Original Article

Smoking Patterns and Willingness to Quit: A Cross-sectional Study in Al Ain City, UAE

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ABSTRACT

Background: Tobacco use is the major cause of preventable morbidity and mortality. The main objectives of this study were to identify smokers willing to participate in quit smoking campaigns using social media and to identify smoking habits of everyday smokers in Al Ain City, United Arab Emirates (UAE). **Research Design and Methods:** Everyday smokers from Al Ain city of the UAE were surveyed in different locations of the city including malls and specialized tobacco-selling shops. They were interviewed using a semi-structured survey and the information was recorded by one assessor. The information gathered included type and frequency of tobacco use, smoking history and habits, quitting history, desire to quit, and the preferred communication platform. **Result:** A total of 412 regular adult smokers were interviewed in which the majority (95%) reported first smoking at or before the age of 28 years. Participants were mainly UAE nationals (33.7%), Egyptians (14.1%), Syrians (12.9%), and Jordanians (10.9%). Manufactured cigarettes were the main form of tobacco consumption (59.5%), and smoking was mainly solitary (56.3%) and at home (26.3%) and coffee shops (24.9%). The majority of interviewed subjects (76.7%; 95% confidence interval [CI]: 72.4%–80.5%) expressed their interest to quit smoking in the future and 55.3% (95% CI: 50.5%–60.2%) were ready to get involved immediately in a smoking cessation program. Of those, 80.3% (95% CI: 74.6%–84.9%) preferred WhatsApp for receiving smoking cessation motivational education. **Conclusion:** The majority of smokers started at younger ages, which warrant the age of smoking restriction to be raised to 29 years instead of 18 years by the health authority. Everyday smokers were aware of the potentially hazardous effects of tobacco smoking and many were willing to accept help to quit smoking that involves the use of WhatsApp.

KEYWORDS: *Abstinence, age group, smokers in Al Ain City, smoking cessation, smoking habits, WhatsApp*

INTRODUCTION

There are different forms of tobacco smoking, which include manufactured cigarettes, hand-rolled cigarettes, kreteks, pipe full of tobacco, cigars, water pipe, electronic cigarettes (e-cigarettes), and the smokeless tobacco (e.g., chewing tobacco). In addition to nicotine dependence, smoking is undisputedly associated with a significant number of diseases including adverse pregnancy and birth outcomes, type 2 diabetes mellitus, cardiovascular diseases (i.e., coronary heart disease, stroke, and myocardial infarction), chronic obstructive pulmonary disease, and lung and other organ cancers.[1,2] The illnesses caused by tobacco smoking are not limited to smokers as secondhand smoke has also detrimental

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health effects, especially when smoking indoor accompanied by nonsmokers.[3,4]

Tobacco taxation is thought to reduce smoking-related morbidity and premature deaths; however, it has also affected poor people.[5] The economic costs of smoking can be classified into direct and indirect costs.[6] The direct costs are related payments made for smoking and smoking-related illness, whereas indirect costs represent morbidity, mortality costs, and disability adjusted life years. In China, the total direct and indirect costs of smoking for persons aged 35 years and older raised from $17.1 billion in 2003 to $28.9 billion in 2008.[7] It has been estimated that US employer of a tobacco smoker bears an excess of $5816 annually compared to employing a nonsmoker because of absenteeism, smoking breaks, and health-care costs.[8] Furthermore, the calculated cost of smoking-related illness to the National Health Service (NHS) of the United Kingdom (UK) was £3.3 billion in 2006–2007.[9] Cigarettes smoking is known to be associated with the consumption of alcohol.[10,11] The financial burden for the NHS because of alcohol-related sickness was also £3.3 billion in 2006–2007.

Quitting smoking can significantly reduce the risk of diseases, and the US Centers for Disease Control and Prevention offers a variety of online resources to help smokers quit the habit.[12-14] This will result in a decreased morbidity, mortality, and burden to the health-care providers. Several approaches for smokers to give up smoking are available. These include educational materials, mailings and phone calls, test messaging, counseling, cognitive behavioral therapy, varenicline (an alpha-4, beta-2 nicotinic receptor partial agonist), and the use of antidepressant bupropion to relieve nicotine withdrawal symptoms, but nicotine replacement (i.e., transdermal nicotine patch, nicotine gum, nicotine nasal spray, nicotine oral inhaler, e-cigarettes, and nicotine lozenge) remains the mainstream pharmacotherapy.[15-17] Factors can interfere to enhance quitting rates such as smoke-free environment (i.e., smoking bans in public places), quitter determination, motivation, alcohol asceticism, financial incentives, and better stress management.[18-21]

The purpose of this research was to identify everyday smokers' characteristics in Al Ain City, UAE and their willingness to participate in a smoking cessation campaign to support health-care providers and regulators to intervene.

RESEARCH DESIGN AND METHODS

Location and sample size

Everyday smokers (formerly known as regular smokers) were identified and interviewed at different locations of Al Ain City, UAE, including malls and specialized tobacco-selling shops. According to the Global Media Insight (Dubai, UAE), the UAE population is approximately 9.54 millions in which expatriates constitute the majority of approximately 88.5% with male gender being the dominant in the total UAE population making approximately 72%.[22] Al Ain City population exceeds 500,000, and it was chosen because of the assessor convenience.

The interviews were made after assuring the participants of keeping their identity confidential and after obtaining the participants' consent. The study received approval from the institutional ethics committee (Ref.: REC 2015101). The primary end point in the calculation of the sample size was whether the participants are willing to quit smoking at some point in time with anticipated rate of 60% based on another study conducted in Poland and published in 2017.[23] The confidence interval (CI) level for the calculation of the sample size was 95% (95% CI) with the total width of the CI being 10%. As such, the number of participants was 386. It was decided to approach 800 current smokers with anticipated participation rate of approximately 50%. The length of the study was therefore dependent on having the right number of participants.

Participants' inclusion criteria

Participants were interviewed if they were adult (aged ≥15 years) and everyday smoker. For the purpose of this study, everyday smoker is the one who smoked at least 100 cigarettes/smoke sessions in his or her lifetime, and who now smokes every day any of the assessed tobacco products with the exception of water pipe smoking.[24] For the latter, regular (everyday) smoker was assumed if his/her tobacco sessions were at least once weekly on average. Both genders were admissible for the interview if they meet the inclusion criteria and are freely willing to participate.

Interview

The interview was to identify adult everyday smokers at certain sites in Al Ain City, UAE, such as outside malls while smoking, inside one of the city malls while having anti-smoking campaign stand for 1 week, or after buying tobacco products from tobacco shops. This will ensure capturing potential participants. For interviews, semi-structured questions were prepared after modification from the "*Tobacco Questions for Surveys: A Subset of Key Questions from the Global Adult Tobacco Survey (GATS).*"[25] Demographic data were obtained from the eligible and consenting participants about the type of tobacco product used, tobacco smoking history and consumption habit, and tobacco smoking cessation attempts and successful

ones. For the purpose of this study, successful attempt to quit smoking was defined as an attempt that resulted in complete cessation of any tobacco product consumption for at least 1 month. Additional questions were regarding whether they would be ready to quit smoking and their preferred method of follow-up and sending standardized anti-smoking educational text, graphic, and video messages, whether by WhatsApp (Subsidiary to Facebook, WhatsApp Inc., Mountain View, California), Facebook (Facebook, Menlo Park, California), e-mail, mobile short message service (SMS), or other. WhatsApp and Facebook are used by at least 97% of the UAE population according to the Global Media Insight.[22] One assessor was used to report the results on the questionnaire sheets directly while each participant was interviewed.

Statistical analysis

Excel (Office 365, Microsoft, Washington) was used for the statistical analysis, for both descriptive and inferential analysis. The 95% CI, assuming $\alpha = 0.05$, and two-tailed test were applied in the proportion of participants willing to quit smoking and the method of follow-up for sending anti-smoking educational materials.

RESULTS

Cross-sectional survey analysis

The field interviews were carried out over 3 months and 20 days. Of the 800 smokers identified, 412 participants agreed for further interview (i.e., 51.5%). Of those, 20 participants were female (i.e., 4.9%). Approximately 52% of the participants started smoking before the legal age of purchasing tobacco products in many countries (i.e., at least 18 years of age). Between the age of 18 and 28 years, 43% of the participants started smoking, 3.3% between 29 and 39 years, and 0.7% started at the age of 39 years or above. No association was observed between the time to reach the workplace and back and the number of manufactured cigarettes smoked by the participants (Pearson's correlation, $r = 0.063$, two-tailed test, $\alpha = 0.05$). The other demographic details are provided in Table 1.

The majority of participants smoke regular manufactured cigarettes (59.5%), followed by smoking pipes (30.3%) and water pipe (also known as hookah) by 17.2%. Table 2 provides information about the number of participants using each method of tobacco consumption. Approximately 5% of the participants smoke two types of tobacco products, 3% smoke three types of tobacco products, and 0.5% smoke four types of tobacco products.

For regular manufactured tobacco smokers, the mean number of cigarettes smoked per day was 21 (range,

1–80 cigarettes), whereas the mean for pipe smoking was approximately 20 (range, 1–100 pipe smoke sessions). The mean number of sessions for water pipe smoking per week was approximately nine (range, 1–28).

When the smokers were asked about the places where they spend most of their time while smoking (at least 90% of the smoking time), the highest percentage indicated that it was at their home (26.3%), followed by at coffee shops (24.9%). Other nonspecific locations were chosen 25.8% of the times. The complete distributions of the main locations for their tobacco use are given in Table 3. Approximately 8% of the participants indicated two or three locations for most of their smoking sessions.

Participants indicated that they usually smoke alone (56.3%), with family members (9.0%), with friends (36.9%), and with others (1.7%). Approximately 4% of the participants chose two or three categories

Table 1: Age, employment, and daily time spent to and from the regular destination of everyday smokers participating in the survey (*n* = 412)

Demographic characteristics	Value
Age in years (mean: range)	Mean = 32.3 (range, 15–72)
% Employed (employee, self-employed, businessperson, etc.)	78.6%
% Students	12.4%
Total time to reach their weekdays destination place and back home for employed/students in minutes	Mean = 36 (range, 0–360)
Nationality of the participants	(%)
Locals	33.7
Egyptians	14.1
Syrians	12.9
Jordanians	10.9
Palestinians	4.4
Indians	2.9
Pakistanis	2.7
Lebanese	2.7
Others	15.7

Table 2: Number of participating smokers using each type of tobacco for use

Type of tobacco consumption	Number of participants
Manufactured cigarettes	245
Hand-rolled cigarettes	5
Kreteks	2
Pipes	125
Cigars, cheroots, or cigarillos	4
Water pipes	71
Other types	1

regarding with whom they smoke tobacco products. It was expected that the majority of water pipe smokers would have the tobacco sessions with their friends at coffee shops. In fact, approximately 46.5% had them with their friends at coffee shops (64.8%).

When participants were asked if they attempted to quit smoking previously, the majority indicated that they did (71.6%). The average number of attempts were four (range, 1–100). Last year alone, 48.8% attempted to quit smoking with the number of attempts ranging from one to five. The main reason given for quitting smoking was for health issue (56.6%). No specific reason was indicated by 5.1% of the participants to quit smoking. These information with other reasons are summarized in Table 4.

Many of the participants who attempted to quit smoking were in a period of abstinence of at least 1 month as defined in this study (47.8%). These attempts were apparently not long-lasting even with the successful attempts ranging from 1 to 20. During a visit to a health-care provider in the past 12 months, 30.8% of the participants were advised to quit smoking. Significant percentage of participants (76.7%; 95% CI: 72.4%–80.5%) indicated that they wished to quit smoking and 55.3% (95% CI: 50.5%–60.2%) indicated their interest to be contacted as soon as possible for free consultation and follow-up. WhatsApp was the best method of contact for sending educational advices and motivational messages chosen by the ready to participate smokers (80.3%; 95% CI: 74.6%–84.9%), followed by mobile SMS (59.2%; 95%

CI: 52.7%–65.4%). Other methods of contact received less than 1.5% of favor each.

DISCUSSION

The interview questions were not validated because they were adapted from the "*Tobacco Questions for Surveys: A Subset of Key Questions from the Global Adult Tobacco Survey (GATS)*." One trained assessor from the study investigator was responsible for conducting the interview to avoid any discrepancies in recording the collected information. As expected, close to 50% of the smokers that were approached agreed to participate in the interview. Higher proportion of participants agreed to having face-to-face interview compared to telephone interview as was reported in one published study.[26] Face-to-face interviews have been documented to have more participants with least biases compared to telephone interview or online surveys addressing the behavioral characteristics of the participants.[27] Web-based surveys have been associated with bias because of low and selective participation. The online survey response can be as low as 13%.[28] Therefore, our method of face-to-face interview can provide reliable results.

The clear majority of participants started smoking before the age of 29 years but extended to as high as 46 years old. The wide range of participants' age is consistent with other studies that showed smokers were from different age groups.[29,30] A study published in 2011 showed that among UAE nationals (aged ≥18 years), the mean age for smokers was 32.8 years with approximately 3% being female, which is in agreement with our study.[31] This allows the generalization of this study outcomes because it involves participants over a wide age spectrum. It involved age group of 15 years or more. On the other hand, it has been documented that school students aged 13–15 years use tobacco at higher rates compared to adults in UAE, mainly in the form of water pipe.[32]

Smoking while driving could be a reason for getting into road accidents.[33,34] It has been documented that the exposure of children to smoking in the car resulted in their significant early smoking activities.[35] In this study, it was hypothesized that the longer the distance to the workplace, the larger the number of cigarettes smoked, because of possible traffic jam–related stresses. This was not evident in this study, which maybe explained in terms of good road infrastructure in UAE and especially Al Ain City, which reduces the traffic jam. In addition, because of the country's hot condition, most drivers will need to close their car windows, which causes their cars' internal fabrics to absorb the unpleasant smell of the cigarette smoke. This can be

Table 3: Common locations the smokers consume their tobacco products

Smoking location	% of participants
Home	26.3
Workplace: indoor	11.9
Workplace: outdoor	11.0
Coffee shops	24.9
Other locations	25.8

Table 4: Reasons chosen by the participating smokers for attempting to quit smoking

Reasons for quitting smoking	% of participants
Health	56.6%
Money	2.7%
Social respect	5.8%
Undesirable smoking smell	1.0%
Inability to sleep	0.3%
Feeling tired	5.4%
No reason	5.1%
Other reasons	35.6%

inconvenient to other passengers who may accompany the drivers to work or other places. This study however revealed that only 1.0% of the participants wished to quit because of smoke smell.

Although the UAE population is highly diverse and its citizens constitute relatively small proportion (approximately 12%), they were the largest number of smokers who agreed to being interviewed. Data from the Health Authority Abu Dhabi (HAAD) showed that between April 2011 and December 2011, approximately 60% of the smokers that registered in the premarital screening program database were UAE nationals, whereas other Arab expatriates constituted approximately 30%, which are consistent with our findings.[36]

Manufactured cigarettes were favored by the participants in our study, which supports another study that analyzed surveys from individuals aged 15 years or older in 14 low-income and middle-income countries.[37] Also, another study carried out in the Middle East and North Africa indicated that most of the smokers in UAE used the manufactured cigarettes only (85%) compared to 7% who smoked water pipe. It was also published that among UAE nationals aged 18 years or more, cigarette smoking was the most common form of tobacco use (78% of smokers), followed by pipe (13%), shisha (5%), and cigar (0.5%), which is in agreement with our study.[31] Our study documented that pipe smoking is widespread among participants, ranking second after manufactured cigarettes. Pipe smoking (also called "midwakh" or "dhokha") has been documented to be widely used but underreported.[38] The use of pipe smoking by medical field students was also reported in Ajman, UAE with male participants significantly higher than the female participants.[39]

It is well known that secondhand smoke associated with indoor smoking can significantly cause serious problems to nonsmokers.[40] In addition, there have been restriction in some countries for smoking outdoors and this has been viewed as a positive move toward controlling littering, reducing exposure to secondhand smoking, establishing a constructive role model for youth, and reducing smoking opportunities.[41] Significant proportion of the participants smoke indoor, including their own home and workplace. On the other hand, many indicated that they do this while being alone, which could lead not only to significant increase in risk to smokers themselves but to nonsmokers who might be present at other times in the same place.[42] It has been documented that friends and community level adults' daily smoking prevalence influence adolescents' cigarette smoking.[43] Although

UAE has many regulations to counter smoking such as high tobacco tax, restriction in licensing tobacco retailers, and banned smoking areas, additional comprehensive smoke-free regulations will be needed, including assuring compliance with the existing legislations.[44] Although selling tobacco is banned in UAE to individuals who are less than 18 years, more than half of the participants in the interview either were less than this limit or started smoking before the age of 18 years, indicating that some tobacco retailers may not be fully complying with the available UAE legislation.

Our study indicated that as many as half of the participants attempted to quit smoking last year alone, which is in agreement with the four-country cohort survey conducted in Australia, Canada, the UK, and the United States, which found approximately 40.1% of smokers attempted to quit in a given year with a reported average of 2.1 attempts.[45] Another study indicated that recent attempts to quit, which resulted in relapse is also associated with relapse in any future attempt to quit smoking. Nicotine dependence, smoking smells, and lack of smoking cessation aids were factors that influenced the relapse.[46]

According to the World Health Organization, most tobacco users want to quit when they become aware of full range of harmful effects it can produce and the benefits from smoking cessation.[47] This supports our findings that significant proportion of the participants wanted to quit mainly because of the health-related reasons. Moreover, more than half of the participants indicated their willingness to be contacted to participate in smoking cessation campaign as soon as possible. The significant percentage of smokers willing to participate reinforces previously published study in which 60% of hospitalized smokers expressed their willingness to quit immediately. Our results create a wide range of opportunities for the government in planning smoking cessation campaigns. Giving advice alone based on medical grounds can result in an increased rate of quitting attempts.[48] Therefore physicians, health-care providers, or free telephone counseling (e.g., quit lines) can play a role in improving the willingness to quit. In addition, it has been documented that the use of WhatsApp social group was effective in reducing the associated relapse.[49] The evolution of social network mobile applications such as the "Facebook" or communication applications such as the instant messaging service "WhatsApp" is having a great impact on the delivery of health services. For example, a group of patients starting orthodontic multibracket treatment enrolled in a WhatsApp chat room to show self-photographs (as a competition) of their oral hygiene status over 1 year showed significantly

lower plaque index, gingival index, white spots, and caries presence compared to that of a control group.[50] The use of stand-alone tailored cessation e-mails was found to be more effective in increasing smoking abstinence than a single non-tailored e-mail.[51] A study comparing Facebook to WhatsApp showed the latter was more effective in reducing smoking relapse resulting from better interaction and peer support in the social groups.[49] The participants in the WhatsApp social groups shared more posts with each other consisting of views and experiences, motivation, and knowledge and information.[52]

CONCLUSION

Face-to-face interview is an effective tool of collecting information from significant proportion of targeted population. Smokers were from different age groups and included those who were less than 18 years of age. The initial smoking age of many participants was less than 18 years, making this age group more vulnerable to the influence of friends. Most participants were male, smoke at home, and do it alone, with manufactured cigarettes being the most commonly used followed by pipe and then water pipe smoking. Many participants had managed to quit smoking in the past for at least 1 month because of health reasons but went into relapse. Significant proportion were also ready to quit and to participate in a smoking cessation program immediately. WhatsApp was the method of choice for receiving anti-smoking messages and tailored social support. This creates an opportunity for the health authorities to mediate and prepare relevant effective smoking cessation campaigns that can reduce the financial and health impact of smoking consequences.

Ethical approval

The authors sought ethical approval from the Al Ain University of Science and Technology Ethics Committee. There was no need to obtain ethical approval from the Health Authority. The interviews were made after assuring the participants of keeping their identity confidential and obtaining the participants consent. The study received ethical approval from Al Ain University of Science and Technology Research Ethics Committee (Ref: REC 2015101).

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Conflicts of interest
There are no conflicts of interest.

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