

## Bahraini school teacher knowledge of the effects of smoking

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**BACKGROUND:** Tobacco smoking is one of the important health problems among school-age children. Wrong perceptions promoted by tobacco industry sponsorship increase smoking initiation amongst adolescents despite awareness of the risks involved. School teachers' awareness of the hazards of smoking and school educational programs and curricula on control and prevention of diseases caused by smoking help in discouraging students from smoking. We assessed school teachers' knowledge of the effects of smoking and attitudes towards smoking.

**METHODS:** Of the 152 schools in the Kingdom of Bahrain with a total of 3360 teachers, a random sample of 49 schools was selected. A questionnaire was distributed to all teachers working in these schools to collect information about their smoking habits and their knowledge of smoking-related health issues.

**RESULTS:** The prevalence of smoking amongst Bahraini school teachers is low (7%). The majority of smokers were males (94%). Only 3.07% of the sample population were ex-smokers. In general the teachers had good knowledge of the effects of smoking on health, but some 9.5% had wrong concepts, believing that smoking does not have any harmful effect.

**CONCLUSION:** School teachers are a main source of health information for students. Therefore, any anti-smoking campaign should involve continuous teacher training to increase their awareness of the hazards of smoking.

**KEYWORDS:** Smoking, cigarette, knowledge, attitude, behavior, school, teachers

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Cigarette smoking is considered the single most preventable cause of premature death in some industrial countries<sup>1,2</sup> and is the most important health problem among school-age children.<sup>3</sup> Smoking is a behavior that students will copy when observed in a model person, such as a school teacher. Close contacts, such as parents, siblings and friends, also affect children's behaviors.<sup>4-6</sup> Therefore, teachers can play a role in promoting or preventing smoking among students.<sup>7</sup> To discourage students from smoking, teachers should have an unfavorable attitude toward smoking and be knowledgeable about the effects of smoking on health in order to convey that message to their students.

Statistics from around the world on smoking among teachers are alarmingly high. In Malaysia, 40.6% of teachers smoke while in Syria, 52.1% of male teachers and 12.3% of females *[AUTHOR: female teachers?]* smoke.<sup>4,7</sup> In Spain, teachers were allowed to smoke in their own offices in 61.6% of centers and 18.6% of schools allowed students to smoke.<sup>8</sup>

Many schools around the world have a written policy on smoking. Whether a school had a written policy appeared to be unrelated to pupil smoking in the toilets or teacher smoking outdoors on school premises. Where a complete ban on teacher smoking existed, smoking among

teachers was seen less often in the staff rooms, but more often in outside areas on school premises.<sup>9</sup>

School teachers can increase limited student knowledge of medical problems related to smoking if they have adequate knowledge of all areas related to these problems.<sup>3</sup> Since the 1980s, concerted efforts have been directed towards the control of smoking, including educational programs on the hazards of smoking.<sup>10</sup> Such school-directed programs are very effective in improving student knowledge, attitudes, and future avoidance of tobacco products.<sup>11,12</sup> Thus programs must be implemented in schools with the aim of raising the student awareness of the dangers of smoking.<sup>13</sup> Any anti-smoking policy should include raising the level of teacher knowledge on the effects of smoking on health and should discourage teachers from smoking in public places, especially in schools.<sup>14</sup>

The present study was undertaken because of the concern over the high prevalence of smoking among school-aged children in Bahrain and the paucity of information on teacher knowledge on the effect of smoking on health.

### Methods

This cross-sectional survey was conducted in the Kingdom of Bahrain, a small island in the Arabian Gulf with a population of 750 000. Of 152 government schools with a total

**Table 1.** Knowledge of school teachers about the effects of smoking on health.

Symptoms/Signs	No. of Responses	Responses (n, %)			Non-responders
		Correct responses	Incorrect responses	Don't know	
Lung cancer	1062	1015 (95.6)	( ) 1.9%	( ) 2.5%	78 (6.8%)
Angina	998	858 (86%)	( ) 4.6%	( ) 9.4%	142 (12.5%)
Atherosclerosis	1005	830 (82.6%)	( ) 6.7%	( ) 10.7%	135 (11.8%)
Bronchitis in smokers' children	984	751 (76.3%)	( ) 6.9%	( ) 16.8%	156 (13.7%)
Peptic ulcer	975	642 (65.9%)	( ) 19.1%	( ) 15%	165 (14.5%)
Stroke	928	450 (48.5%)	( ) 21.9%	( ) 29.6%	212 (18.6%)
Lung cancer in smokers' spouse	914	417 (45.7%)	( ) 25.7%	( ) 28.6%	226 (19.8%)
Cause no illness	847	683 (80.6%)	( ) 9.5%	( ) 9.9%	293 (25.7%)

[AUTHOR: Please insert "n" values above]

of 3360 teachers distributed over the country, a random sample of 49 schools was selected using multistage cluster stratified random sampling. Randomization was made by assigning a number to each school and then selecting a school by means of random computer selection [AUTHOR: Please verify that statement is correct as rewritten]. The target population was all teachers of all disciplines serving in those 49 schools.

A pre-designed structured self-administered questionnaire was distributed by hand to all the 1284 teachers working in those schools. The completed questionnaires were collected at the end of the same day. An explanatory letter explaining the study's objective and how to complete the questionnaire was attached. The 28-item questionnaire included areas related to information about the school, the teachers' personal profile without self-identification, teachers' attitudes towards smoking, and teachers' knowledge about the effects of smoking. The questionnaire was tested for face value and content validity and for repeatability, and a pilot study was done to test various areas of the questionnaire.

Based on a literature review, a set of eight statements representing effects of smoking was prepared. One of these was not correct. The teachers were asked to give their response to those statements either by writing 'Yes' (agree), 'No' (do not agree) or 'Do not know' to the answer. In addition, information about smoking behavior among these teachers was also collected. The knowledge statements were as follows: Smoking could lead to 1) lung cancer, 2) lung infection (bronchitis), 3) atherosclerosis, 4) peptic ulcer, 5) heart attack (angina, MI), 6) chest infection (bronchitis) in the smoker's children, 7) lung cancer in the smoker's spouse, and 8) does not cause any illness; smoking is safe.

Descriptive statistics and a chi-square test for significance were generated in SPSS program version 11.5 and a level of significance was set at a *P* value of <0.05.

**Results**

Completed questionnaires were returned by 1140 (89%) teachers. Most teachers taught in primary schools (n=513; 45%), while 285 (25%) taught at the intermediate level, and 342 (30%) were recruited in secondary schools. The teachers' ages ranged from 20 to 58 years. Eighty-one percent had a university education (more females than males [81% vs. 70%]) and 19% were high school graduates. Males accounted for 40% of the sample and 78% of males were married. The teachers had been employed in government schools for a period ranging between 1 and 35 years with a mean of 12.3 years.

Only 18% exercised regularly. The younger teachers working in the intermediate schools practiced [AUTHOR: Practiced exercise?] more than the others (*P*<0.02). In Bahrain alcohol consumption is not a norm, but not all who drink admit it. However, those who do not drink would deny it strongly. When asked about this habit, 14 (1.21%) admitted that they consumed alcohol (all were male, *P*<0.0001), while 1003 (88%) reported they did not drink alcohol, and 123 (10.8%) did not respond to the question. Forty-six percent of the alcohol consumers were in the highest age group (>40 years, *P*, 0.1) [AUTHOR: *P* equal to 0.1? - not significant?] in comparison to 15% in the youngest age group (from 20 to 29 years).

**Teachers' smoking habits.** When asked about smoking, 8.7% (78 females and 21 males) of teachers did not respond to the question and only 7% (67) said they were smokers (including one male and one female who smoked "hubble

**Table 2.** Knowledge of various smoking-related disease states and teacher variables.  
**[AUTHOR: Please mention/comment on significant relationships in results section]**  
**[AUTHOR: Please explain missing data]**

Variable	Lung cancer	Angina	Atherosclerosis	Bronchitis in smoker's children	Peptic ulcer	Stroke	Lung cancer in smoker's spouse	Causes no illness
<b>Sex</b>								
Male			77%	64%				
Female			70%	61%				
<b>Perception of own health</b>								
Satisfactory			74%			39%	37%	7%
Unsatisfactory			70%			45%	25%	5%
<b>Perception of health service</b>								
Satisfactory			76%*			41%	38%*	
Unsatisfactory			69%			39%	32%	
<b>Duration of teaching experience</b>								
1 to 10 years			69%		49†	33†		5.4%
11 to 20 years			76%		63	47		8%
≥21 years			79%		58	39		8.5%
<b>Type of school</b>								
Primary	91%*	79%‡	78%‡	66%	59†	43¶		
Intermediate	88%	77%	70%	69%	58	41		
Secondary	87%	68%	67%	63%	50	33		

Statistically significant difference between levels within variables: \* $P < 0.05$ , † $P < 0.001$ , ‡ $P < 0.01$ , ¶ $P < 0.02$

bubble”). Only 0.7% were female. These teachers smoked between 2 to 60 cigarettes with a mean of 20.5 cigarettes per day. Ninety-four percent responded to the question related to the duration of smoking. The duration among admitted smokers ranged between 3 and 33 years with a mean of 15 years. More males than females were smokers (94% vs. 6%,  $P < 0.000$ ). The duration of smoking increased as years of employment increased ( $P < 0.001$ ). Thirty-nine (3.75%) teachers (36 males and 3 females) were ex-smokers. Forty-three percent of the smoking teachers were more than 40 years old ( $P < 0.001$ ).

**Knowledge base on health issues.** Table 1 shows the number of responses to various areas of knowledge related to the effects of smoking. The most commonly known effect was lung carcinoma (95.6% of the teachers). The next most

commonly known association was “smoking leads to heart attack” (86%) followed by “smoking can lead to atherosclerosis of the vessels” (82.6%). Few teachers knew about the effects of passive smoking on the spouse (45.7%). Although the majority of teachers were knowledgeable about the harmful effects of smoking, it is notable that almost 10% of the teachers (all were smokers) thought that smoking causes no health problems.

There was no relationship between the teachers’ smoking habit and their knowledge of the effects of smoking [AUTHOR: Please report P values or other test results]. Neither was there any relation between the presence of chronic illnesses among the teachers and their smoking habits. Also, there was no relationship between smoking, marital status, and level of education. However, knowledge of the

effects of smoking increased with the duration of employment ( $P < 0.02$ ) (Table 2). *[AUTHOR: Is this comparison shown in Table 2?]*

### Discussion

There has been a worldwide increase in the smoking habits of school-aged children.<sup>17-20</sup> Various factors play a role in this increasing prevalence, including the school environment and teachers. Also, wrong perceptions about smoking promoted by tobacco industry sponsorship increase smoking initiation amongst both boys and girls even when they are aware of the risks involved.<sup>15</sup> The prevalence of smoking among Bahraini school students was 25.8% in 1996<sup>16</sup> and among Saudi intermediate schoolboys it was 13.2% with a range from 3.2% in 12 to 13 year olds to 31.1% in those aged 18 to 19 years.<sup>17</sup> Among Saudi secondary school students, prevalence ranged from 15% to 17%.<sup>18,19</sup> In China, 15.1% of boys and 1.4% girls reported smoking at least occasionally.<sup>20</sup> In another Chinese study it was reported that approximately 28% of secondary school boys and 3% of girls had smoked cigarettes.<sup>21</sup> In Burkina Faso the smoking rate among school students was 13.6%.<sup>22</sup> In a study conducted by Hospital Universitario of Spain, 13.7% of school children reported smoking while 68% of boys and 50.7% of girls had smoked at some time during their life.<sup>3</sup> Studies have found that students also start smoking at a very early age, as early as 12 to 13 years, with boys starting to smoke at a significantly younger age ( $P < 0.001$ ) than girls.<sup>3,17,20,22</sup> Male students tend to smoke more than females.<sup>17</sup>

The prevalence of smoking among Bahraini teachers (7%) in this study was not as high as in other parts of the world. For example the smoking rate of school teachers in Saraqeb in Syria was 52.1% in males and 12.3% in females, with males having smoked for an average of 16 years, and females for 9 years. Most of the teachers who smoked did so openly at school.<sup>7</sup> In Malaysia, 20% of the teachers were current smokers, 4% were occasional smokers, 10% were ex-smokers and 67% had never smoked.<sup>23</sup> Although the prevalence of smoking among teachers is low in Bahrain, self-reports about smoking habits may sometimes lead to underestimation of the prevalence of current smokers.<sup>24</sup>

The fact that more male teachers smoked than the females in our study is a reflection of the general smoking pattern among the population in Bahrain and worldwide. Only 0.7% of female teachers smoked, which is consistent with what has been reported elsewhere (0.8% among the Malaysian female teachers).<sup>23</sup> Among the general population in Bahrain, the prevalence of smoking in 1983 was 33.1% in men and 9.2% among women<sup>25</sup> and the annual adult cigarette per capita consumption in Bahrain was 2017 in 1990.<sup>26</sup> The age-standardized mortality for lung cancer was 26.7 for male and 9.4 for females per 10 000 during the period 1978 to 1982.<sup>27</sup>

Teachers' knowledge about smoking in our study was found to be very good, and tended to increase as the duration of occupation increased. More teachers in the primary schools were knowledgeable than teachers in the intermediate and secondary schools, which may reflect the fact that they are younger and more educated. This may imply that early role modeling of not smoking by teachers might deter school-age children from smoking. Knowledge increased with family size (number of children). Knowledge was greater when teachers viewed their own health as satisfactory. Those who were dissatisfied with health services provided in the country had better information than the others. This could be explained by the assumption that these teachers were more knowledgeable and hence were looking for quality health services to be provided in the country. However, knowledge about the effects of passive smoking was partially deficient. A similar finding was reported in a Kuwaiti study.<sup>28</sup>

Despite the fact that teachers were knowledgeable and few admitted to smoking, reports indicate that the prevalence of smoking among Bahraini students was high.<sup>9</sup> This could be explained by the fact that not enough education and information about the hazardous effects of smoking was being transferred from the teachers to their students or that teachers might not have had the enthusiasm to deliver such information, and hence, students were less encouraged not to smoke. In addition, smoking is not included in the health education curriculum of schools in Bahrain.<sup>29</sup>

Although we found no significant differences between the knowledge between smoking and non-smoking teachers, it has been reported that teachers' attitudes about the health effects of smoking were statistically different between smokers and non-smokers.<sup>23</sup> Among students it has been reported that there is a relationship between smoking knowledge and smoking behavior. In assessing smoking attitude and knowledge, studies have shown that current smokers among school students appeared to be the least knowledgeable (69.4%) whilst non-smokers (89.3%) and experimenters (93.7%) were the most knowledgeable.<sup>18,30</sup> In Korea, 97.2% of the students knew that smoking could cause lung cancer.<sup>5</sup> The fact that smoking students were least knowledgeable could be a reflection of a deficiency in the transfer of knowledge to them from their teachers, or a weakness in our public health campaign.

Teacher training should be conceptualized as a behavior change process with explicit teacher motivation components included to help affect the intended behavior. It is important for teachers to take a personal interest in student welfare so that they influence the students' smoking habit. For students to realize the benefits of behavior change, curricula for disease prevention programs must be implemented effectively. It is believed that health educa-

tion activities against smoking should be continued and extended to the young population in schools and in the community to further reduce the prevalence of smoking and its health consequences.<sup>17,19</sup> Providing written material for students could enhance health education programs aimed at smoking prevention, both in terms of current smoking and any future intent to smoke. A change of attitude toward smoking could thus be affected significantly.<sup>3, 31, 32</sup> Lectures and talks on smoking should be included in the curriculum of teachers' training courses.<sup>4</sup> Among African-American students, those who received information on the effects of smoking on health from family and teacher had higher overall knowledge, attitude, and preventive efforts scores than students who received information from other sources. Smoking among teachers should receive attention because it is closely related to the attitudes and practices of young people towards smoking.<sup>7</sup> In addition religious antipathy toward smoking should be emphasized in any local anti-smoking

campaigns<sup>17</sup> as religious belief and care for health attitudes discourages non-smokers from taking up smoking.

### Conclusion

The prevalence of smoking amongst the Bahraini school teachers is low and their knowledge about the effect of smoking on health is highly satisfactory. However, despite this finding, reports have indicated that the smoking habit among adolescents is increasing. Therefore, any anti-smoking policy should include prohibition of teachers from smoking in school and maintenance of an in-service teachers' education about the hazards of smoking. There should also be active involvement of teachers, religious leaders, parents, and other influential groups in all tobacco-related prevention efforts to maximize their effectiveness. All such programs aimed at school children are helpful in reducing tobacco smoking in this population, since an adolescent who learns to avoid tobacco is unlikely to be a smoker in adulthood.

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