



## The Relationship between Loneliness and Suicidal Ideation in Private Medical and Dental Students in Jeddah, Saudi Arabia

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### Abstract:

**Introduction:** The aim of this study was to assess the prevalence of suicidal ideation, suicidal attempts, and loneliness among dental and medical students in the western region of Saudi Arabia. **Materials and Methods:** This cross-sectional study investigated 607 dental and medical students and interns in private colleges in Saudi Arabia. A self-administrated questionnaire was based on the Revised UCLA Loneliness Scale. Suicidal ideation and attempts were measured by a questionnaire adopted from previous research. The data was collected at the end of the year at examination time. **Results:** The loneliness mean was  $M = 45.14$  ( $SD 8.66$ ). Among the participants, 37.7% had experienced suicidal ideation throughout their lives, 33.4% had experienced suicidal ideation during the previous 12 months, and 23.2% had attempted suicide. Loneliness was significantly related with suicidal ideation during the previous 12 months ( $p < 0.001$ ) and with suicidal attempts ( $p = 0.005$ ). The results showed that the following subgroups had higher risk for suicidal ideation and suicidal attempts: female, low family income, married, and dental students. **Conclusion:** The high levels of suicidal ideation and attempts among dental and medical students in the western region of Saudi Arabia call for the implementation of professional counselling and health promotion programs.

**Key words:** loneliness, suicidal ideation, medical students, dental students, Saudi Arabia

### Introduction:

Dealing with suicide is a dark side of healthcare workers' careers.<sup>1</sup> The suicide attempt is a self-injurious behavior,<sup>2</sup> while suicide ideation expresses the serious desire to die, which could be fatal or non-fatal. A previous meta-analysis showed that suicidal attempts are more common in female physicians than in male physicians.<sup>3</sup>

Several studies have emphasized the overwhelming challenges that often face medical and dental professionals and students worldwide, such as high workload, competitive environment, and academic problems.<sup>4-8</sup> Many studies have investigated suicidal ideation and attempts among medical students, and their findings showed variable percentages of suicidal ideation in countries around the world. For example, the prevalence of suicidal ideation among medical students was found to be 1.4% to 10.3% in the United States,<sup>9-10</sup> 14% in Norway,<sup>11</sup> 17% in

Poland,<sup>12</sup> 1.4% to 43.6% in Taiwan,<sup>13</sup> 37.8% in Austria, 27.3% in Turkey,<sup>14</sup> 35.4% in Pakistan,<sup>15</sup> and 17.5% in the United Arab Emirates (UAE).<sup>16</sup> Some previous studies found lower percentages of suicidal attempts, such as 1.4% in Norway, 2.2% in Austria, 6.4% in Turkey,<sup>14</sup> 4.8% in Pakistan,<sup>15</sup> and only 1.8% in the UAE.

Our review of the relevant literature revealed that only one previous study investigated suicidal ideation among medical students in Saudi Arabia, finding no suicidal ideation.<sup>17</sup> According to Amiri and Inam,<sup>16-17</sup> because Islamic teachings prohibit suicide, the participants may have been reluctant to express their suicidal ideation or reveal their suicide attempts. However, this effect is difficult to confirm because of the lack of other local studies on the same topic. Moreover, there were few studies conducted among dentists and dental students. In fact, some researchers indicated that the occurrence of suicidal ideation among dentists was over

estimated, pointing to the low quality and scant quantity of the evidence.<sup>18-19</sup> In contrast, a few recent studies have investigated suicidal ideation. For example, a study conducted in Spain found that suicidal ideation ranged from 3.8% to 10.9% in different years, and only 1% of the participants in the sample had attempted suicide.<sup>20</sup> Another study conducted in the United States found the percentage to be 6%, which varied according to academic year.<sup>21</sup> The findings of a study that investigated suicidal ideation among Indian dental students indicated that there was a level of suicidal intention among the students in the study sample, but the exact prevalence not provided.<sup>21</sup> Nevertheless, to the best of our knowledge, no previous study has investigated suicidal ideation or suicide attempts among dental students in the Middle East.

Furthermore, a direct relationship between suicidal ideation and the level of loneliness was reported among the general population<sup>22</sup> and college students.<sup>23</sup> Loneliness, which is caused by social isolation, results from unpleasant feelings of absent and limited social relationships.<sup>24</sup> The individual feels lonely for several reasons, such as lack of communication skills, social disconnectedness, exclusion, shyness, and low self-esteem.<sup>24</sup>

Few studies have investigated loneliness among medical students. However, the findings of previous studies linked loneliness to internet addiction in Japan,<sup>25</sup> low quality of life in Iran,<sup>26</sup> and anxiety in Turkey.<sup>27</sup> Only one Chinese study investigated loneliness among medical students, and its findings showed a relationship with suicidal ideation.<sup>28</sup> This study also indicated that medical students were lonelier than students in other specialties were.

Nevertheless, to the best of our knowledge, no previous study has assessed loneliness among dental students and dentists. Thus, the aim of this study is to

assess suicidal ideation, suicide attempts, loneliness, and their interrelationships among private dental and medical students in the western region of Saudi Arabia.

## Materials and Methods:

In this cross-sectional study, data was collected from three private dental and medical colleges. Interns and students in years 3, 4, 5, and 6 were recruited through convenience sampling. The participants were asked to answer a self-reported questionnaire that was distributed to them during the last month of the academic year and during final examination time. The participants could answer the questionnaire in their free time or when their examinations were finished.

The questionnaire was distributed to the students as either a hard copy or an electronic link. The hard copy was given in person to the student and then returned to the data collection team, who ensured that all answers were completed in order to reduce the amount of missing data. The electronic version was sent to the class representative, who sent the questionnaires to the participants in his or her class. The questionnaire took 5 to 10 minutes to answer. All participants signed the consent form or agreed to the electronic consent agreement before they answered the questionnaires. The anonymity of the responses was maintained. This study was approved by the Umm Al-Qura Institutional Review Board.

The questionnaire was composed of three sections. The first section asked demographic questions about gender, age, faculty, marital status, academic year, monthly family income, and nationality. The second section measured loneliness on the Revised UCLA Loneliness Scale.<sup>29</sup> The UCLA contains 20 items that are answered on a Likert scale from 1 to 4; (1) means "I have never felt this way", (2) "I feel this way rarely", (3) means "I feel this way sometimes" and (4) means "I feel this

way often". This UCLA was measured by the questions sum score ranging from 20 to 80, taken in consideration that some questions have reversed score. High scores indicated high levels of loneliness. The Cronbach's alpha of 0.94 showed that the scale was valid and reliable.<sup>29</sup> Some words in the questions were translated into the Arabic language so that they would be easily understood by the participants.

In the third section, suicidal attitude was measured by a set of three questions that were adopted from previous research.<sup>30</sup> The questions were as follows: 1) Have you ever had thoughts of taking your own life, even if you would not really do it? 2) During the past 12 months, have you had thoughts of taking your own life? 3) Have you ever attempted to take your own life? The responses were either "yes" or "no."

SPSS v.21 software was used to analyze the data collected from the completed questionnaires. The descriptive statistics included a frequency table, mean (M), and standard deviations (SD). A t-test, ANOVA, linear regression, and logistic regression were used to analyze the data. P-values of 0.05 were used as the cutoff for statistical significance. All data was saved on a private computer that was

accessed only by the research team, who were responsible for the data entry.

### Results:

A total of 607 students participated in this study (M = 24.08 years, SD = 2.06). **Table I** shows the participants' demographic information. The mean of loneliness among the dental and the medical students was M= 45.14 (SD= 8.66). The prevalence of suicidal ideation throughout their life was 37.7%. During the previous 12 months, 203 (33.4%) of the students had experienced suicidal ideation. Furthermore, 140 (23.2%) students had attempted to take their own life.

The results of the logistic regression analysis showed a relationship between loneliness and suicidal ideation during the previous 12 months ( $p < 0.001$ ) with an odds ratio (OR)= 1.039. In addition, there was a significant relationship between loneliness and suicide attempt ( $p = 0.005$ ) with OR= 1.034. The results did not show a significant relationship between loneliness and suicidal ideation throughout life ( $p = 0.123$ ).

**Table I: Participants' demographic information**

		Count	Column N %
<b>Gender</b>	Male	219	36.1%
	Female	388	63.9%
<b>Academic year</b>	Student	396	56.2%
	Intern	211	34.8%
<b>Nationality</b>	Saudi	442	72.8%
	Non-Saudi	165	27.2%
<b>Monthly family income (Saudi Riyal)</b>	less than 5,000	43	7.1%
	5,000–15,000	292	48.1%
	more than 15,000	272	44.8%
<b>Marital status</b>	Married	94	15.5%
	Not married	513	84.5%
<b>Faculty</b>	Dentistry	289	47.6%
	Medicine	318	52.4%

The results of the linear regression showed a significant negative relationship between loneliness and age ( $p = 0.002$ ) with R-squared 0.015. The logistic regression found a significant relationship between suicidal ideation throughout life and age ( $p = 0.039$ ) with OR= 0.917. No significant relationships were found between age and suicidal ideation or suicide attempts during the previous 12 months.

No significant association was found between loneliness and gender or nationality. **Table II** shows the relationships between loneliness and the different demographic variables, which were found using a t-test and an ANOVA. **Table III** shows the relationships between suicidal ideation throughout life and during the last 12 months, as well as the number of suicide attempts.

**Table II: Relationships between Loneliness and Demographic data**

		Loneliness Mean (SD)
<b>Gender</b>	Male	45.32 (8.68)
	Female	45.04 (8.66)
<b>Academic year</b>	Student	45.26 (8.77)
	Intern	44.91 (8.46)
<b>Nationality</b>	Saudi	45.39 (8.60)
	Non-Saudi	44.47 (8.82)
<b>Marital status</b>	Married	45.34 (8.48)
	Non-married	45.10 (8.70)
<b>Monthly family income</b>	Less than 5,000	47.51 (6.50)*
	5,000–15,000	46.18 (8.20)
	More than 15,000	43.65 (9.21)
<b>Faculty</b>	Dentistry	44.97 (8.60)
	Medicine	45.30 (8.72)

*Note.\** The number of students with a family income of more than 15,000 was significantly lower than in other categories, which was shown by the ANOVA and the Tukey post-hoc test ( $p < 0.05$ ).

## Discussion:

A significant relationship was found between loneliness and suicidal ideation in the previous 12 months and suicide attempts among the student-participants in dental and medical private colleges in the western region of Saudi Arabia. Furthermore, the results showed a high prevalence of suicidal ideation and suicide attempts among the participants. Females, those with low family income, those who were married, and dental students in subgroups reported significantly higher suicidal ideation in the last year and suicidal attempts than males, those with middle and high family incomes, those who were unmarried, and those who were medical students.

The findings showing a relationship between suicidal ideation and loneliness in this study are aligned with those found in a previous study that used a sample of medical students<sup>28</sup>. However, our results showed that this relationship is also found in another population, which is dental students as well. In addition, loneliness was found to be a potential risk factor for attempted suicide. Despite the relatively weak relationships found in this study, loneliness should be avoided and treated carefully because suicide causes a serious loss of not only individuals but also the national health workforce.

The results showing the occurrence of suicidal ideation throughout life or in the previous year (37.7%–33.4%) were higher than found most previous medical and dental studies<sup>9-12,14,16,17,20-21</sup> with the exception of the high prevalence in Taiwan (43.6%)<sup>13</sup> and Pakistan (35.4%).<sup>15</sup> Moreover, the results of our study showed the highest prevalence of suicide attempts compared to all previous studies on medical and dental students.<sup>11, 14, 16-17, 20-21</sup> The results of our study are shocking because in Saudi Arabia, the Islamic religion forbids suicide. In addition, our results are in great contrast to

**Table III: Relationships between Demographic data and Suicidal ideation and Suicide attempts**

		Have you ever had thoughts of taking your own life?		During the past 12 months, have you had thoughts of taking your own life?		Have you ever attempted to take your own life?	
		Yes	No	Yes	No	Yes	No
		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
<b>Gender</b>	Male	69 (11.37%)*	150 (24.71%)	63 (10.38%)*	156 (25.7%)	28 (4.61%)*	191 (31.47%)
	Female	160 (26.36%)	228 (37.56%)	140 (23.06%)	248 (40.86%)	113 (18.62%)	275 (45.3%)
<b>Academic year</b>	Student	150 (24.71%)	246 (40.5%)	121 (19.93%)*	275 (45.3%)	84 (13.84%)	312 (51.4%)
	Intern	79 (13.01%)	132 (21.75%)	82 (13.51%)	129 (21.25%)	57 (9.39%)	154 (25.37%)
<b>Nationality</b>	Saudi	170 (28.01%)	272 (44.81%)	148 (24.38%)	294 (48.43%)	105 (17.3%)	337 (55.52%)
	non-Saudi	59 (9.72%)	106 (17.46%)	55 (9.06)	110 (18.12%)	36 (5.93%)	129 (21.25%)
<b>Marital status</b>	Married	45 (7.41%)*	49 (8.07%)	42 (6.92%)*	52 (8.57%)	34 (5.6%)*	60 (9.88%)
	Non-married	184 (30.31%)	329 (54.2%)	161 (26.52%)	352 (57.99%)	107 (17.63%)	406 (66.89%)
<b>Monthly family income</b>	less than 5,000	26 (4.28%)*	17 (2.8%)	24 (3.95%)*	19 (3.13%)	18 (2.97%)*	25 (4.12%)
	5,000–15,000	97 (15.98%)	195 (32.13%)	103 (16.97%)	189 (31.14%)	77 (12.69%)	215 (35.42%)
	more than 15,000	106 (17.46%)	166 (27.35%)	76 (12.52%)	196 (32.29%)	46 (7.58%)	226 (37.23%)
<b>Faculty</b>	Dentistry	116 (19.11%)	173 (28.5%)	110 (18.12%)*	179 (29.49%)	83 (13.67%)*	206 (33.94%)
	Medicine	113 (18.62%)	205 (33.77%)	93 (15.32%)	225 (37.07%)	58 (9.56%)	260 (42.83%)

Note.\*  $p < 0.05$  using chi square

those of the only previous study that investigated suicide among Saudi medical students, which found no suicidal ideation.<sup>17</sup> The reason for this difference could not be identified in the current data. Furthermore, the two studies were conducted at different times, the cities and the types of colleges were different (governmental and private), and different measurement instruments were used. In future research, qualitative and quantitative studies should be conducted to validate such data on a national scale and to investigate the reasons for suicidal ideation and suicide attempts.

Our results showed that almost all of the demographic variables were not in relation to loneliness. However, students with a high family income reported significantly lower loneliness scores than the other participants did. This result is similar to the findings of studies conducted in Taiwan<sup>31</sup> and in Iran<sup>26</sup> in which family income was negatively correlated with loneliness levels among undergraduate students. However, in contrast to our results, the Taiwanese study found that male and female students had different levels of loneliness. The differences in the results may be due to cultural and national conditions or to differences in students'

specialties between our study (medical and dental students) and the Taiwanese study (university students in general).

Furthermore, female students had higher frequencies of suicidal ideation and suicide attempts than the male students did, which aligns with the findings of previous studies that females had higher frequencies of suicidal ideation and suicide attempts.<sup>32-33</sup> Females were found to be prone to negative emotions.<sup>33</sup>

An interesting finding in our study was that married students showed higher rates of suicidal ideation and suicide attempts than the unmarried students did. The results of a previous study showed that married individuals were less at risk for suicide, with the exception of psychiatric patients who were married.<sup>34</sup> This finding might explain our result, because previous studies indicated that many medical and dental students suffered from high levels of depression, anxiety, and stress.<sup>4,6,8</sup> In addition, the combined factors of the relatively lower age of students attending medical and dental schools in Saudi Arabia, the high load of marital obligations on both male and females in the Saudi culture, and the high level of stressors in medical and dental schools can result in these symptoms. However, this point needs further validation and qualitative investigation in future research.

Students with a low family income expressed higher rates of suicidal ideation and suicide attempts than students with a high family income did. This finding may have been due to the study settings, which were private medical and dental colleges where the tuition fees are very high, thus adding to the students' psychological burden. Finally, in our study, the dental students were found to have higher frequencies of suicidal ideation and suicide attempts than the medical students had. This result implies that dental students are at higher risk of suicide; however, this finding does not imply that medical students are not at risk as well. It is not

known whether our results could be generalized to apply to governmental universities.

Our findings showed that suicidal ideation and suicide attempts exist among dental and medical students in Saudi Arabia, indicating the particular need for private college authorities to provide psychological support, promotional programs, and workshops to students who experience suicidal ideation or suicide attempts. In addition, these efforts should include ways to overcome loneliness and the promotion of social activities in the colleges.

Our study was the first to investigate suicidal phenomena in private colleges in Saudi Arabia. The strengths of our study are as follows: our sample size was bigger than those used by the previous local studies;<sup>16-17</sup> moreover, we used a validated questionnaire to collect the data. However, the limitations of our study include the following: the data were collected using a self-reported questionnaire and the participants were recruited through the convenience sampling technique.

### **Conclusions:**

The results of this study showed unexpected levels of suicidal ideation and suicide attempts in dental and medical students in Saudi Arabia. Special attention should be directed toward female dental students, students with low family income, and married students because they are the most affected. Based on the results of our study, we recommend that dental and medical educational bodies conduct health promotional programs to help students overcome loneliness and cope with suicidal ideation and suicide attempts. In addition, we recommend that psychological consulting services be available for students in need.

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