as the main motivating factor for their intention to quit.

Conclusion: A large proportion of shisha smokers viewed shisha as a safer alternative to cigarettes, yet they admitted to intending to quit. These findings underscore the need to design educational interventions and awareness campaigns as well as impose stringent laws on waterpipe smoking in public places in Qatar.

Tobacco smoking has been well-recognised as a leading preventable cause of morbidity and premature mortality worldwide.^{1–4} According to the World Health Organization (WHO), tobacco kills at least 6 million people each year, and the number is expected to rise to 8 million by 2030.⁵ The prevalence of tobacco smoking in the form of cigarettes is generally declining, while waterpipe (also known as *shisha*) smoking is on the rise.⁶ Studies have reported high prevalence rates and increasing trends of waterpipe smoking in both Middle Eastern and European countries.^{2,7} A systematic review by Akl et al. reported prevalence rates of current shisha smoking among university students and adults of respectively 6% and 4–12%.⁸ Another review article showed that multiple countries, including Lebanon, Iran and the United Arab Emirates, have a waterpipe smoking prevalence of more than 25% among the public.⁶ An unpublished study conducted to examine the prevalence of shisha smoking and other forms of tobacco among the general public in Qatar found that around 19% of the sample were current shisha smokers.

Many people have a misconception that waterpipe smoking is a safer alternative to cigarettes, perhaps

due to the exotic smells and the attractive and sophisticated architecture of the nicotine delivery device, whereby water is wrongly thought to act as a smoke filter.^{6,9} Approximately 10–20 g of tobacco is used per shisha session, in addition to 5 g of charcoal, which produces more toxic chemicals than cigarettes.¹⁰ Multiple health dangers are associated with waterpipe smoking, such as heart disease, lung and oral cancers, respiratory diseases and low birth weight.^{2,4,7,11,12} Shisha smoking thus imposes a significant burden on health care systems worldwide.^{6,13–17} Compared to cigarette smoking, shisha smoking exposes individuals to 6.5 times more carbon monoxide, 1.7 times more nicotine and 46 times more tar, along with other lung carcinogens and heavy metals.¹⁸ The dangers of shisha smoking are not limited to the degree of exposure to toxic chemicals; there is also an increased probability of transmission of infectious diseases such as tuberculosis, herpes and oral bacterial infection due to sharing the mouthpiece of the shisha.¹⁸

Previous studies on the perceptions and attitude of shisha smokers have shown that around 30–58% of smokers believe that shisha is less harmful than cigarettes.^{10,19,20} In general, shisha smoking is more culturally acceptable among Arabs than cigarette smoking. There is also some gender disparity in terms of how society perceives cigarette and shisha smoking; cigarette smoking is considered more culturally and socially unacceptable among women than shisha smoking.^{21–24} In addition, the majority of waterpipe smokers are confident that they can quit at any time, and do not believe that shisha smoking is as addictive as cigarettes.²²

Qatar, a Middle-Eastern country of about 2.4 million, predominantly expatriates,²⁵ has been reported to have the highest age-standardised incidence of lung cancer in the Arabian Gulf.²⁶ Qatar is one of the countries that signed and ratified the WHO Framework Convention on Tobacco Control (FCTC) in 2004.²⁷ Despite this, there seems to be a growing number of shisha cafes in the country,^{28,29} along with an increasing trend towards shisha smoking among both adults and teenagers, and a reportedly high prevalence of cigarette use.^{17,30} There is limited information on the extent to which shisha smokers and the general public in Qatar understand and perceive the health dangers of shisha smoking, and little is known about the quitting intentions of shisha smokers.

The objectives of this study were to evaluate the perceptions and attitudes of waterpipe smokers in Qatar regarding the health dangers and associated risks and to determine their intention to quit.

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KEY WORDS

attitude; tobacco smoking; quitting; shisha

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METHODS

Study design

A community-based, cross-sectional, descriptive study was conducted using face-to-face interviews with a piloted questionnaire.

Ethical approval

The study was approved by the Qatar University Institutional Review Board, Doha, Qatar. Only participants who provided written or verbal informed consent participated in the study. This dual consent strategy was used to cater for respondents with low or no literacy skills. Respondents were informed about the voluntary nature of the study and were assured of the confidentiality and anonymity of the data obtained.

Study population and setting

This study was part of a larger project aimed at determining the prevalence of shisha smoking and other forms of tobacco use among the general public in Qatar and to assess the perceptions of those who self-reported that they smoked shisha. To determine the prevalence of shisha smoking, a sample of 1000 respondents was randomly approached by the researchers from July to October 2013 in public places in Qatar, including shisha cafes and popular shopping malls. Participants included in the study were adults aged ≥ 18 years who had lived in Qatar for at least one year. Individuals who did not meet these criteria (based on the demographics section of the questionnaire) were excluded from the study. Of the 1000 respondents interviewed, 181 admitted to current shisha smoking and consented to proceed further by answering additional sections of the questionnaire pertaining to smoking attitude and intention to quit. The sample size was based on the 181 respondents who admitted to current waterpipe smoking.

Questionnaire development and validation

The questionnaire was developed based on an extensive review of the literature on the prevalence of shisha smoking and on public attitudes towards shisha smoking conducted elsewhere,^{19–22,24,31} as well as by an iterative process among the researchers. The questionnaire was comprised of three major sections, with 55 items related to the demographic profile of the respondents; attitudinal items aimed at eliciting information pertaining to the respondents' perceptions of waterpipe smoking; and items relating to intention to quit. The attitude-related options were given a score from 1 to 5 whereby the 'strongly agree' option was assigned a score of 5 and 'strongly disagree' was assigned a score of 1.

The questionnaire was evaluated for face and content validity by three purposively selected external academic researchers with extensive experience in tobacco-related research and survey instrument development. Appropriate modifications of the survey instrument were undertaken based on the experts' opinions. The readability, clarity and completion time of the questionnaire was determined by piloting among four respondents (two shisha smokers and two non-smokers). The final instrument was translated from English into Arabic using standardised forward-backward and reconciliation processes.

Data analysis

Descriptive and inferential data analyses were performed using the Statistical Package for Social Sciences (IBM SPSS® Statistics, version 21.0; IBM Corp, Armonk, NY, USA). The level of significance was set at $P \leq 0.05$. For the attitude towards shisha smoking section, each statement had five response options covering the extent of agreement. The scores of all the attitudinal statements were summed for every participant to determine their de-

gree of attitude and perception. Reverse scoring was used whenever a statement was negatively worded.

RESULTS

Most shisha smokers in the sample were male (79%, $n = 143$), aged 26–35 years (46%, $n = 82$), of non-Qatari nationality (94%, $n = 169$), and were not on long-term medication (89%, $n = 160$). Details of the respondents' baseline characteristics and attitude scores are provided in Table 1.

Of all the shisha smokers, 39% ($n = 70$) reported that they never smoked cigarettes, while 37% ($n = 68$) reported current cigarette smoking. A high proportion of the shisha smokers had started smoking between the ages of 18 and 22 years (37%, $n = 68$), followed by those who initiated between the ages of 13 and 17 years (22%, $n = 39$). The reasons for smoking shisha are represented in the Figure; the most commonly reported reasons were the taste, and socialising with others.

Most respondents (37%, $n = 67$) smoked on a monthly basis and 25% ($n = 45$) on a weekly basis. The majority of the respondents (72%, $n = 130$) smoked in shisha cafes, mostly (66%, $n = 119$) with their friends. Around 22% ($n = 39$) reported that they sometimes smoked shisha when children were around, whereas 51% ($n = 92$) did not have a member in their household who smoked shisha.

A summary of the attitudinal statements is provided in Table 2. A large percentage of the respondents (44%, $n = 79$) viewed shisha as a safer alternative to cigarettes. More than half (65%, $n = 121$) believed that shisha was more addictive than cigarettes. Although 72% ($n = 130$) of the shisha smokers would allow their children to smoke shisha, 92% ($n = 166$) agreed that there should be an age restriction on shisha smoking. Over 33% ($n = 60$) reported that shisha smoking is more culturally acceptable than cigarettes, and 45% ($n = 81$) agreed that it is acceptable for women to smoke shisha. As regards the health aspects, 77% ($n = 138$) of the participants believed that shisha could be harmful to the people around them; 79% ($n = 142$) believed that it could worsen lung diseases such as asthma and 70% ($n = 128$) believed that it could cause lung cancer (Table 2).

Comparing male and female smokers with respect to some specific statements (Table 3), we found that only 8% ($n = 3$) of female smokers agreed with the statement 'I would accept it if my spouse smoked shisha'; however, 62% ($n = 88$) of the male smokers agreed with the same statement, indicating a significant difference between the sexes ($P < 0.001$). Other statements did not show significant sex-based differences. Similarly, level of education did not affect the attitude score for the health effects of shisha (statements 14–17).

Attitudes toward intention to quit are provided in Table 4. Almost half of the participants (48%, $n = 85$) were very confident about quitting shisha and 54% ($n = 98$) had the intention to quit at some point, with only 22% ($n = 39$) intending to quit within one month. Spare time was considered a barrier to quitting (22%, $n = 38$). However, 37% ($n = 64$) of participants agreed that there are no barriers to quitting shisha smoking.

DISCUSSION

To determine how to address the increasing trend in shisha smoking and to design effective interventions, it is essential to understand how shisha smokers perceive this behaviour and their intentions to quit. This study has demonstrated that a large

TABLE 1 Demographic characteristics and attitude scores among shisha smokers in Qatar (*n* = 181)

Respondent characteristics	<i>n</i> (%)	Total attitude score mean ±SD	<i>P</i> value
Sex			0.009
Male	143 (79)	42.5 ± 8.9	
Female	38 (21)	46.8 ± 8.8	
Age, years*			0.015
18–25	64 (35.4)	44.8 ± 9.3	
26–35	82 (45.3)	44.0 ± 8.7	
36–45	26 (14.4)	38.2 ± 8.6	
>45	8 (4.4)	44.0 ± 8.3	
Nationality			0.532
Qatari	12 (6.6)	45.0 ± 9.8	
Non-Qatari	169 (93.4)	43.3 ± 9.0	
Job status			0.050
Employed	131 (72.4)	42.6 ± 9.0	
Unemployed	50 (27.6)	45.5 ± 8.8	
Marital status			0.037
Married	74 (40.9)	42.1 ± 8.8	
Single	106 (58.6)	44.5 ± 9.0	
Widowed	1 (0.6)	27.0 ± 0.0	
Education level			<0.001
Primary	1 (0.6)	36.0 ± 0.0	
Middle school	2 (1.1)	43.0 ± 2.8	
High school	28 (15.5)	38.7 ± 7.3	
Diploma	21 (11.6)	40.6 ± 10.3	
Bachelor degree	108 (59.7)	43.8 ± 8.5	
Master degree	18 (9.9)	49.6 ± 8.7	
Doctoral degree	3 (1.7)	57.0 ± 2.1	
Have children†			0.003
Yes	56 (74.7)	43.7 ± 8.8	
No	19 (25.3)	37.0 ± 7.2	
Medical conditions			
Diabetes			0.700
Yes	7 (3.9)	44.7 ± 10.5	
No	174 (96.1)	43.4 ± 9.0	
Asthma			0.481
Yes	5 (2.8)	40.6 ± 10.3	
No	176 (97.2)	43.5 ± 9.01	
Hypertension			0.078
Yes	5 (2.8)	36.4 ± 4.9	
No	176 (97.2)	43.6 ± 9.1	
Dyslipidaemia			<0.001
Yes	3 (1.7)	37.7 ± 0.58	
No	178 (98.3)	43.5 ± 9.1	
On long-term medication			0.107
Yes	21 (11.6)	40.4 ± 9.1	
No	160 (88.4)	43.8 ± 9.0	

*One missing value.

†106 participants did not answer this question as they were single. SD = standard deviation.

proportion of waterpipe smokers in Qatar have misconceptions about the health risks of this type of addiction compared with cigarette smoking and possess negative attitudes towards the practice. The results of our study show that the average age at starting shisha smoking was between 13 and 22 years. This is similar to results published in a review article that stated that most shisha smokers started the habit after their nineteenth birthday, with

10–18% of smokers starting between the ages of 13 and 15 years.¹¹ Children tend to view their parents as role models,^{32,33} and such perceptions can result in children and young adults trying this new experience that can then turn into a habit. Children are a vulnerable group, and this behaviour can worsen respiratory diseases, including asthma and upper respiratory infections.

A study conducted in Syria reported an average age at starting shisha smoking of respectively 19 and 21 years among males and females,²³ suggesting that shisha smokers have similar characteristics, regardless of country of residence. As with other studies,^{3,7,21,22} we noted an increase in shisha smoking among females compared with cigarette smoking. This may reflect the social acceptance of this kind of tobacco use. This is of concern, nevertheless, especially knowing the dangers associated with this type of addiction, which may indicate the need to address tobacco smoking with a special focus on shisha smoking among females.

A large proportion of the shisha smokers in the current study were unaware of the dangers associated with the habit and considered it a better alternative to cigarette smoking. This is consistent with other studies,^{19,20,24,31,34} and requires direct intervention from the health authorities to address this gap in knowledge and related misconceptions.

There was a clear impact between the sexes on attitude score. Our data suggest a disparity between the sexes in how shisha smoking was perceived by smokers, with female smokers demonstrating an overall more positive attitude than male smokers towards shisha; more females would mind if their spouses smoked shisha and perceived that it was not acceptable for women to smoke shisha even though they were smokers themselves. In contrast, men did not mind their spouse smoking a waterpipe, and found it acceptable for women to smoke shisha. Although this may reflect the cultural backgrounds of the participants, further studies may be needed to investigate the reasons behind these findings.

Looking at the statement pertaining to allowing children to smoke, the results showed that 72% of participants agreed with the statement. Participants might have understood the question as to whether they would not mind their children smoking in the future once they are grown up, which could reflect a problem with the way the question was worded. We therefore advise caution with respect to this response. As children of shisha-smoking parents have a greater tendency to be smokers themselves, as demonstrated in previous studies, it is alarming to note such a response to the statement.³⁵ This may certainly contribute to the increasing trend in shisha smoking and should be addressed.

Regarding intention to quit and motivation, the majority of the smokers were confident that they could quit smoking. However, they did not seem to have the intention to quit within the next 6 months. This is similar to studies conducted in the USA and Syria, in which shisha smokers were also confident about being able to quit, yet did not intend to do so.^{24,31,34} Almost half of our participants had tried quitting smoking at least once, and stated that the most motivating reason for their attempts was health concerns. The majority stated that there was no challenge to quitting, although some identified free time as the most significant challenge. Shisha smokers in general do not seem to find major challenges in quitting.²⁴

The Global Adult Tobacco Survey (GATS), published by the WHO in 2013, showed a prevalence in Qatar of tobacco smoking (waterpipe and cigarettes) of 12.1%.³⁶ This might be an underestimation, as only one member represented each household. Our results show that multiple people in one house were shisha smok-

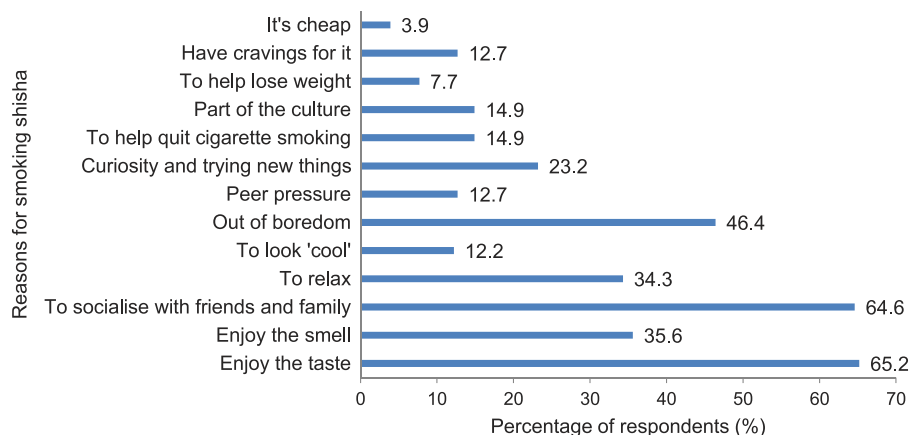


FIGURE Reported reasons for smoking shisha. Representation of results in percentages for multiple answer question 'Why do you smoke shisha?'

TABLE 2 Attitudes and perceptions towards the health risks of shisha among shisha smokers in Qatar ($n = 181$)

To what extent do you agree or disagree with the following statements	Total number of shisha smoker participants ($n = 181$)				
	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
1 Shisha is safer for my health than cigarette smoking	29 (16)	50 (27.6)	27 (14.9)	61 (33.7)	14 (7.7)
2 Shisha is less addictive than cigarettes	8 (4.4)	36 (19.9)	20 (11.0)	84 (46.4)	33 (18.2)
3 I am addicted to shisha smoking*	43 (23.9)	78 (43.3)	26 (14.4)	26 (14.4)	7 (3.9)
4 Shisha smoking is more culturally acceptable by my family than cigarette smoking	23 (12.7)	37 (20.4)	35 (19.3)	72 (39.8)	14 (7.7)
5 It is acceptable for women to smoke shisha	41 (22.7)	40 (22.1)	32 (17.7)	56 (30.9)	12 (6.6)
6 I would accept it if my spouse smoked shisha	57 (31.5)	34 (18.8)	24 (13.3)	53 (29.3)	13 (7.2)
7 I would allow my children to smoke shisha	78 (43.1)	52 (28.7)	23 (12.7)	20 (11.0)	8 (4.4)
8 Many people find my habit of smoking shisha unacceptable	14 (7.7)	59 (32.6)	38 (21.0)	56 (30.9)	14 (7.7)
9 Serving shisha to guests is acceptable	23 (12.7)	56 (30.9)	39 (21.5)	53 (29.3)	10 (5.5)
10 I would encourage others to smoke shisha with me	38 (21.0)	71 (39.2)	28 (15.5)	38 (21.0)	6 (3.3)
11 Shisha smoking is becoming more popular	3 (1.7)	10 (5.5)	18 (9.9)	89 (49.2)	61 (33.7)
12 There should be age restrictions for shisha smoking in cafes	100 (55.2)	66 (36.5)	8 (4.4)	6 (3.3)	1 (0.6)
13 Shisha smoking can cause lung cancer*	67 (37.2)	61 (33.9)	40 (22.2)	11 (6.1)	1 (0.6)
14 Shisha smoking can cause other types of cancers	52 (28.7)	68 (37.6)	47 (26.0)	14 (7.7)	0 (0)
15 Shisha can worsen lung diseases such as asthma	58 (32.0)	84 (46.4)	29 (16.0)	8 (4.4)	2 (1.1)
16 Shisha can cause heart diseases	58 (32.0)	70 (38.7)	40 (22.1)	11 (6.1)	2 (1.1)
17 Shisha smoking is harmful to people around me	64 (35.4)	74 (40.9)	30 (16.6)	10 (5.5)	3 (1.7)

*Data missing.

TABLE 3 Sex differences by attitude statements among shisha smokers in Qatar ($n = 181$)

Statement	Males ($n = 143$)		Females ($n = 38$)		P value
	SA/A n (%)	SD/D n (%)	SA/A n (%)	SD/D n (%)	
I am addicted to shisha smoking	93 (65.0)	26 (18.2)	28 (73.7)	7 (23.7)	0.111
It is acceptable for women to smoke shisha	75 (52.4)	42 (29.4)	6 (15.8)	26 (68.4)	<0.001
I would accept it if my spouse smoked shisha	88 (61.5)	36 (25.2)	3 (7.9)	28 (78.9)	<0.001
I would allow my children to smoke shisha	114 (79.7)	16 (11.2)	16 (42.1)	12 (31.6)	<0.001

Percentage calculations included the option of neutral.
SA = strongly agree; A = agree; SD = strongly disagree; D = disagree.

TABLE 4 Attitude towards motivation and intention to quit among shisha smokers in Qatar ($n = 181$)

	<i>n</i> (%)
How would you rate your confidence that you could quit shisha smoking at any time?*	
Not at all confident	13 (7.3)
A little confident	35 (19.6)
Moderately confident	46 (25.7)
Very confident	85 (47.5)
Do you have the intention to quit shisha smoking?	
Yes	98 (54.1)
No (will be N/A for following question)	83 (45.9)
When do you intend to quit shisha?	
Within one month	39 (21.5)
1–6 months	30 (16.6)
>6 months	29 (16.0)
N/A	83 (45.9)
Did you try quitting shisha before?	
Yes, once	34 (18.8)
Yes, a couple of times	49 (27.1)
No, never (will be N/A for following question)	98 (54.1)
What is the main motivation that made you try quitting?	
Health problems	30 (16.6)
Family	11 (6.1)
Friends	9 (5.0)
Lack of time	16 (8.8)
Religious	11 (6.1)
Others	6 (3.3)
N/A	98 (54.1)
What do you think is the main barrier for quitting shisha?†	
Friends	26 (14.8)
Family	7 (4.0)
Addiction	16 (9.1)
Free time	38 (21.6)
Fear of stress	15 (8.5)
No barriers	64 (36.4)
Others	10 (5.7)

*2 had data missing.

†5 had data missing.

N/A = not applicable.

ers. Moreover, this habit is perceived as a social norm, in which friends and family share a shisha session.

To our knowledge, this study is the first to assess the perception, attitudes and intentions to quit among shisha smokers in Qatar. Among the major limitations of this study are the ability to approach some of the respondents directly from targeted shisha cafes and the generally small sample size that was selected based on convenience. Moreover, there was a probable association between different ethnic groups and shisha smoking³⁷ that was not measured in this study and might have influenced the current findings.

CONCLUSION

A significant proportion of shisha smokers in Qatar have negative perceptions and attitudes towards the harmful effects of shisha compared with cigarette smoking. The most commonly reported motivation for quitting was the perception of health risks or having a health problem, which suggests that shisha smokers were aware of the health dangers. Implementing educational interven-

tions in the country to improve knowledge and change attitudes towards shisha smoking is recommended. Finally, development and enforcement of policies banning waterpipe smoking in public places, including restaurants, are needed in Qatar.

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Objectif : Evaluer les perceptions et attitudes des fumeurs de pipe à eau (*shisha*) au Qatar en ce qui concerne les risques sanitaires associés à l'addiction et déterminer leurs intentions d'arrêter.

Méthodes : Une enquête transversale a été réalisée auprès de 181 fumeurs de pipe à eau. Les participants ont été approchés dans des lieux publics ainsi que dans des cafés à shisha au Qatar. Le questionnaire a inclus des items liés aux perceptions, aux attitudes et aux intentions de s'arrêter. Des études statistiques descriptives et déductives ont été réalisées pour analyser les données, avec $P \leq 0,05$ considéré comme statistiquement significatif.

Résultats : Près de 44% des répondants pensaient que fumer une pipe à eau était plus sûr que fumer des cigarettes, et plus de 70% ne

verraient pas d'inconvénient à ce que leurs enfants se mettent à fumer la pipe à eau. De plus, plus de la moitié des fumeurs actuels voulaient arrêter de fumer la shisha à un moment ou à un autre et 17% indiquaient qu'une préoccupation relative à leur santé était le facteur de motivation principal dans leur intention d'arrêter.

Conclusion : Une large proportion de fumeurs de shisha la considérait comme une alternative plus sûre que les cigarettes, mais ils admettaient volontiers qu'ils avaient l'intention d'arrêter. Ces résultats soulignent la nécessité d'élaborer des interventions à visée éducative et des campagnes de sensibilisation ainsi que d'imposer des lois strictes relatives à l'utilisation de la pipe à eau dans des lieux publics au Qatar.

Objetivo : Evaluar las percepciones y las actitudes de los fumadores de pipa de agua (*narguile*), con respecto a los riesgos sanitarios asociados con este hábito en Qatar y determinar sus intenciones de abandonar el consumo.

Métodos : Se realizó una encuesta transversal a 181 personas autorreferidas como fumadoras de pipa de agua. Los participantes se abordaron en lugares públicos y también en cafés que ofrecen el consumo de narguile en Qatar. El cuestionario comprendió elementos sobre la percepción, las actitudes y la intención de abandonar el hábito. Se aplicaron estadísticas descriptivas y deductivas en el análisis de los datos y se optó por una significación estadística correspondiente a un valor de $P \leq 0,05$.

Resultados : Cerca del 44% de quienes respondieron consideró que el consumo de narguile era más seguro que el consumo de cigarrillo y más del 70% no se preocuparía si sus hijos se inician en el hábito. Además, más de la mitad de los fumadores actuales ha deseado abandonar el consumo de narguile en algún momento. El 17% de los encuestados atribuyó a los problemas de salud la principal motivación de su intención de abandonar el consumo.

Conclusión : Una gran proporción de fumadores de narguile considera este consumo como una alternativa más segura que los cigarrillos y sin embargo admite tener la intención de abandonarlo. Los resultados del estudio destacan la necesidad de concebir nuevas intervenciones educativas y campañas de sensibilización, además de la aplicación de leyes restrictivas sobre el consumo de narguile en los lugares públicos en Qatar.