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Summary

Objectives This study aimed at estimating the number of users of different types of tobacco, particularly narghile (water pipe) among a sample of women working at a higher education institute in Jordan. It also investigated the attitudes of narghile smokers to their habit, together with their willingness to stop NS; and finally their awareness to oral health and their perceptions about the harmful effects of NS.

Design The study was a cross-sectional survey whereby the sample was randomly selected from all the faculties, institutes and centres of the University. Data were collected by interview method to complete a pre-prepared questionnaire, followed by statistical analysis using the SPSS program.

Results Among the (96) participants, 24 ladies were smokers mostly (79.2%) of narghile. Demographic and social data of age, marital status, education level and number of children had no influence on smoking status. Whereas the hygienic practices related to narghile smoking was below the required level, narghile smokers reported a satisfactory level of oral health practices and were aware of the health risks associated with this habit.

Conclusions Narghile smoking is showing popularity among educated working Arabic women who invariably have children. Social influences seem to be the major player in shaping women's smoking behavior whereby close family and friends are the introducers and home is the favorable place for practicing the habit. Urgent measures are needed to educate women and their
husbands of the health hazards of narghile especially that children are adversely affected on different levels.

Key words Arab, women, educated, narghile, tobacco
Introduction

In many Arabic countries, narghile smoking (NS) is common and whilst normally practiced by men, it is gaining increasing popularity amongst women. Statistics for the prevalence of NS among young Arab females are disturbing, particularly in countries such as Syria, Jordan, Egypt and Lebanon. The prevalence is also relatively high among Palestinian girls and those in the gulf region. A number of factors may contribute to this phenomenon. Whereas cigarette smoking among females is still considered a social taboo in conservative Arabic societies, a permissive and even encouraging role is invariably adopted by society with respect to NS.

Among many other issues pertaining to women, the Jordanian government considers the advancement of women a national priority and with respect to education and employment, the aim is that women should share equality with men. From a social perspective, the habit of NS has been linked with modernization, spending power and education and there is a common misconception that the practice has no health risks. In the present study, we wanted to extend previous observations on the prevalence of NS in females and examine the practice of NS in educated working Arabic women who were married and had children. We examined 1) the number of users of different types of tobacco, particularly NS; 2) the attitudes of narghile smokers (NSs) to their habit, together with their willingness to stop NS; and 3) the awareness of NSs to oral health and their perceptions about the harmful effects of NS. We believe that only by determining women's attitude towards NS and evaluating actual practice can appropriate anti-smoking campaigns be devised and government policy developed. We particularly targeted working married women who have
children because the education of both parents and children alike will be fundamental to the success of any national anti-smoking directive.

Methods

Data collection

This study was a cross-sectional survey of female employees at the University of Jordan. The study sample was randomly selected and subjects were derived from all of the Faculties, Institutes and Centres of the University. All of the subjects were interviewed and each participant completed a pre-prepared questionnaire; certain questions were explained more fully, as required.

The questionnaire was in Arabic and had been validated previously\(^2\). In brief, each question was read to 5 volunteers, checked for clarity of meaning and, as necessary, modified until there was consistency between all of the volunteers. As a separate exercise, the questionnaire was distributed to a further 10 women and after 1 week, the process repeated. The completed questionnaires were compared to ensure that the answers were similar, thereby confirming, albeit in part, the clarity of the questions; vague questions were modified accordingly. The questionnaire was structured into 1) demographic data such as age, educational level, marital status and number of children, 2) history of tobacco use in general and NS specifically and 3) medical issues such as awareness of the health hazards of NS and willingness to stop the habit, general medical health and oral health.
Statistical analysis

The statistical analysis program SPSS (Statistical Package for Social Sciences) version 17.0 (SPSS, 2008) was used to undertake all of the statistical analyses.

Results

Demographic data

The number of women participating in the survey was 96. 4 individuals declined to participate in the study. The demographic characteristics of the sample are shown in Table I. 24 of 96 women were smokers; of these 24 women, 7 confirmed at interview that they were smokers whilst the remainder declined to admit the habit other than through the questionnaire. Among the 24 smokers, 5 women were cigarette smokers, 1 woman smoked both cigarettes and narghile and 18 women smoked narghile exclusively. Thus, the study groups consisted of 19 narghile smokers (20%), 5 cigarette smokers (5%) and 72 non-smokers (75%). There were no statistical differences between narghile smokers and non-smokers in terms of age (mean age of NSs 48.2 years; mean age non-smokers 48.6 years), marital status, educational level and number of children (mean number children for NSs 1.95; mean number of children for non-smokers 1.65). While the majority of participants (42.7%) had a bachelor degree, a minority (8.3%) had a masters degree and one participant did not declare her education level.
**Characteristics of smokers**

No narghile smoker indicated the frequency of their practice. The age of onset of narghile smoking was 20-40 years, with a mean of 27.5 years. By contrast, the age of onset for cigarette smoking was 10-30 years, with a mean of 21.2 years. The social aspects of NS are shown in Table II. Briefly, individuals practiced NS within the home environment and shared the habit with close family and relatives.

**Disposable parts**

Disposable mouth pieces (mabsams) and hoses are available to promote hygienic NS. In the present study, 12 women used mabsams, 5 women did not use mabsams and 2 women were unaware of their availability. When asked if they still smoke narghile when mabsams are unavailable, 12 women reported that they would still smoke, 6 women would decline to smoke and 1 failed to reply. The material of mabsams used routinely was: gypsum (1), metal (3), plastic (10) and wood (5). With respect to disposable hoses, 8 women reported that they would want to use a disposable hose in a cafe, 9 women would not use it and 2 women failed to reply. When disposable hoses were not available, 10 women would smoke, 6 women would resist the practice completely and 3 women failed to reply.

**Medical aspects and oral health awareness**

Among the non-smokers, 7 women reported that they had medical problems compared to 4 women who smoked (3 were NSs). When the study sample was stratified for medical history, there were no significant statistical differences between
the number of non-smokers and smokers (p=0.46) and between non-smokers and NSs (p=0.45).

Regarding oral hygiene practices, all participants brushed their teeth daily, with most using dental floss and a mouth wash daily. 24 participants (25%) visited the dentist regularly compared to 33 (34%) women who reported that they never visited the dentist; the remaining participants, including 16 NSs, attended a dentist as required.

19 of 19 women who were NSs (100%) stated that NS was harmful, a figure that compared to 67 of the non smokers (93%); 8 women gave no reply to the question. With respect to whether NS was more harmful than cigarette smoking, both NSs (n=12; 63%) and non-smokers (n=42; 62%) thought that this statement was true. The harmful effects cited by the participants included infections, stomach problems, lung disease, cancer and lung cancer, halitosis and heart problems.

Cessation

12 women (63%) stated that they were interested in stopping NS whilst the remaining 7 women reported that they would continue the practice. 11 women had already tried to stop NS but explained that this was difficult because it was fun, it had a pleasant taste and it was encouraged by family and friends.
Discussion

This study examined the incidence of NS smoking, together with practices, attitudes and health awareness, in women employed by the University of Jordan. The University was established in 1962 and was the first Institution of Higher Education within the country. It employs a total of 1011 women and is an ideal study group to examine the views of educated women. We recruited approximately 10% of this workforce to the present investigation and whilst we acknowledge that this sample is relatively small, the results demonstrated a number of interesting trends.

Previous studies that have described the smoking behaviour of Arabic women have focused on the young and adolescent age group\(^{2-4,12-15}\). By contrast, the present study relates to NS in educated women who were invariably married with children. Interestingly, the immediate response of these women was to deny the practice of NS completely and only within the privacy of the questionnaire would they admit to NS. These findings suggest an element of guilt or stigma associated with NS and the fact that the age of onset of NS (mean 27.5 years) was later than that of cigarette smoking (21.2 years) is consistent with the view that there is an initial resistance to the practice. Therefore, despite the tobacco industry targeting women through advertisements portraying smoking as associated with independence, stylishness, weight control, sophistication and power\(^{16}\), together with the Government’s consistent efforts to empower women, it would appear from the results of the present study that family and cultural rules play a more important role in shaping the social behavior of women.
One of the most striking findings of the present study was the fact that highly educated women were ignorant of the routine hygienic measures that are available for the practice of NS. Women gave an equivocal response regarding their knowledge of the availability of mabsams and disposable hoses and many reported that they would continue to practice NS even in situations where disposable equipment was not available. By contrast, NSs were aware of the need of oral health by being regular attendees at dental surgeries and were aware of the health risks associated with NS. These rather conflicting observations suggest that there is a fundamental lack of understanding about NS usage and parallel what is known about cigarette smoking. On the one hand, individuals are aware of the health risks associated with smoking but either do not want to stop or cannot give up the practice due to social pressures.

The results of this study demonstrated that NS was invariably practiced in the home environment, with participants being introduced to the practice by close family and relatives. This may be attributable to time constraints on young mothers, the importance that the husband has consented to the practice, the stigma of smoking in public and/or the belief that smoking in the home carries less risk of cross infection. Home NS, however, is likely to occur in front of young children and this has both biological and social implications. The US Environmental Protection Agency, the US National Toxicology Program and the International Agency for Research on Cancer have all reported that NS emits second-hand smoke that contains known human cancer promoters, all of which are likely to be inhaled by children whose parents participate in NS. With respect to the social impact of NS, children will inevitably observe their parents’ smoking, will accept it as the norm and thus will be pre-conditioned to accept the practice when they are adolescents and young adults. Again,
the issue of education would appear to relevant because our sample was specifically derived from educated women working in a University environment and it might have been anticipated that they would have been extremely cautious of NS in front of children and possibly, would wish to set an example to their offspring.

In 2010, the Jordanian Department of Statistics conducted a survey that included 11,885 families residing in different parts of the country and reported that NSs constituted approximately 11% of tobacco smokers and 6% of the study population. The prevalence of NS, therefore, remains widespread. In the present study, we demonstrate that the health and social risks of NS start in the home and children take this practice forward into adulthood due to social and cultural pressures despite high levels of general education. Jordanian society has shown acceptance and even approval of NS in young females and, in the main, this appears to be undertaken in cafes and social gatherings. We suggest that it is now important to develop a different consensus of the harms of NS. The results of the present study suggest that any anti-NS campaign must target the home and both young mothers and children. The fact that a number of participants expressed a desire to stop the practice of NS gives some cause for optimism.
References

Table I  Incidence of narghile smoking

<table>
<thead>
<tr>
<th>Tobacco use</th>
<th>Age group in years (p = 0.91)</th>
<th>Educational level (p = 0.89)</th>
<th>Marital status (p = 0.23)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21-30</td>
<td>31-40</td>
<td>41-50</td>
</tr>
<tr>
<td>Non-smokers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>NS</td>
<td>6</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Cigarette smokers</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Total Number (%)</td>
<td>34 (35)</td>
<td>37 (39)</td>
<td>24 (25)</td>
</tr>
</tbody>
</table>
Table II  Social aspects of narghile smoking

<table>
<thead>
<tr>
<th>Introduction to narghile smoking (number)</th>
<th>Currently smoking narghile with: (number)</th>
<th>Favorable place of narghile smoking (number)</th>
<th>Married women's practice of narghile smoking (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friend (7)</td>
<td>Friend (6)</td>
<td>Home (13)</td>
<td>Sharing narghile with husband (11)</td>
</tr>
<tr>
<td>Husband (3)</td>
<td>Husband (3)</td>
<td>Café (3)</td>
<td>Smoking narghile while pregnant (1)</td>
</tr>
<tr>
<td>Relatives (7)</td>
<td>Relatives (8)</td>
<td>Café/home (1)</td>
<td>Children attending narghile smoking (4)</td>
</tr>
<tr>
<td>Alone (1)</td>
<td>Alone (1)</td>
<td>Farm (1)</td>
<td></td>
</tr>
<tr>
<td>No reply (1)</td>
<td>No reply (1)</td>
<td>No reply (1)</td>
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