Tobacco smoking and depressive symptoms among male medical students in Al-Baha University

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Abstract

Background: Smoking is a psychosocial problem regarding its causes mainly. In primary health care units, depression is the most common problem that affects the whole body and arises with physical, emotional, and cognitive symptoms. This study aimed to determine the prevalence rate of tobacco smoking and depressive symptoms among male medical students of Al-Baha university. Also, to investigate the association between tobacco smoking and depressive symptoms among male medical students of Al-Baha university. Method: A cross-sectional study was conducted on All the male medical students in the all-academic year levels of Al-Baha medical college using a self-administered questionnaire. Results: Two hundred and eight medical students completed the study. About 49.5% of the participants weren’t smokers. More than two-thirds (69.5%) started smoking in the first academic year. Our statistical analysis results reported; a significant correlation regarding the marital status (P-value = 0.000). The abnormality was significantly higher among current smokers (P-value = 0.013) and markedly lower among nonsmokers (P-value = 0.004). Regarding types of smoking, cigarette smokers were seriously depressed (P-value = 0.000). Conclusion: There is a relationship between smoking and depressive state among medical students. Researches must be conducted to explain this relation of depression symptoms with tobacco and not to increase the prevalence of smoking by helping students quit smoking.

Keywords: Al-Baha University, depressive symptoms, male medical students, tobacco smoking

Introduction

Tobacco smoking is the biggest health threats worlds widely; it kills more than 7 million people per year.[1]

Smoking and depression are both leading causes of disability, morbidity, and mortality around the world.[2]

A systematic review of tobacco smoking habits among medical students suggests that smoking among medical students varies widely amongst different countries and between male and female students within the same areas. Consistently low smoking rates were found in Australia and the United States, while generally high rates were reported in Spain and Turkey.[3]

The overall prevalence of smoking in Saudi Arabia was 12.1% in 2013, and the starting age for smoking in Saudi Arabia is below 18 years of age in 60.9% of smokers.[4]

A study conducted to evaluate the relationship between smoking status and depression among medical students concluded that depression symptoms were found higher in medical students who are current smokers than nonsmokers.[5,6]

Persons with depression are more likely to smoke cigarettes and have more incredible difficulty quitting smoking.[2]

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A few studies from Saudi Arabia reported smoking status, depression prevalence, and their interaction among medical students. In the Al-Baha region, there were no previous studies so this study is going to be conducted.

Methodology

Study design conducted in Saudi Arabia, Al-Baha region medical college at Al-Baha university on all the male medical students in the all-academic year levels of Al-Baha medical college will be recruited to complete a self-administered questionnaire.

A self-administered questionnaire including smoking status and 21-item Beck Depression Inventory (BDI) will be used to assess their depressive symptoms.

Ethical consideration

Before Interviewing, Informed Consent will be asked from all participants. All participants have the right not to participate in the study or withdraw from the study before completion.

The researcher will explain the purpose to all respondents. Confidentiality and privacy will be guaranteed for all participants.

The approval of the ethical research committee was obtained from Al-Baha university. Approval from the ethics committee is obtained 26/June/2018.

Statistical analysis

Statistical analysis was done using SPSS 16.0 statistical software package. Results were presented frequencies and percent for qualitative data. Chi-square test was used for comparing qualitative variables between groups; Fisher exact test was used instead of Chi-square with two by two tables when expected cell count less than five. A probability value of less than or equal to 0.05 was considered statistically significant.

Results

Two hundred and eight medical students completed the study; most were singles (87.5%), while the remaining (12.5%) were married. More than half of them (58.7%) were 21 years old and less; the remaining 41.3% were more than 21 years old. Regarding the class level, 37.5%, 22.6%, and 17.8% belonged to class I, III, and IV, respectively [Table 1].

About half of participants (49.5%) weren’t smokers, 38.9% were current smokers, and 11.5% were ex-smokers. Regarding smoking types, more than two-thirds (69.5%) were cigarette smokers, 12.4%, 9.5%, and 8.6% were hubbly bubbly E-cigarette and pipe smokers, respectively. 43.8% starting smoking at the age of 16 years old and less, 39% starting at the age of 19, and 17.2% beginning between 17 and 18 years old. Most of them (89.5%) were smokers for more than one year. 54.3% consumed up to 10 cigarettes per day, 19% consumed up to 20 cigarettes, 9.5% consumed up to 30 cigarettes, and 17.1% consumed more than 30 cigarettes per day [Table 1].

Table 1: Demographic characteristics of smoker and nonsmoker students

| Description (n=208) | Description (n=208) |
|---------------------|---------------------|
| Marital             | Description (n=208) |
| Non-smoker          | Current smoker      |
| Current smoker      | Ex-smoker           |
| Ex-smoker           | Non-smoker          |
| Class level         |                    |
| I                   | 78 (37.5)           |
| II                  | 17 (8.2)            |
| III                 | 47 (22.6)           |
| IV                  | 37 (17.8)           |
| V                   | 10 (4.8)            |
| VI                  | 19 (9.1)            |
| Age                 |                     |
| ≤21                 | 122 (58.7)          |
| >21                 | 86 (41.3)           |
| Smoking status      |                     |
| Cigarette           | 73 (69.5)           |
| E-cigarette         | 10 (9.5)            |
| Pipe                | 9 (8.6)             |
| Hubbly bubbly       | 13 (12.4)           |
| Chewing             | 0 (0)               |
| Duration of smoking |                     |
| <1 year             | 11 (10.5)           |
| >1 year             | 94 (89.5)           |
| Daily cigar. consumption |                 |
| Up to 10            | 57 (54.3)           |
| Up to 20            | 20 (19)             |
| Up to 30            | 10 (9.5)            |
| >30                 | 18 (17.1)           |
| Reason for smoking  |                     |
| Social              | 43 (41)             |
| Distress and anxiety| 27 (23.7)           |
| Emulation and enthusiasm | 0 (0)              |
| Pleasure and fun    | 35 (33.3)           |
| The academic year when start smoking |       |
| I                   | 73 (69.5)           |
| II                  | 21 (20)             |
| III                 | 11 (10.5)           |
| IV                  | 0 (0)               |
| V                   | 0 (0)               |
| VI                  | 0 (0)               |
| Frequency of Smoking by time |           |
| Increased           | 60 (57.1)           |
| Decreased           | 14 (13.3)           |

Contd...
from Table 1: Contd...

| Description (n=208) | |
|---------------------|----------------------|
| The same            | 31 (29.5)            |
| Beck's Depression Inventory | |
| Normal              | 102 (49)            |
| Mild mood disturbance | 32 (15.4)        |
| Borderline clinical depression | 42 (20.2)   |
| Moderate depression  | 23 (11.1)           |
| Severe depression    | 0 (0)                |
| Extreme depression   | 9 (4.3)              |
| Beck's Depression Inventory | |
| Abnormal            | 106 (51)            |
| Normal              | 102 (49)            |
| Beck's Depression Inventory | |
| Depressed           | 32 (15.4)           |
| Not depressed        | 176 (84.6)          |

consumed up to 30 cigarettes, and 17.1% were heavy smokers who consumed more than 30 cigarettes per day. 41% smoked for social reasons, 33.3% smoked for pleasure and fun, and 25.7% for distress and anxiety [Table 1].

More than two-thirds (69.5%) started smoking in the first academic year, 20% and 9.5% started at the second and third academic years. More than half of them reported that the frequency of smoking increased by time; 13.3% stated the frequency decreased, and the remaining 29.5% said that the frequency wasn’t affected by time [Table 1].

Regarding Beck’s Depression Inventory, 51% were abnormal, where 20.2% had borderline clinical depression, 15.4% had mild mood disturbance, 11.1% had moderate depression, and 4.3% had extreme depression. Finally, 15.4% were depressed, while the remaining 84.6% weren’t [Table 1].

Table 2 illustrated comparisons regarding Beck’s Depression Inventory (Normal VS Abnormal), our statistical analysis results reported: a significant correlation regarding the marital status (P-value = 0.000) where the abnormality among married participants was high, regarding age 19, 23, and 24 years old participants were significantly correlated with BDI where P values were 0.020, 0.008, and 0.001 respectively and the abnormality was higher among 19 years old participants while was lower among 23 and 24 years old participants, in concern with class level, class II, IV, and V significantly correlated with BDI (P-value = 0.028, 0.000 and 0.002 respectively) where the abnormality was higher among type II and V participants while was lower among class IV participants, regarding the smoking status, the exception was significantly higher among current smokers (P-value = 0.013) and markedly lower among nonsmokers (P-value = 0.004), BDI was significantly correlated with all types of smoking where both cigarette and E-cigarette had higher abnormality (P-value = 0.000 and 0.006 respectively) while pipe and hubbly bubbly had lower monster (P-value = 0.000 for both of them), consuming up to 30 cigarettes per day participants had significantly higher abnormality (P-value = 0.006), regarding the reason for smoking, the exception was substantially higher among social reasons participants (P-value = 0.006) while significantly lower among distress and anxiety (P-value = 0.001), regarding academic year when start smoking, year I academic students had lower significant abnormality (P-value = 0.001) while those of both year II and III were significantly high (P-value = 0.036 and 0.047) and frequency of smoking significantly decreased by time among normal BDI (P-value = 0.001).

Table 3 illustrated a comparisons regarding Beck’s Depression Inventory (Depressed VS Not depressed), our statistical analysis results reported; a significant correlation regarding the marital status (P-value = 0.000) where the most single participants weren’t depressed, regarding age 20, 21, 22, 23 and more than 25 years old participants were significantly correlated with BDI where P values were 0.006, 0.026, 0.010, 0.006, and 0.050 respectively and where 20 and more than 25 years old weren’t extremely depressed while 21, 22, and 23 years old participants were significantly depressed, in concern with class level, class IV, V, VI significantly correlated with BDI (P-value = 0.004, 0.000 and 0.050 respectively) where the depression was higher among class V participants while those of class IV and VI weren’t depressed, regarding the smoking status, all depressed participant were current smokers (P-value = 0.000) while ex-smokers and nonsmokers were significantly not depressed (P-value = 0.030 and 0.000), regarding types of smoking, cigarette smokers were extremely depressed (P-value = 0.000) while E-cigarette and hubbly bubbly smokers were especially not depressed (P-value = 0.030 and 0.009 respectively), consuming up to 30 cigarettes per day participants were significantly depressed (P-value = 0.000) while more than 30 cigarettes per day participants were incredibly not depressed (P-value = 0.002), regarding reason for smoking, those who smoked for pleasure and fun were significantly depressed (P-value = 0.000) while those who smoked as a result of distress and anxiety were especially not depressed (P-value = 0.000), regarding academic year when start smoking, year I academic students were significantly depressed (P-value = 0.029) and frequency of smoking, all depressed ones were those who increased smoking by time (P-value = 0.000) while those who with decreased or with the same smoking rate were significantly not depressed (P-value = 0.005 and 0.000 respectively).

Discussion

To the best of our knowledge, this is the first study that investigated the relationship between self-reported smoking status and increased risk of depressive symptoms among medical students in our region.

In our study, the prevalence of smoking among medical students was 38.9%. The majority (69.5%) were cigarette smokers; more than half of them consumed up to 10 cigarettes per day. This percent was higher than this reported by Marakoglu et al., who said that the prevalence of smoking among medical students in Turkey was 20%. In comparison, we matched with a Saudi study investigating the prevalence of smokers among male students was 30.4%.
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Our study found current smoking is associated with a significantly increased risk of depressive symptoms and BDI abnormality. The recent findings are consistent with a survey conducted by the British Heart Foundation (BHF) that found tobacco smokers were 70% more likely to suffer from anxiety and depression overall compared to nonsmokers.8,9 Moreover, our findings are similar

| Marital | Abnormal (n=106) | Normal (n=102) | \( P^* \) |
|---------|-----------------|----------------|----------|
| Single  | 80 (75.5)       | 102 (100)      | 0.000    |
| Married | 26 (24.5)       | 0 (0)          |          |
| Age     |                 |                |          |
| 18      | 0 (0)           | 0 (0)          |          |
| 19      | 27 (25.5)       | 13 (12.7)      | 0.020    |
| 20      | 16 (15.1)       | 14 (13.7)      | 0.779    |
| 21      | 26 (24.5)       | 26 (25.5)      | 0.873    |
| 22      | 18 (17)         | 9 (8.8)        | 0.080    |
| 23      | 9 (8.5)         | 22 (21.6)      | 0.008    |
| 24      | 0 (0)           | 9 (8.8)        | 0.001    |
| 25 and more | 10 (9.4) | 9 (8.8)       | 0.879    |
| Age     |                 |                |          |
| \( \leq 21 \) | 69 (65.1) | 53 (52)        | 0.055    |
| >21     | 37 (34.9)       | 49 (48)        |          |
| Class level |                 |                |          |
| I       | 43 (40.6)       | 35 (34.3)      | 0.352    |
| II      | 13 (12.3)       | 4 (3.9)        | 0.028    |
| III     | 21 (19.8)       | 26 (25.5)      | 0.328    |
| IV      | 9 (8.5)         | 28 (27.5)      | 0.000    |
| V       | 10 (9.4)        | 0 (0)          | 0.002    |
| VI      | 10 (9.4)        | 9 (8.8)        | 0.879    |
| Smoking status |             |                |          |
| Current smoker | 50 (47.2) | 31 (30.4)      | 0.013    |
| Ex-smoker | 14 (13.2)  | 10 (9.8)       | 0.442    |
| Non-smoker | 42 (39.6) | 61 (59.8)      | 0.004    |
| Type of smoking |         |                |          |
| Cigarette | 54 (84.4) | 19 (46.3)      | 0.000    |
| E-cigarette | 10 (15.6) | 0 (0)          | 0.006    |
| Pipe     | 0 (0)          | 9 (22)         | 0.000    |
| Hubbly bubbly | 0 (0)   | 13 (31.7)      | 0.000    |
| Duration of smoking |      |                |          |
| <1 year  | 10 (15.6)       | 1 (2.4)        | 0.047    |
| >1 year  | 54 (84.4)       | 40 (97.6)      |          |
| Daily cigar, Consumption |     |                |          |
| Up to 10 | 32 (50)        | 25 (61)        | 0.271    |
| Up to 20 | 13 (20.3)      | 7 (17.1)       | 0.680    |
| Up to 30 | 10 (15.6)      | 0 (0)          | 0.006    |
| >30      | 9 (14.1)       | 9 (22)         | 0.295    |
| Reason for smoking |       |                |          |
| Social   | 33 (51.6)       | 10 (24.4)      | 0.006    |
| Distress and anxiety | 9 (14.1)  | 18 (43.9)      | 0.001    |
| Pleasure and fun | 22 (34.4) | 13 (31.7)      | 0.777    |
| The academic year when start smoking |  |                |          |
| I        | 37 (57.8)       | 36 (87.8)      | 0.001    |
| II       | 17 (26.6)       | 4 (9.8)        | 0.036    |
| III      | 10 (15.6)       | 1 (2.4)        | 0.047    |
| Frequency of smoking by the time |  |                |          |
| Increased| 41 (64.1)       | 19 (46.3)      | 0.073    |
| Decreased| 1 (1.6)        | 13 (31.7)      | 0.000    |
| The same | 22 (34.4)       | 9 (22)         | 0.173    |

*Chi-square test
Table 3: Comparisons regarding Beck’s Depression Inventory (Depressed VS Not depressed)

| Marital         | Depressed (n=32) | Not depressed (n=176) | P*     |
|-----------------|------------------|-----------------------|--------|
| Single          | 19 (59.4)        | 163 (92.6)            | 0.000  |
| Married         | 13 (40.6)        | 13 (7.4)              |        |

| Age             | Depressed (n=32) | Not depressed (n=176) | P*     |
|-----------------|------------------|-----------------------|--------|
| 18              | 0 (0)            | 0 (0)                 |        |
| 19              | 10 (31.3)        | 30 (17)               | 0.061  |
| 20              | 0 (0)            | 30 (17)               | 0.066  |
| 21              | 13 (40.6)        | 39 (22.2)             | 0.026  |
| 22              | 9 (28.1)         | 18 (10.2)             | 0.010  |
| 23              | 0 (0)            | 31 (17.6)             | 0.006  |
| 24              | 0 (0)            | 9 (5.1)               | 0.360  |
| 25 and more     | 0 (0)            | 19 (10.8)             | 0.050  |

| Age             | Depressed (n=32) | Not depressed (n=176) | P*     |
|-----------------|------------------|-----------------------|--------|
| ≤21             | 23 (71.9)        | 99 (56.3)             | 0.099  |
| >21             | 9 (28.1)         | 77 (43.8)             |        |

| Class level     | Depressed (n=32) | Not depressed (n=176) | P*     |
|-----------------|------------------|-----------------------|--------|
| I               | 13 (40.6)        | 65 (36.9)             | 0.691  |
| II              | 0 (0)            | 17 (9.7)              | 0.081  |
| III             | 9 (28.1)         | 38 (21.6)             | 0.416  |
| IV              | 0 (0)            | 37 (21)               | 0.004  |
| V               | 10 (31.3)        | 0 (0)                 | 0.000  |
| VI              | 0 (0)            | 19 (10.8)             | 0.050  |

| Smoking status  | Depressed (n=32) | Not depressed (n=176) | P*     |
|-----------------|------------------|-----------------------|--------|
| Current smoker  | 32 (100)         | 49 (27.8)             | 0.000  |
| Ex-smoker       | 0 (0)            | 24 (13.6)             | 0.030  |
| Non-smoker      | 0 (0)            | 103 (58.5)            | 0.000  |

| Type of smoking | Depressed (n=32) | Not depressed (n=176) | P*     |
|-----------------|------------------|-----------------------|--------|
| Cigarette       | 32 (100)         | 41 (24.7)             | 0.000  |
| E-cigarette     | 0 (0)            | 10 (13.7)             | 0.030  |
| Pipe            | 0 (0)            | 9 (12.3)              | 0.054  |
| Hubbly bubbly   | 0 (0)            | 13 (17.8)             | 0.009  |

| Duration of smoking | Depressed (n=32) | Not depressed (n=176) | P*     |
|---------------------|------------------|-----------------------|--------|
| <1 year             | 0 (0)            | 11 (15.1)             | 0.017  |
| >1 year             | 32 (100)         | 62 (84.9)             |        |

| Daily cigar. Consumption | Depressed (n=32) | Not depressed (n=176) | P*     |
|--------------------------|------------------|-----------------------|--------|
| Up to 10                 | 13 (40.6)        | 44 (60.3)             | 0.063  |
| Up to 20                 | 9 (28.1)         | 11 (15.1)             | 0.117  |
| Up to 30                 | 10 (31.3)        | 0 (0)                 | 0.000  |
| >30                      | 0 (0)            | 18 (24.7)             | 0.002  |

| Reason for smoking       | Depressed (n=32) | Not depressed (n=176) | P*     |
|--------------------------|------------------|-----------------------|--------|
| Social                   | 10 (31.3)        | 33 (45.2)             | 0.181  |
| Distress and anxiety     | 0 (0)            | 27 (37)               | 0.000  |
| Pleasure and fun         | 22 (68.8)        | 13 (17.8)             | 0.000  |

| The academic year when start smoking | Depressed (n=32) | Not depressed (n=176) | P*     |
|--------------------------------------|------------------|-----------------------|--------|
| I                                    | 27 (84.4)        | 46 (63)               | 0.029  |
| II                                   | 4 (12.5)         | 17 (23.3)             | 0.203  |
| III                                  | 1 (3.1)          | 10 (13.7)             | 0.166  |

| Frequency of smoking by the time     | Depressed (n=32) | Not depressed (n=176) | P*     |
|--------------------------------------|------------------|-----------------------|--------|
| Increased                            | 32 (100)         | 28 (38.4)             | 0.000  |
| Decreased                            | 0 (0)            | 14 (19.2)             | 0.005  |
| The same                             | 0 (0)            | 31 (42.5)             | 0.000  |

*Chi-square test

Also, we agreed with results obtained from the Saudi study, which reported that smoking is associated with a significantly increased risk of depressive symptoms that persisted after adjusting for

to previous research among the general population samples that found tobacco smoking is significantly associated with increased risk of clinical depression and depressive symptoms.[10,11]
age, income, and self-reported health and high prevalence rate of depressive symptoms among current smokers. This peak of depression in Saudi Arabia could be attributed to many factors such as competency for limited seats of residency programs among graduated students, yearly updating requirements for residency application, and family and social pressure.

The age at which students began smoking shows that most of them had begun to smoke in senior high school and medical school as Marakoglu et al. reported that.

Also, our study reported that the frequency of reporting depressive symptoms was higher in the first year; these results matched with the studies that were performed among the students of medical faculties in different cities, it was seen that most students began to smoke in their first and second years at the medical faculties.

Conclusion

Among the students of the medical faculty, the prevalence of smoking increases at the first, second, and third year, respectively, and the frequency among students in the first class reaches nearly the frequency of a general population. There is a relation between smoking and depressive state among medical students. Researches must be conducted to explain this relation of depression symptoms with smoking, and not to increase the prevalence of smoking by helping students quit smoking; lecturers should aim to inform the students about the harms of smoking in medical lessons.

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Conflicts of interest
There are no conflicts of interest.

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