

Original Article

Prevalence of smoking among male secondary school students in Jeddah, Saudi Arabia

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ABSTRACT

Objectives: This study was conducted to examine the prevalence of smoking and habits of smoking among male secondary school students in Jeddah, Kingdom of Saudi Arabia (KSA) and to assess their knowledge and attitudes toward it. **Materials and Methods:** A cross-sectional study was conducted in Jeddah, using a two-stage cluster sampling, randomly selecting 4 out of 85 government male secondary schools. Data were obtained through a self-administered questionnaire eliciting responses to questions on personal background, smoking behavior, knowledge, behavior, and attitude toward smoking. A total of 695 students responded to the questionnaires with 87.4% response rate. **Results:** Of the studied group, 258 (37%) currently smoked, and of these, 83.7% had started smoking at the age of 14 years or less. The most common reason for smoking was the influence of family, especially the presence of someone at home who smoked (65, 9%) and friends who smoked (42.5%). Many of the students search for information on the risks of smoking (66.3%), and only (45.3%) knew about the bad effects of passive smoking on others. Two-third of the students who smoked wanted to quit smoking (63.2%), especially if suitable help was offered, whereas (60.9%) had tried to quit. While 50% of students smoked for recreation and entertainment, and (33.6%) had difficulty avoiding smoking in no smoking areas. **Conclusion:** A well-planned integrated antismoking campaign is urgently required, especially among students and teachers. The study revealed that the prevalence of smoking was high. This will contribute to an increase in smoking-related health problems in the future if proper preventive measures are not taken.

Key words: Smoking, male students, secondary school, prevalence, behavior

INTRODUCTION

Despite its decline in developing countries, the rate of smoking in developing countries is still high.^[1] Many developing countries have used preventive campaigns to combat smoking with varying degrees of success.^[2] Among the factors to be considered in a well-designed preventive program are the prevailing social factors and determinants that reinforce and perpetuate this habit in the specific social environment.^[3]

The socio-demographic factors that interact with smoking behavior were studied extensively in those countries that have succeeded in combating smoking.^[4,5] A lot of work is needed to define those factors in developing countries and reveal the impact of global communication on those societies with the excessive relentless advertising by the tobacco industries. It should be noted here that social interaction is continuous and as social determinants change with the evolvement of societies new methods of targeting potential customers are employed by the tobacco industry.^[6]

The youth form the main target for these companies to ensure that smoking persists in developing countries. When a person begins to smoke before the age of 18 years, he/she is likely to continue into adulthood and quitting becomes more difficult.^[7] This undoubtedly increases the burden of chronic illnesses later in life.^[8] Adolescence, is the period when the rapid changes in the biological, emotional, cognitive, and social development influence behavior.

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It is interesting to note how a conservative society such as the Saudi Arabian society, where smoking was socially, traditionally, and above all religiously banned, has been affected by the tobacco smoking pandemic to reach such high prevalence levels.^[9] Nowadays, about half of the population is thought to be smokers and the country ranks fourth in cigarette import worldwide, with an annual increase of around 3% of tobacco consumption. Meanwhile, no regulations prevent Saudi youth from purchasing or using tobacco, the cost of which is relatively low.^[10,11]

The aim of this study was to estimate the prevalence rate of smoking among male students (16-18 years age). To our knowledge, there have been no such previous studies in male secondary schools in Jeddah.

MATERIALS AND METHODS

Jeddah city is an important centre of various activities in Saudi Arabia, besides being a gateway for more than 3 million pilgrims going to Mecca every year. The city, with a cosmopolitan population of 3.2 million, is considered the most liberal city in the kingdom, and it makes an enormous contribution to the economic activities of the country. Based here are also more than a hundred international agencies.^[12,13]

This study involved male secondary schools students. The sample size of this study was calculated at around 400 students. However, the investigators decided to double that number to account for an expected number of no response and grossly uncompleted questionnaires. The calculation was based on the assumption of a 5% margin of error at a confidence level of 95% and a response level of 50%. The total number of male students in secondary schools was 85,000 students and the number of schools was 11 in the northern region, 7 in the middle region, and 20 in the southern region. The sampling method was a two-stage cluster method including governmental secondary schools from the three main regions of Jeddah (North 1 school, Middle 1 school, and South 2 schools selected randomly) as the first stage. At the second stage, the full classes (average 30 students per class) from the three levels of the selected secondary schools were randomly chosen by proportional allocation as 10 classes of the first year, 8 classes from second year, and 7 classes from third year.

After completing the administrative steps, the protocol of the study and the required consent forms were verified and cleared by the local ethical committee of the faculty of medicine, King Abdulaziz University. The questionnaire used was self-administered and was succinct to encourage

the students to respond. It comprised 29 questions modified and translated from previously used surveys in Saudi Arabia^[12] including 13 questions on socio-economic data of the respondents as well as some on the knowledge of smoking, practices, and attitudes (16 questions). A smoker in this study was considered anyone who has smoked before and continues to smoke even irregularly as long as he does not describe himself as a past smoker.

A team of four assistants was trained to ensure a unified method of data collection. A preliminary pilot study was undertaken with 22 students, and some questions were subsequently rephrased and modified. The data were collected on the first day of the school week (to reduce absenteeism) and during the second break, in the same classrooms by the data collector only, with no teacher or supervisor. The session started with an explanation of the procedure, and the questionnaires were then distributed to the students. After about 15 minutes, the questionnaires were collected at will. No student was forced to return the questionnaire if they were unwilling to do so. The collected data were validated and then processed using the SPSS program for a bivariate analysis and later the significant variables were introduced into a logistic regression model. The level of significance adopted was $P < 0.05$.

RESULTS

The total number of students selected for this study was 800 students, but the response rate was about 87% (695 students).

Table 1 shows that the prevalence rate of smokers among students was 37.1% with a mean age of 17.06 ± 0.80 years. There was no significant difference between the ages of smokers (17.13 ± 0.82 years) and nonsmokers (17.01 ± 0.79 years). The mean duration of smoking, of the smokers was 33.3 ± 27.5 months.

Table 2 demonstrates the results of the bivariate analysis for the socio-demographic characteristics associated with smoking in adolescent male students. It shows that the educational level of father and the mother were significant factors associated with their children's

Table 1: Demographic data of the studied population of students

| | |
|------------------------------------------------|------------------|
| Response rate | 695/800=86.8% |
| Prevalence of smoking | 258/695=37.1% |
| Mean age of students (n=695) | 17.06±0.80 years |
| Mean ages of smokers (n=258) | 17.13±0.82 years |
| Mean age of non smokers (n=437) | 17.01±0.79 years |
| Mean duration of smoking among smokers (n=258) | 33.3±27.5 months |

Table 2: Social factors and smoking among adolescent male students in Jeddah city, Saudi Arabia

| Factors | Smokers (%) | Non-smokers (%) | P value | OR (95%CI) |
|----------------------------------|-------------|-----------------|---------|------------------|
| Father's education: n=653 | | | | 1.42 (1.02-1.99) |
| Less than university | 110 (42.0) | 152 (58.0) | <0.05 | |
| University | 132 (33.8) | 259 (66.2) | | |
| Mother's education: n=634 | | | | 1.51 (1.07-2.43) |
| Less than university | 145 (40.7) | 211 (59.3) | <0.05 | |
| University | 87 (31.3) | 191 (68.7) | | |
| Father's work: n=695 | | | | 0.78 (0.53-1.51) |
| Professional | 47 (32.6) | 97 (67.4) | 0.21 | |
| Nonprofessional | 211 (38.3) | 340 (61.7) | | |
| Mother's work: n=590 | | | | 1.16 (0.79-1.70) |
| Housewife | 164 (37.9) | 269 (62.1) | 0.44 | |
| Working | 54 (34.4) | 103 (65.6) | | |
| Monthly income: n=641 | | | | 1.09 (0.70-1.70) |
| <5 000 SR | 38 (40) | 57 (60) | 0.70 | |
| >5 000 SR | 207 (37.9) | 339 (62.1) | | |
| House: n=656 | | | | 0.10 (0.71-1.40) |
| Owned | 168 (38.5) | 268 (61.5) | 0.32 | |
| Rented | 85 (38.6) | 135 (61.4) | | |
| Crowding index: n=632 | | | | 0.98 (0.62-1.65) |
| >1 person/room | 34 (66.6) | 59 (53.4) | 0.95 | |
| <1 person/room | 199 (36.9) | 340 (63.1) | | |
| Friends who smoke n=695 | | | | 5.31 (2.88-9.94) |
| Yes | 244 (42.1) | 335 (57.9) | <0.01 | |
| No | 14 (12.1) | 102 (87.9) | | |
| Persons at home who smoke: n=669 | | | | 3.10 (2.21-4.35) |
| Yes | 168 (51.4) | 159 (48.6) | <0.01 | |
| No | 87 (34.4) | 255 (61.6) | | |

smoking habit. About 42% of students with a father who had less than university level of education were smokers compared with 34% of students who had a university educated father (OR = 1.42, 95% CI 1.02-1.99). Similarly, about 40% of students with mother who had less than university education were smokers compared with 31.3% with a university educated mother (OR = 1.51, 95% CI 1.07-2.43). Moreover, a student who had a friend who smoked was significantly more likely to become a smoker (42.5%) than a student with friends who did not smoke (12.1%) OR = 5.31, 95% CI 2.88-9.94. The same pattern was found among student smokers when one or more persons at home were smokers (65.9%) compared with 34.4% of smokers who came from homes where no one smoked (OR = 3.10, 95% CI 2.21-4.35). However, the table shows that the type of work the father or mother did, the monthly income of the family as well as the housing conditions showed no statistically significant associations.

Table 3 shows the result of the logistic regression model involving the significant factors revealed in the bivariate analysis [Table 2]. It indicates that the significant factors in this model were reduced to only the presence of friends who smoked and persons at home who

Table 3: Result of the logistic regression model

| | Significance | OR | 95% CI | |
|---------------------|--------------|-------|--------|-------|
| | | | Lower | Upper |
| Father 's education | 0.852 | 1.037 | 0.707 | 1.520 |
| Mother's education | 0.076 | 0.710 | 0.486 | 1.037 |
| Friends who smoke | 0.000 | 4.812 | 2.528 | 9.156 |
| Smokers at home | 0.000 | 2.848 | 2.001 | 4.054 |
| Constant | 0.000 | 0.029 | | |

smoked (OR = 4.81, 95% CI 2.53-9.16 and OR = 2.85, 95% CI 2.00-4.05), respectively.

Table 4 describes the behavioral factors related to smoking in adolescent male students in this study who smoked. It shows that the prevalence of smoking is about 37% of students, who smoked cigarettes in the main (39.5%), followed by those who smoked nargile or shisha (32.9%) while a substantial percentage of the students (27.6%) combined different types. One-third of the students (35.7%) regularly smoked 1-5 times/day. The highest percentage (39.5%) claimed that the decision to smoke was their own personal choice and not because they were imitating others. They thought that the majority (50%) of young people, smoked as an entertainment activity

Table 4: Behavioral factors related to smoking in adolescent male students in Jeddah city, Saudi Arabia

| Factors | N | % |
|-------------------------------------------------------------------|-----|------|
| Prevalence of smokers (n=695) | | |
| Yes | 258 | 37.1 |
| No | 437 | 62.9 |
| Type of smoking: (n=257) | | |
| Cigarettes | 102 | 39.7 |
| Nargile or shisha | 85 | 33.1 |
| Combinations | 70 | 27.2 |
| Number of daily smoking: (n=258) | | |
| Occasional | 70 | 27.1 |
| 1-5/day | 92 | 35.7 |
| 5-10/day | 46 | 17.8 |
| More than 10 times/day | 50 | 19.4 |
| Why do you smoke? (n=201) | | |
| To be like my friends | 66 | 32.8 |
| To imitate parents | 33 | 16.4 |
| Personal choice | 102 | 50.8 |
| Why do other youth choose to smoke? (n=205) | | |
| Entertainment activity | 129 | 62.9 |
| To show their virility | 48 | 23.4 |
| Imitation of others | 28 | 13.7 |
| Do you feel uncomfortable in no smoking areas: (n=234) | | |
| Yes | 86 | 36.8 |
| No | 148 | 63.2 |
| Do you have any intention of quitting?: (n=258) | | |
| Yes | 163 | 63.2 |
| No | 53 | 20.5 |
| Undecided | 42 | 16.3 |
| Have you tried quitting before? (n=209) | | |
| Yes | 157 | 75.1 |
| No | 52 | 24.9 |
| Will you quit smoking if suitably helped?: (n=231) | | |
| Yes | 179 | 77.5 |
| No | 52 | 22.5 |
| Do you search for information about the risks of smoking? (n=251) | | |
| Yes | 171 | 68.1 |
| No | 80 | 31.9 |
| What are the effects of passive smoking? (n=246) | | |
| Bad effects on others | 117 | 47.6 |
| No effect on smokers | 18 | 7.3 |
| Don't know | 111 | 45.1 |

and not because they were imitating anyone. Most of them (63.3%), however, intended to quit or have already made attempts to do so (60.9%) especially with suitable help (69.4%). Besides, 57.4% of them had not reached the point at which they felt uncomfortable in a no smoking area. Although many of them look for information on the risks of smoking, a sizeable portion (52%) did not know what was meant by passive smoking. Moreover, about 70% stated that they would not mind if members of their future families were smokers.

DISCUSSION

The prevalence of smoking in this group of teenagers in secondary schools in Jeddah was higher (37.1%) than the rate found in some previous Saudi studies.^[14] What was cited by Abdalla *et al.*,^[15] was 34% among males who currently smoked cigarettes (students who had smoked on one or more days in the 30 days preceding the survey), and 11.1% in males who smoked daily. Similarly for Al Ghobain *et al.*,^[16] the prevalence was 31.2% in male students in Riyadh aged 16-18 years, and the significant factors related to smoking were friends and parents who smoked. One possible reason for this difference is that our study included all those who answered “yes” to the question (are you a smoker?) even on an irregular basis, as long as the person did not answer that he had quit. In our opinion, a considerable number of young people at that age experimented with smoking on an irregular basis. Nevertheless, this has to be noted for preventive purposes, for it is known that children who start smoking at that age continue to smoke, and a proportion form a habit which they have difficulty breaking later in life.^[17]

The significant effect of the father’s and mother’s education on their children’s behavior is to be expected especially in the Saudi society where children of that age are still presumably influenced by their home values and beliefs. Moreover, it is assumed that a better educated mother and/or father could deal, in most cases, more effectively and rationally with the behavior of their children.^[18,19]

The results of the logistic regression model showed that the factors of peers who smoked and the role played by a family member who smoked at home were the only significant variables in this model. At this age, it is expected that peer pressure will play an important role on the students’ behavior. Coupled with the effect of a family member at home who smoked^[20] would produce a negative combination that might increase the tendency to smoke.

The smoking behavior of this age group reflects the eagerness to experiment with different types of smoking as indicated by the nearly equal prevalence of different types of smoking such as cigarettes, shisha, nargila, and combinations of several kinds. This should be a warning sign as more deleterious types of strongly addictive substances are now readily available and are being offered to these young people. It is to be noted, however, in this study that family income had no effect on the prevalence of smoking, indicating that the price of the regular types of smoke is affordable. This might not be the case when the more dangerous substances are introduced on to the market.

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In response to the question “why do you smoke?”, most students denied imitating their peers or relatives but stated that it was rather a personal choice and that it was an entertainment activity. Smoking as a social activity has been reported in some studies where youths combined smoking with other entertainment.^[21] An important point of interest here concerning the personal choice of smoking is that they claim that they would respect that personal choice if made by members of their own future families. Among the positive aspects of this study was the finding that most of the students had no problems with being in a nonsmoking zone and therefore, prevented from smoking. This probably indicates that a majority were not addicted yet. Again, the majority of them had the intention to stop smoking, especially with the proper support, or had already attempted to stop. Another positive finding was that most looked for information on the risks of smoking. However, it seems that the information obtained was unclear as most of them did not know what passive smoking meant. This lack of clarity in information disseminated might present health risks and have a negative impact on their mates and relatives. Educational information specially tailored for this age group is therefore necessary.

CONCLUSION

This study illustrates the importance of the level of education of the parents on the smoking behavior of their children. This influence is affected by the presence at home of a member of the family who smokes. It also shows that at the age when adolescents spend a lot of time with their peers, the behavior of those who smoke has a considerable effect on the others. Therefore, it is recommended that apart from antismoking programs for the students, their parents should also be targeted through their children's schools with suitable antismoking education programs.

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