Prevalence of smoking in Bahrain

Randah R Hamadeh, Klim McPherson, Richard Doll

Abstract

Objective To determine (a) the prevalence of smoking and its distribution by demographic characteristics in the general population of Bahrain; (b) the types and pattern of smoking; and (c) smoking trends.

Design Analysis of smoking and demographic questions from a 4.5% sample of households. The survey was conducted between September 1981 and February 1983. A two stage sampling design was used, the block being the first stage unit and the household the second stage unit.

Setting A national morbidity survey in Bahrain, Arabian Gulf.

Subjects A total of 9282 adults aged 15 and over.

Results The prevalence of smoking was 33.1% among men and 9.2% among women. Non-Bahraini men had the highest prevalence of smoking (40.4%) followed by Bahraini men (30.6%), Bahraini women (9.5%), and non-Bahraini women (7.9%). Cigarette smoking was the most popular type of smoking followed by the waterpipe. The latter was more prevalent among Bahraini women than men, but has begun to decrease in both sexes.

Conclusion The prevalence of smoking among men and women in Bahrain was lower than in most of the developed and developing countries. However, a secular trend of increasing cigarette smoking was seen.

Introduction

The state of Bahrain is an Arab Moslem independent state composed of an archipelago of 36 islands. It is located in the Arabian Gulf, with the Kingdom of Saudi Arabia to the west and Qatar to the east. The total population of Bahrain according to the 1981 census is 350798. About two thirds of the population are Bahraini nationals and the remaining third are non-Bahraini residents, who are mostly Asians.

Data on the prevalence of smoking in the Arabian Gulf region are limited to special groups (M Yassin, unpublished data). Available evidence indicates that smoking is popular among physicians and other professionals, secondary school boys, and university students (M Yassin, unpublished data). Population based figures on smoking in the Arabian Gulf are available only for Kuwait (NA Al-Naqeeb, unpublished data), where 51.8% of men and 12.1% of women aged 20 years and above are reported to smoke.

The exact date of tobacco introduction to Bahrain is uncertain. However, it can be assumed that it was brought to Bahrain at the beginning of the eighteenth century, similar to Saudi Arabia and other countries in the region. All forms of tobacco are imported in Bahrain as there is no cultivation of tobacco or manufacture of tobacco products.

The objectives of this study were (a) to determine the prevalence of smoking and its distribution by demographic characteristics in the general population of Bahrain, (b) to determine the types and pattern of smoking, and (c) to study smoking trends.

Methods

A national morbidity survey based on a 4.5% sample of total households (58798) in Bahrain was conducted between September 1981 and February 1983 by the Ministry of Health, with a response rate of 99.5%. The national morbidity survey is the first and only survey to be done in Bahrain and the Gulf states to date.

Bahrain is divided into 11 regions, 10 of which are inhabited. These regions in turn are divided into area blocks containing varying number of households.

A two stage sampling design was used, the block being the first stage unit and the household the second stage unit. At the first stage a stratified random sample of blocks was chosen using the regions as strata; in the second stage a systematic sample of households was chosen from the selected blocks. The blocks were selected with probability proportional to the number of households contained in them.

At the time of designing the survey smoking was just one of the variables included and no special emphasis was given to it. Hence, smoking related questions (appendix) along with the others were put to the head of the household or eldest person in the presence of adult members of the family and were intended to identify current smokers in the household and their type and frequency of smoking. Data on ex-smokers, however, were not collected. Information on smoking was obtained for all the 4785 men and 4497 women who were aged 15 years and over. Cigarette smokers were considered to be regular light smokers if they smoked less than one packet a day and regular heavy smokers if they smoked one packet or more daily; otherwise they were classified as occasional smokers (less than one cigarette a day). Waterpipe smokers were classified as
Table 1  Prevalence of smoking (%) by age, sex, and nationality in the national morbidity survey

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Bahraini Male (n = 3537)</th>
<th>Bahraini Female (n = 3548)</th>
<th>Non-Bahraini Male (n = 1248)</th>
<th>Non-Bahraini Female (n = 949)</th>
<th>Total Male (n = 4785)</th>
<th>Total Female (n = 4497)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>81</td>
<td>12</td>
<td>57</td>
<td>60</td>
<td>78</td>
<td>11</td>
</tr>
<tr>
<td>20-29</td>
<td>326</td>
<td>39</td>
<td>398</td>
<td>344</td>
<td>434</td>
<td>42</td>
</tr>
<tr>
<td>30-39</td>
<td>421</td>
<td>122</td>
<td>458</td>
<td>102</td>
<td>470</td>
<td>115</td>
</tr>
<tr>
<td>40-49</td>
<td>412</td>
<td>256</td>
<td>415</td>
<td>109</td>
<td>424</td>
<td>208</td>
</tr>
<tr>
<td>50-59</td>
<td>44</td>
<td>221</td>
<td>469</td>
<td>176</td>
<td>545</td>
<td>216</td>
</tr>
<tr>
<td>60-69</td>
<td>405</td>
<td>169</td>
<td>455</td>
<td>125</td>
<td>497</td>
<td>167</td>
</tr>
<tr>
<td>≥70</td>
<td>298</td>
<td>233</td>
<td>286</td>
<td>500</td>
<td>388</td>
<td>248</td>
</tr>
<tr>
<td>Total</td>
<td>306</td>
<td>95</td>
<td>404</td>
<td>79</td>
<td>391</td>
<td>92</td>
</tr>
</tbody>
</table>

Table 2  Numbers (percentages) of smokers in the national morbidity survey by type of smoking, sex, and nationality

<table>
<thead>
<tr>
<th>Type of smoking</th>
<th>Bahraini Male</th>
<th>Bahraini Female</th>
<th>Non-Bahraini Male</th>
<th>Non-Bahraini Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarette</td>
<td>981 (27.7)</td>
<td>19 (0.5)</td>
<td>481 (38.5)</td>
<td>68 (7.2)</td>
</tr>
<tr>
<td>Waterpipe</td>
<td>69 (20)</td>
<td>315 (89)</td>
<td>4 (0.3)</td>
<td>5 (0.5)</td>
</tr>
<tr>
<td>Cigar or pipe</td>
<td>3 (0.1)</td>
<td>0 (0)</td>
<td>11 (0.9)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Mixed*</td>
<td>29 (0.8)</td>
<td>3 (0.1)</td>
<td>8 (0.6)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Non-smoker</td>
<td>2453 (69.4)</td>
<td>3211 (90.5)</td>
<td>744 (59.6)</td>
<td>874 (92.1)</td>
</tr>
</tbody>
</table>

Total 3537 (100.0) 3548 (100.0) 1248 (100.0) 949 (100.0)

* Only one was a cigarette and pipe smoker, the rest were cigarette and waterpipe smokers.

Results

The population distribution of those aged 15 years and over was similar in terms of age, sex, and nationality in the national morbidity survey and the 1981 census.

The prevalence of smoking at ages 15 years and over was 33.1% among men and 9.2% among women in Bahrain (table 1). The highest percentage was in non-Bahraini men overall (40.4%) and in those aged 50–59 years (46.9%). The percentage of Bahraini male and female smokers was 30.6% and 9.5%, respectively. The highest frequency of smoking for Bahraini men (44.4%) was in those aged 50–59 and for Bahraini females in those aged 40–49 (23.6%) and 70 and over (23.3%).

Table 2 shows that cigarette smoking including cigarettes mixed with other types of smoking was more prevalent among non-Bahraini men (39.2%), followed by Bahraini men (28.6%), non-Bahraini women (7.4%), and Bahraini women (0.6%).

Waterpipe smoking was more widespread among the Bahraini women (90%) than in the other groups. Pipe and cigar smoking were not common in Bahrain, especially among the Bahraini.

Forty four per cent of the cigarette smokers were regular light smokers (< 1 packet a day). A third of the Bahraini male smokers were heavy smokers (≥ 1 packet a day) compared with a fifth of the non-Bahraini male cigarette smokers. Half of the waterpipe smokers were regular (daily) smokers and the other half occasional (less than daily) smokers (table 3).

The majority of smokers started smoking in the age groups 10-19 years (43.3%) and 20-29 (44.5%). The age at starting smoking was unknown for 29.0% of the smokers (table 4). The average age at starting to smoke was similar for cigarette smokers (21.3 years) and for waterpipe smokers (23.3 years) in all groups except in Bahraini men, in whom the mean ages at starting were respectively 21.0 years and 31.0 years.

The data on duration of smoking were available for 78.4% of the cigarette and 38.2% of the waterpipe smokers. These showed that both cigarette and waterpipe smoking have been prevalent in Bahrain for at least the past 50 years. Throughout this period the prevalence of cigarette smoking was found to have increased in all age groups while the prevalence of waterpipe smoking decreased (table 5). In young women the prevalence of waterpipe smoking is decreasing, but in older women it has become more frequent. Cigarette smoking by women began only in the 1970s and is still very uncommon.

Table 3  Numbers (percentages) of cigarette and waterpipe smokers in the national morbidity survey by frequency of smoking, nationality, and sex

<table>
<thead>
<tr>
<th>Frequency of smoking</th>
<th>Bahraini Male</th>
<th>Bahraini Female</th>
<th>Non-Bahraini Male</th>
<th>Non-Bahraini Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Non-smoker</td>
<td>2527 (71.4)</td>
<td>3526 (99.4)</td>
<td>759 (60.8)</td>
<td>879 (92.6)</td>
</tr>
<tr>
<td>Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasional</td>
<td>242 (68)</td>
<td>11 (0.3)</td>
<td>154 (12.3)</td>
<td>28 (3.0)</td>
</tr>
<tr>
<td>Regular light</td>
<td>441 (12.5)</td>
<td>2 (0.1)</td>
<td>231 (18.5)</td>
<td>31 (3.2)</td>
</tr>
<tr>
<td>Regular heavy</td>
<td>317 (9.0)</td>
<td>6 (0.2)</td>
<td>103 (8.3)</td>
<td>8 (0.8)</td>
</tr>
<tr>
<td>Undetermined</td>
<td>10 (0.3)</td>
<td>3 (0.1)</td>
<td>1 (0.1)</td>
<td>3 (0.3)</td>
</tr>
<tr>
<td>Total</td>
<td>3537 (100)</td>
<td>3548 (100)</td>
<td>1248 (100)</td>
<td>949 (100)</td>
</tr>
</tbody>
</table>

Table 4  Numbers (percentages) of cigarette and waterpipe smokers in the national morbidity survey by frequency of smoking, nationality, and sex

<table>
<thead>
<tr>
<th>Frequency of smoking</th>
<th>Bahraini Male</th>
<th>Bahraini Female</th>
<th>Non-Bahraini Male</th>
<th>Non-Bahraini Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Non-smoker</td>
<td>3440 (97.2)</td>
<td>3230 (91.0)</td>
<td>1236 (99.0)</td>
<td>942 (99.3)</td>
</tr>
<tr>
<td>Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasional</td>
<td>46 (1.3)</td>
<td>156 (4.4)</td>
<td>9 (0.7)</td>
<td>5 (0.5)</td>
</tr>
<tr>
<td>Regular light</td>
<td>51 (1.4)</td>
<td>180 (5.1)</td>
<td>3 (0.3)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Regular heavy</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Undetermined</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Total</td>
<td>3537 (100)</td>
<td>3548 (100)</td>
<td>1248 (100)</td>
<td>949 (100)</td>
</tr>
</tbody>
</table>
About 80% of the cigarette smokers provided data at interview on the brand smoked. Dunhill, Rothmans, Kent, Silk Cut, and Marlboro King Size, were the five brands most commonly smoked. Analysis of cigarette brand smoked by age showed that Dunhill was the most popular brand in all age groups. Rothmans and Silk Cut, however, were less favoured by the young in comparison with Kent and Marlboro. Marlboro was the most favoured brand among those aged 15–19 years.

Single men had a lower prevalence of smoking (12.9%) than all people who had ever been married (23.1–29.4%). The prevalence of smoking among the university degree holders (27.7%) was almost equal to that of the illiterate (26.2%). The proportion of smokers was lowest among those with an intermediate (15.6%) and secondary (15.1%) education.

Income support recipients (43.5%) and labourers (43.0%) had a higher prevalence of smoking than professionals (28.4%) and clerical workers (24.9%).

### Discussion

The prevalence of smoking in men and women in Bahrain is generally lower than that in their counterparts in many developed and developing countries (M Khat and HK Armenian, unpublished report). The proportion of adult male cigarette smokers in Bahrain is 31.3% and 37.6% in those aged 15 and above and 20 and above, respectively. The corresponding figures in the United Kingdom, Australia, and Canada in the early 1980s in those aged 15 and above ranged from 37.0% to 47.0%; those in Lebanon (M Khat and HK Armenian, unpublished report), Kuwait, and Japan ranged from 46.2% to 70.2% in people of 20 and over. However, in the United States, the figure (38.0%) is almost equal to that of Bahrain (37.6%). On the other hand, the proportion of female smokers in Bahrain is much lower than that in industrial countries apart from Japan. (13-17)

However, the prevalence of smoking among females in Bahrain exceeds that of most non-Arab developing countries that have available data but is lower than the rate for Arab females (M Khat and HK Armenian, unpublished report). A comparison with the smoking rates of Kuwait (NA Al-Naqeeb, unpublished data), a country with similar religious, ethnic, and cultural habits, suggests that the prevalence of smoking is lower in Bahrain. Among those aged 20 years and above the prevalence of smoking in males of Bahrain (39.4%) is lower than that of their Kuwaiti counterparts (51.8%), in spite of the fact that the Kuwaiti data were restricted to cigarette smoking only. The proportion of female smokers in that age group is almost similar. However, a large difference results when cigarette smoking alone is considered. The percentage of female cigarette smokers aged 20 years and above in Bahrain drops to 24% compared with 12.1% in Kuwait. Further analysis by nationality and smoking prevalence between the two countries shows that smoking is more prevalent in Kuwait (NA Al-Naqeeb, unpublished data).
particularly among females. The proportion of cigarette smokers in those aged 20 and above is 0-8% in Bahraini females compared with 7-5% in Kuwaiti females. The corresponding percentages among males are 35-8% and 42-7%.

The difference between the prevalence of smoking in Bahrain and in Kuwait may, however, be due to underestimation in the Bahrain data because of the method used to obtain data. The head of the household was usually the interviewee in the Bahrain study and the head might not mention a female cigarette smoker or a young male smoker because of its negative social connotation.

Moreover, the interviewee might not be aware that a female member of the family smokes as she would do so in private. The Kuwaiti data on the other hand were based on a personal interview as part of a cross sectional study. 8

The proportion of smokers who started smoking during their teenage (36-6%) is lower than that reported for Egypt (52-0%)10 and Lebanon (69-0%).11

From the data on duration of smoking, it is evident that cigarette smoking has been practised among males in Bahrain for over 50 years. It is possible that it was imported into Bahrain shortly after being taken up in developed countries at the turn of the twentieth century. 20-22 On the other hand, cigarette smoking by Bahraini females was delayed until the 1970s. In contrast, waterpipe smoking has been popular in the country much longer than cigarettes, as tobacco smoking in waterpipes was probably practised as early as the eighteenth century in Bahrain as in neighbouring countries. 22,23

The prevalence of smoking has been almost stable in all age groups in Bahrain for the past 50 years. But further analysis by type of smoking shows that smoking of cigarettes has increased and that of waterpipes has decreased, particularly in the young. Because data on ex-smokers were not collected, the trend in cigarette smoking has to be interpreted cautiously. However, there is no reason to believe that the proportion of ex-smokers varied during this period of time as serious efforts to educate the public of the harmful effects of smoking and legislative measures to control smoking only began in 1979. 19

It is worth noting that Dunhill, although the leading brand smoked in Bahrain, is not among the five most popular brands in most of the countries that have published data, apart from Cyprus. 24 However, Rothmans, Silk Cut, and Marlboro are also among the most preferred brands in industrial countries. 20,26

The relatively high proportion of smokers among the university degree holders (27-7%) and its similarity to that of the illiterate (26-2%) is contrary to what has been reported for industrialised countries. 25 Smoking among professionals was found to be 26-4% in contrast to the results of a recent study on smoking among physicians, journalists, and teachers in Bahrain where the proportions of smokers were 60-1%, 77-4%, and 80-6%, respectively. 6 However, the response rate in the latter study was only 49-2%.

We conclude that about a third of the men in Bahrain smoke and that there has been a secular trend of increasing cigarette smoking. Knowledge of the risks associated with smoking has not yet brought about any decrease in its prevalence in Bahrain.

We are grateful to the Bahrain Ministry of Health and to Drs Rashid Fuleifei and Ali Memar in particular for their support and assistance. We acknowledge all those who contributed in the national morbidity survey, particularly Drs Haroutune Arzumanyan, Huda Zareyek, Salam Smaan, and Hamid Naif. We also thank ASH (Action on Smoking and Health) and War on Want in the United Kingdom for allowing us to use their library facilities.

Appendix

1. Does anyone in this household smoke cigarettes?
If yes: How many cigarettes does he/she smoke per day?
What brand of cigarettes does he/she smoke?
At what age did he/she start smoking?
2. Does anyone in this household smoke bubble [waterpipe]?
If yes: How much does he/she smoke per day?
At what age did he/she start smoking?

La prévalence du tabagisme au Bahreïn
Randah R Hamadéh et al

Résumé

Objectif: Déterminer (a) la prévalence du tabagisme et sa répartition par caractéristiques démographiques dans la population globale du Bahreïn; (b) les types et les modes de consommation; et (c) les tendances tabagiqes.
Cadre: Une étude nationale sur la morbidité au Bahreïn, Golfe d’Arabie.
Sujets: 9282 adultes âgés de 15 ans et plus.
Résultats: La prévalence du tabagisme était de 33,1 % chez les hommes et de 9,2 % chez les femmes. Le pourcentage de fumeurs était le plus élevé chez les hommes non-originaires du Bahreïn (40,4 %), suivi par les femmes Bahreïni (30,6 %), les femmes Bahreïni (9,5 %) et les femmes non-originaires de Bahreïn (7,9 %). La consommation de cigarettes était la forme la plus populaire du tabagisme suivi par la pipe à eau. Celle-ci était plus répandue parmi les femmes Bahreïni que parmi les hommes mais elle a toutefois commencé à diminuer parmi les deux sexes.
Conclusion: La prévalence du tabagisme parmi les hommes et les femmes au Bahreïn était moins élevée que dans la plupart des pays développés ou en voie de développement. Cependant, on constate que la consommation de cigarettes a tendance à augmenter.

Prevalencia de tabaquismo en Bahrein
Randah R Hamadéh et al

Resumen

Objetivo: Determinar (a) la prevalencia del tabaquismo en la población general de Bahrein y su distribución según características demográficas; (b) los tipos y la modalidad del tabaquismo; y (c) las tendencias del tabaquismo.
Método: Análisis del tabaquismo y preguntas demográficas a partir de una muestra del 4,5% de los hogares. La encuesta se realizó entre septiembre de 1981 y febrero de 1983. Se empleó un diseño de muestreo en dos etapas: la manzana de casas se consideró unidad de la primera etapa y el hogar, como unidad de la segunda.
Marco: Encuesta nacional de morbilidad en Bahrein, Golfo de Arabia.
Sujetos: Un total de 9282 adultos de 15 y más años de edad.
Resultados: La prevalencia del tabaquismo fue de 33,1 % entre los hombres y de 9,2 % entre las mujeres. La prevalencia más alta (40,4 %) se observó en los hombres no originarios de Bahrein, seguida por las correspondientes a los hombres nacionales de Bahrein (30,6 %), las mujeres de Bahrein (9,5 %) y las mujeres no oriundas de Bahrein (7,9 %). El fumar cigarrillos fue el tipo más popular de tabaquismo, seguido por la pipa. La prevalencia de esta última fue más alta entre las mujeres de Bahrein que entre los hombres, si bien su uso por los dos sexos ha comenzado a disminuir.
Conclusion: La prevalencia de tabaquismo en los hombres y mujeres de Bahrein fue menor que en la mayoría de los países desarrollados y en vías de desarrollo. Sin embargo, se observa una tendencia al creciente consumo de cigarrillos.