

Comparison and prevalence of smoking among Saudi females from different Departments of the College of Applied Medical Sciences in Dammam

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ABSTRACT

Objectives: The aim of this study is to estimate the prevalence of smoking and factors associated with smoking habits among female students in all departments of College of Applied Medical Science (CAMS) at the University of Dammam.

Methods: A cross-sectional study was conducted at CAMSs, University of Dammam. Only female students were included from all the departments of CAMS. The modified structured Global Youth Tobacco Survey was used to collect detailed information about smoking habits and factors associated with smoking.

Results: A total of 332 out of 408 female students responded to the questionnaire with a response rate of 81%. The overall prevalence of those who tried smoking was 13.3%. Of those, 0.9% were active smokers. Among departments, Respiratory Care Department has the highest prevalence of smoking (25%; $n = 11$ out of 63) compared to clinical nutrition department where only 11.4% ($n = 5$ out of 54) either tried smoking or active smokers. The associated factors for smoking were high grade point average ($P = 0.01$). Interestingly, 61.3% of the sample reported that their first smoking trail was because of their experience to see someone they know is smoking ($P = 0.01$).

Conclusion: The study results suggest that the prevalence of the current smoking is not significantly high. However, our data of this study suggests that some students tried to smoke in the past which may be considered as a risk factor of becoming regular smokers in the future. The study also reveals that the most common trigger to start smoking is their experience of seeing someone they know is smoking.

Keywords: Applied medical science students, College of Applied Medical Science, female smoking, Saudi Arabia, smoking prevalence

Introduction

Cigarette smoking and its products have been the main cause of premature deaths worldwide.^{1,2} It is responsible for taking more than 5 millions of lives which would be doubled by the end of 2020.³ Every day around 4,800 teenagers would smoke their first cigarette, and 2,000 of them would be regular smokers.⁴

Globally, there is an extensive variation among females in the prevalence of smoking, when comparing smoking in Arab countries among females, it seems to be much lower than Western nations (0.3-7.9% vs. 13.7-31.1%). According to the World Health Organization (WHO) 2009, data from 151 countries suggest that smoking has been increasing and in some countries, the smoking prevalence was approximately the same between the male and females⁵ two genders. Sadly, water pipe becomes fashionable among young women in the Middle East which in turn makes the prevalence of smoking

higher.⁶ Electronic cigarettes are more potential to be smoked among females, adolescent and people with lower education.⁷

Prevalence of smoking in developed countries has been decreased steadily, whereas, in Saudi Arabia, it is found that the percentage of smoking has been increased. One of the studies in Saudi Arabia showed that we have many reasons for the spread of smoking, these include imitation, relieving pressure, enhancing the social status, relieving anxiety, curiosity, influence of advertisement, and contact with other smokers.⁸ For Saudi's aged 15 years or more, the current smokers have a percentage of 37.6% and 6% among males and females, respectively.^{9,10}

Smoking consumption found to be higher among females aged between 20 and 24 years old.⁶ Non-medical female student at the University of Dammam had a smoking prevalence of 8.6%. In the Western region of Saudi Arabia, the prevalence of

smoking among female medical students is 9.1%.¹¹ According to the WHO report, smoking between adolescents distributed differently among Arab countries; as an example; Oman was the least percentage which was 7% young smokers followed by 25% in Saudi Arabia. In addition to cigarette smoking, water pipes are also getting more commoner among younger age groups. In the Middle East, the usage of water pipe has been increased up to 200% in females and 60% in males.¹² However; there is a lack of local data about the prevalence of smoking and water pipe in Saudi female students from different health sciences departments.

The overall aim of the present study is to estimate the prevalence of smoking and assess its pattern among medical female students in CAMS departments, University of Dammam and to explore factors related to smoking among females.

Methods

The detailed methodology of the study is discussed below.

Study design

This is a cross-sectional, observational, and quantitative study. The data collection was carried out at College of Applied Medical Science (CAMS), University of Dammam, female campus from February 2015 to April 2015.

Modified structured global youth tobacco survey (GYTS) questionnaire¹³

The Arabic modified version of a standard GYTS was used. The questionnaire modification was carried out because of three main reasons. First, to make it precise thus make it more suitable to be filled by the college students quickly as the questionnaire was given to the students in between their teaching hours and also before or after their teaching hours. We deleted questions because the questions are not very suitable to ask considering Saudi culture or to avoid chances of biases in relation to their responses against some questions (for example, the questions that during the past 30 days, did you see or hear any anti-tobacco messages at sports events, fairs, concerts or community events, or social gathering where chances are that majority of students do not notice, remember this information during their entertainment time). The questionnaire was divided into seven separate sections, and each section consists of a minimum of 2 and maximum of 9 questions however the questions and section followed the same sequence as of GYTS.

The questions were categorized into seven divisions. First division: Demographic data such as age, marital status, grade level, college, religious beliefs, pocket money, parents' educational level, and grade point average (GPA). Second division: Smoking Habits to clarify if they ever try smoking, which product they use when they began smoking, the reason for smoking and couple of questions

asked about smoking addiction. Third division: Smoking cessation. Forth division: Smoking sources to know from where they got smoking products. Fifth division: Second-hand Smoking to ask them about the exposure duration and harmful effects of passive smoking. Sixth division: Knowledge about smoking. Seventh division: External factor such as media effects. The questionnaire takes around 5-10 min to be filled completely.

The final questionnaires are translated to local (Arabic) language and back-translated to check for accuracy. To further test the accuracy of the translation and students' understanding of the questions the research team conducted focus group discussions with students to make sure there is no unclear, wrong translation done. The final modified questionnaire, therefore, consists of 35 questions.

The self-administered questionnaire survey was conducted anonymously to guarantee the full participation of all students. The questionnaire was given to mandatory classes. The consent was obtained from study participants before questionnaire filling. All of the students were informed that their participation is entirely voluntary and that the obtained information will be used for research purposes only and kept strictly confidential. Furthermore, the research team was trained to ensure a unified method of data collection. A research team member was present during questionnaire filling process just to encourage students to answer all questions and to help if any question need to be clarified.

The questionnaire was given to all CAMS (Respiratory Care; Cardiac Technology; Physiotherapy; Clinical Nutrition; Health Information Management Technology and Clinical Laboratory Science departments) female students, with a total sample size of 408 students, from second to 4th year, the participants aged between 18 and 25 years old. The Institutional Review Board (IRB) approval was obtained before data collection. The session started with the distribution and explanation of the questionnaire to the students. Overall, 20 minutes were given to the students to fill the form. At the end, the questionnaires were collected back.

Statistical analysis

Chi-square test was used to explore the association between the variables. Chi-square is a test used to approximate the sample size to approach the population size to determine if there was a considerable difference between the predictable frequencies and the observed frequencies.

In this study, we use it for testing relationships of demographics, behaviors, attitudes, opinions, and knowledge. $P < 0.05$ was considered to be significant. Histograms, bar charts, numbers, and percentage, were used to represent the quantitative and qualitative data. SPSS version 22 was used for data analysis.

Inclusion and exclusion criteria

All the study participants are eligible where those who are females and officially enrolled as full-time students in any of the program in the female campus of CAMSs, University of Dammam. Furthermore, all participants should sign the informed consent form before fill the study questionnaire. Students who are not enrolled and all visiting students were excluded. Furthermore, students who did not fill the informed consent form were also excluded. Ethical Approval was obtained from the IRB before data collection (IRB - UCS-2015-03-137).

Results

The questionnaires were distributed to 408 college students. Out of 408, 332 (81%) completed the questionnaire. The demographical data showed that the mean age was 21 ± 1.2 years and 31.6% were married. The number of students in each department ranges from 44 to 63. The prevalence of those who tried smoking was 13.3%.

Table 1 summarizes the demographic information as well, some factors affecting the smoking habit among female students. The mean age of smokers was 21.3 ± 1.8 years and 21.3 ± 1.1 years among non-smokers. The majority of the students were singles 59%. Parents' educational status and year level were not statistically significant. However, higher monthly pocket money, more than 1000 SAR was positively associated with increased smoking ($P = 0.038$).

A total of 12.9% admitted that they tried smoking before; approximately two-third of them 61.4% began smoking at the age of 16 or older. Surprisingly, more than half of the participants do not know the reason behind beginning their smoking habit, the rest of data are shown in Table 2.

Table 3 summarizes the smoking termination and second-hand smoking, in this section the response rate was low because most of the students were non-smokers. The data presented in this section is for those who are smokers. It shows that 70.4% have already stopped smoking ($P = 0.047$), only 4.5% tried to stop smoking, and 18% are positive to stop smoking. Almost 16% received advices from programs, family and friends and 18% got support from their friends, family and relatives. Most of the students realize that passive smoking is more harmful 96.7%. More than half of the sample 55.7% has learned about the smoking hazard.

This study showed that 72.6% of the sample have seen people using tobacco in media messages. Approximately, 12% of the students would try smoking if one of their best friends asks them to smoke. On the other hand, 10.3% may smoke in future. More than half of the girls think stopping smoking is difficult 73.7%. The majority 76.8% of the students believe smoking tobacco helps smokers to feel more comfortable. Around 14%

Table 1: Demographics statistics and comparison between non-smokers and smokers

| Variable | Non-smokers (%) | Smokers(%) | P | |
|--------------------------------------|-----------------|------------|------|------|
| Marital status (n) | | | | |
| Single | 195 (68.4) | 26 (59) | 0.37 | |
| Married | 85 (29) | 18 (40.9) | | |
| No response | 5 (1.5) | 0 | | |
| Year level (n) | | | | |
| 2 nd year | 90 (31) | 13 (29.5) | 0.7 | |
| 3 rd year | 98 (34.3) | 17 (38.6) | | |
| 4 th year | 97 (34) | 14 (31.8) | | |
| No response | 3 (0.9) | 0 | | |
| Colleges (n) | | | | |
| *RC | 52 (18.2) | 11 (25) | 0.55 | |
| CT | 46 (16) | 6 (13.6) | | |
| PT | 48 (16.8) | 7 (16) | | |
| CN | 49 (17) | 5 (11.3) | | |
| CLS | 53 (18.5) | 8 (18) | | |
| HIMT | 37 (13) | 7 (16) | | |
| No response | 3 (0.3) | 0 | | |
| Religious beliefs (n) | | | | |
| Not religious | 11 (3.8) | 4 (9) | | 0.17 |
| Neutral | 157 (55) | 27 (61.3) | | |
| Religious | 112 (39.2) | 12 (27.2) | | |
| No response | 3 (0.9) | 1 (2.2) | | |
| Monthly pocket-money (SR) (n) | | | | |
| <1,000 | 198 (69.4) | 22 (50) | 0.03 | |
| >1,000 | 87 (33.7) | 22 (50) | | |
| No response | 3 (0.3) | 0 | | |
| Father educational level (n) | | | | |
| Low educational level | 93 (32.6) | 16 (36.3) | 0.21 | |
| High educational level | 171 (60) | 22 (50) | | |
| No response | 3 (0.9) | 8 (13.6) | | |
| Mother educational level (n) | | | | |
| Low educational level | 121 (42.4) | 20 (45.5) | 0.65 | |
| High educational level | 119 (41.7) | 18 (40.9) | | |
| No response | 3 (0.9) | 8 (13.6) | | |
| GPA (n) | | | | |
| 4.5-5 | 107 (37.5) | 20 (45.4) | 0.01 | |
| 3.75-4.5 | 146 (51.2) | 20 (45.4) | | |
| 2.75-3.75 | 25 (8.7) | 3 (6.8) | | |
| <2.75 | 1 (0.35) | 1 (2.2) | | |
| No response | 3 (0.9) | 0 | | |

*RC: Respiratory care, CT: Cardiac technology, PT: Physiotherapy, CN: Clinical nutrition, CLS: Clinical laboratory science, HIMT: Health information technology department, GPA: Grade point average

Table 2: Smoking habits among female students in CAMS

| Variable (mean±SD) | n (%) |
|---|------------|
| Have you ever smoked? (1.85±0.383) | |
| Yes | 44 (12.9) |
| No | 285 (83.6) |
| No response | 3 (0.9) |
| Age of smoking initiation (3.9±1.41) years | |
| <10 | 3 (6.8) |
| 10-12 | 2 (4.5) |
| 13-15 | 7 (15.9) |
| 16 and older | 27 (61.4) |
| No response | 5 (11.4) |
| Reason of smoking (1.09±0.77) | |
| I do not know | 24 (54.5) |
| Someone I know smoke | 9 (20.5) |
| I feel relax | 2 (4.5) |
| No response | 9 (20.5) |
| After how much you have the desire to smoke again? (0.81±0.040) | |
| Never have the desire to smoke again | 35 (79.5) |
| No response | 9 (20.5) |
| Days of smoking last month (1.16±1.3) | |
| I did not smoke last month | 33 (75) |
| Several days | 3 (6.8) |
| No response | 8 (18.2) |

SD: Standard deviation, CAMS: College of applied medical science

of sample agrees with “I may enjoy smoking”, for the further information shown in Table 4.

Discussion

The study presents the detail account of the prevalence of smoking in the CAMS and reveals that 13.3% of the study sample has tried smoking in the past. This percentage is relatively lower than a study done in King Fahad Medical City in Riyadh 20% (Al-Kaabba *et al.*, 2011), what this reference is cited as text, not as superscript?). This variation in prevalence may be due to the dishonesty of reporting by students.^{14,15}

In this study, approximately 70% of the smokers were ex-smokers out of those two smokers stated that they do not want to stop smoking with only one student who was hesitant about smoking cessation. Only 0.9% of the samples are active smokers. It is also reported that smoking prevalence among medical students at King Abdul-Aziz University, Jeddah to be 0.3%.⁶ Similarly, another study conducted in Riyadh found out current smoking prevalence to be 0.86% among female medical students.¹⁶ The results of both above-mentioned studies are consistent with this study.

In the present study also found that there is a statistically significant relationship between smoking and GPA, it finds

Table 3: Components of modified GYTS (explore feelings of the participants toward smoking cessation)

| Variable (mean±SD) | Responses | n (%) |
|---|---------------------------------------|-----------|
| Smokers like to stop smoking (0.93±0.789) | I don't smoke now | 31 (70.4) |
| | No | 2 (4.5) |
| | Hesitant | 1 (2.2) |
| Smokers who ever tried to stop smoking (0.98±0.0821) | No response | 10 (22.7) |
| | I didn't smoke last year | 27 (61.3) |
| | Yes | 2 (4.5) |
| Smokers who are positive to stop smoking (0.93±0.661) | Hesitant | 4 (9) |
| | No response | 11 (25) |
| | I don't smoke now | 25 (56.8) |
| Smokers who received advice (2.98±2.2) | Yes | 8 (18) |
| | No response | 11 (25) |
| | From family and friends | 13.6% (6) |
| Smokers get support (1.20±1.06) | From program | 2.2% (1) |
| | No | 23 (52.2) |
| | No response | 14 (31.8) |
| Smokers who received support (1.20±1.06) | They don't know | 17 (38.6) |
| | They know but never advise me to stop | 6 (13.6) |
| | They know and advise me to stop | 8 (18) |
| Smokers who received support (1.20±1.06) | No response | 13 (29.5) |

SD: Standard deviation, GYTS: Global Youth Tobacco Survey

that most of the smokers have a high GPA. Regarding a study conducted in Riyadh, there was no relationship between smoking and GPA. This difference may be due to the diversity in students' major.³

Another interesting finding, respiratory care students got the highest smoking prevalence 25% in comparison with other departments. This is surprising because they have deep knowledge on the consequences of being a smoker. This is may simply refer to the theory that assumes all forbidden things will become desirable (Figure 1).¹⁷

This study also explores the age initiation of smoking and found that the smoking age is 16 years old and older 61.4%. Around 6% of the smokers started their smoking habit at the age of <10 years old. According to a study conducted at Dammam University, Saudi Arabia, reported similar findings,¹ where the mean age of smoking initiation was 16 years old. These numbers verify the need of health education program about smoking hazards from the 1st year of school life. Furthermore, those who started their smoking habit at the age of <10 years are prone to continue smoking in adulthood.^{1,4}

Table 4: External factors effecting smoking

| Variable (mean±SD) | n (%) |
|---|------------|
| While watching last month see any people using tobacco (1.26±0.45) | |
| Yes, I did | 241 (72.6) |
| No, I didn't | 88 (26.5) |
| No response | 3 (0.9) |
| Would you try smoking if one of your best friends ask you to smoke (2.1±0.33) | |
| Yes | 40 (12) |
| No | 291 (87.7) |
| No response | 1 (0.3) |
| Have any desire to smoke in future (1.10±0.325) | |
| Strictly no | 294 (88.6) |
| Not sure | 35 (10.3) |
| No response | 3 (1.1) |
| Stop smoking is difficult (1.09±0.8) | |
| Yes | 251 (75.6) |
| No | 81 (24.4) |
| Smoking tobacco helps smokers to feel more or less comfortable (1.06±0.42) | |
| Yes | 253 (76.8) |
| No | 79 (23.8) |
| Agree or disagree with the following: "I may enjoy smoking" (1.63±0.36) | |
| Agree | 45 (13.6) |
| Disagree | 258 (85.8) |
| No response | 29 (0.6) |

SD: Standard deviation

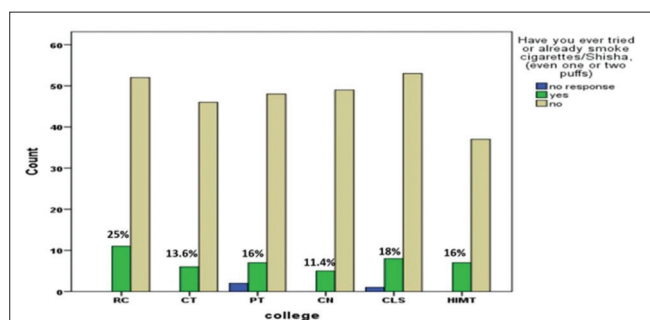


Figure 1: It shows that respiratory care department got the highest percentage 25% and the least percentage was for clinical nutrition department 11.4%. RC: Respiratory care, CT: Cardiac technology, PT: Physiotherapy, CN: Clinical nutrition, CLS: Clinical laboratory science, HIMT: Health information technology department

The present study showed different results, the majority of the smokers do not know why do they smoke 54%, approximately 5th of them 20.4% affected by other smokers surrounding them and only 4.4% claimed they feel relaxed. According to a study conducted in 2011, the reasons of smoking initiation were curiosity in the first place and tension relief in the second (44.4% and 26.1%, respectively).¹ However, the reason of this conflict may be due to lacking a standard questionnaire.¹⁶

In addition, when the study examined how they get their first smoking product. The study results found, 61.3% of the sample got their first smoking trail from someone they know, and that is considered statistically significant. For example, 38.6% of the smokers got their cigarette from a friend. Previous studies conducted in Saudi Arabia give similar results to the presented study, which found out more than 70% got smoking products from others.¹⁸

The study also looked at the relationship of parents' educational level and smoking and found that there were not statistically significant differences. Other studies have done support our findings, which stated that there was no relationship between smoking and parents' educational level.^{11,19} However, this area needs more researchers to make a firm conclusion.

The study also explored the factors related to smoking, which showed that the plurality of smokers believed that smoking made them more comfortable, which was comparable with a fact that was established in Tabuk.²⁰

This study also attempts to know about participants' view on quit smoking. About 70% of smokers reported that they quit smoking because they got more knowledge and information about smoking hazards. Moreover, these findings are consistent with a previous study.⁴ In addition, nearly 10% of the students were not sure if they have the desire to smoke in the future and 13% declared that they might enjoy smoking. These results suggest that the smoking prevalence may increase in the future.¹ Therefore; more studies are essentially required to change public attitude and behavior toward smoking.

In addition, the present study evaluates the knowledge of participants' on receiving anti-tobacco message. The study found a strong relationship between receiving anti-tobacco messages and the desire to smoke in the future. Students who received anti-tobacco messages will have less desire to smoke in the future. The result was supported by a study done by secondary school students, which stated that anti-tobacco messages had a good impact on decreasing tobacco use.²¹ Thus, this study highlights the important of the smoking awareness program among the general public.

Furthermore, the study also suggests that half of the sample was exposed to second-hand smoke in public areas which remain higher than the global prevalence among females 35%. This will raise the alarming bell as it is responsible for a wide range of disease from otitis media to lung cancer. Hence, strict policies should be established to prohibit smoking in public areas.^{19,22} Almost all the students were conscious about the hazards of passive smoking, students who did not expose to secondhand smoking in their homes were highly knowledgeable about the risks of being a passive smoker, but still, 1% of the sample insists that passive smoking is not harmful.

Overall, this study highlights some interesting facts about smoking among health-care students, their factors associated with smoking habits, smoking type and also their attitude toward smoking. However, more studies need to be conducted on the other medical colleges to verify this study result with higher sample size. This study also suggests that a valid questionnaire is required to examine the prevalence of other smoking-related facts in a structured, standard and more organized way.

This study has some limitations. For example; the issue of self-administrated questionnaire and it is a common problem with surveys,²³ for our knowledge, there is no standard and valid Arabic questionnaire, the previous studies have used different questionnaires.^{15,22} Accurate estimation of smoking prevalence requires measurements of exhaled carbon monoxide or nicotine levels, which lacked in this study.¹² For reliability, it would be more appropriate that the study should be conducted in other medical colleges. However, due to time constraints, we were not able to recruit participants from other colleges.

Conclusion

The study concludes that the prevalence of smoking among female students in the CAMS, Dammam University was statistically not significant. However, our data suggested that some students tried to smoke in the past. It is essential to have awareness programs on smoking hazards, and it should be a part of the curriculum for all departments.

Limitation of the study

There are some limitations of this study. First is the questionnaire, although the questionnaire is used in many studies to calculate prevalence, however, the questionnaire still lack to assess many important factors in association with risk factors of smoking in Saudi population To overcome this, researchers have attempted to make some modifications to make the questionnaire more relevant to Saudi females especially removing some questions that may not be closely relevant to Saudi culture. Another limitation was the validity of the changes made, translation of English to Arabic questionnaire as well as reliability and repeatability. In this regard, a focus group discussion was done to ensure relevance of the added or modified questions, accurate translation but nothing was done to examine the reliability and validity of the questionnaire. In addition, the sample size was another limitation, however, it can be controlled as the study only aimed at female students, and researchers believe that the data from 332 is reasonable enough to draw a meaningful conclusion (response rate was 81%).

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