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Study of suicidal thoughts and intentions with regard to job stress among female medical students living in dormitory with a mental health promotion approach

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Abstract:

BACKGROUND: Medical students are exposed to stresses which have irreversible consequences, such as suicidal ideation. The present study aimed to investigate the level of occupational stress in medical students and its relationship with the prevalence of suicidal ideation and attention among them and then provide mental health promotion approaches.

MATERIALS AND METHODS: This cross-sectional descriptive study was performed on 325 undergraduate medical students residing at the dormitory of Shahid Beheshti University of Medical Sciences. The sample size was determined by the census method. Osipow and Suicide Behaviors Questionnaires were used to measure job stress and suicidal ideation, respectively. The condition of entry into the study was living in the dormitory and spent at least one semester. Linear regression and logistic regression were used to examine the relationship between variables.

RESULTS: The mean score of occupational stress among students with a mean age of 21 (± 2.18) years was 158.84 (± 27.07) and 60% ($n = 180$) of students had high levels of stress. There was a significant relationship between age and educational level with stress level and suicidal ideation ($P < 0.05$). They had the highest effect on stress ($P = 0.031$) and suicidal ideation ($P = 0.001$), respectively, among students. High level of stress was 11.829 times more likely to have suicidal thoughts than low-stress level ($P < 0.001$).

CONCLUSIONS: Stress and suicidal ideation are much higher in students of lower semesters and lower ages than students with higher semesters. Students should learn how and with what approach to control and manage exposure to stressors. Measures such as holding stress management training courses as well as managing stressful situations are among the effective measures in improving mental health and reducing stress levels and its effects.

Keywords:

Health education, medical students, occupational stress, Osipow Questionnaire, suicidal thoughts

Introduction

Suicidal ideation is recognized as one of the predictors of suicidal behaviors worldwide. Suicidal behaviors include a wide range of thoughts and actions to end one's life, including suicidal ideation,

suicide planning, and suicide attempts. The World Health Organization (WHO) estimates that more than 800,000 people die each year through suicide.^[1] Suicide is the second-leading cause of death among 15–29-year-old, the approximate age at university, worldwide, and the third-leading

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cause of death among college students.^[2] That means about 16 million people commit suicide each year. The annual cost of suicide in the United States is estimated at about \$ 93.5 billion.^[3,4] According to the definition of the WHO, mental health is a complete state of biological, mental, and social well-being, which simply does not mean the absence of disease or disability.^[5,6]

Medical students should have adequate mental health due to facing more stressors than other groups. Mental health is essential for maintaining and sustaining individual, social, occupational, and academic functions. The results of studies also show that mental health affects the educational status of students. As mental health increases, students' academic achievement increases.^[7,8]

Suicidal behaviors, especially among young people, are a global health issue that are widespread among the young population, especially students around the world. For example, in the US, 12% of students have experienced suicidal ideation. A study of students showed that 29% of the participants had a suicidal ideation and 7% had attempted suicide. Ten percent of Chinese students and 13.2% of Korean students reported suicidal behaviors.^[9,10]

According to recent studies, social, psychological, cultural, and biological factors are influential factors in suicidal ideation.^[11]

Stress is one of the related factors that predispose students to suicidal thoughts and intentions. Students with high levels of stress have higher suicidal thoughts than students with less stress.^[12,13] Medical students have been influenced by many stressors since their entry into the university such as examinations, apprenticeships, clinical training, communication with faculty and students and other academic staff, hospital attendance and close communication with patients, and low sleep hours.^[5,7] Not all students are able to cope with this stress, and the persistence of these stresses can lead to the risk of suicidal ideation. Studies have reported higher levels of stress among medical students than other student groups.^[14]

Exposure to stress can lead to poor academic performance, poor memory, poor communication with friends and family, and a dissatisfaction with life. Chronic exposure to stress causes students to become addicted to drugs, alcohol, and insomnia, and sleep disorders that can lead to suicide.^[13,15,16] In one study, the prevalence rate of suicidal ideation related to occupational stress among medical students was reported to be 4.4%–23.1%, while in another study, the prevalence of suicidal thoughts was 7.4%–24.2%. Therefore, there is a higher risk of suicide among medical students with high occupational stress levels compared to people of the same age range.^[16]

Medical students are directly involved in community health, depending on their profession. For this reason, mental and physical health is very important in this group.^[17]

This study was aimed to investigate suicidal behaviors and their relationship to the stress level among medical students living in dormitories, then provide mental health promotion approaches. In this study, the effects of two important variables such as semester and age on the prevalence of suicidal ideation and stress level were investigated.

Materials and Methods

Study design and participants sampling

This cross-sectional study was carried out among female students of medical sciences residing in one of the dormitories of Shahid Beheshti University of Medical Sciences in 2019. Of all the university dormitories, the Al-Zahra dormitory is for female medical students. The sample size was determined by the census method. All female medical students lived in the dormitory were 325. After explaining the purpose of the study and obtaining informed consent from students to participate in the study, questionnaires were distributed to students' rooms. The inclusion criteria were living in a dormitory and at least one-semester experience; therefore, 300 questionnaires were collected (92% return rate). Exclusion criteria were psychiatric drug use or drug abuse. Participants were optionally excluded from the study.

Data collection tools and technique

Demographic data were collected by using a researcher-made checklist, which included background information such as age, educational, native or nonnative student, and use of psychotropic drugs. Osipow standard questionnaire was used to assess stress among students. The questionnaire has six dimensions, namely (1) role workload: it examines the status of the person in relation to the demands of the working environment; (2) role inadequacy: it evaluates the appropriateness of a person's skill, education, and training characteristics and experience with workplace needs; (3) role duality: evaluates one's awareness of priorities, environmental expectations, and evaluation criteria; (4) role scope: evaluates the contradictions that a person has in terms of work conscious and the role expected of him or her in the workplace; (5) responsibility: measures one's sense of responsibility for the performance and well-being of others in the workplace; and finally (6) physical environment: examines the physical conditions of the workplace to which the individual is exposed. To investigate the relationship between suicidal ideation and stress level in students, we considered students'

job stress levels (1 – with job stress score above 150 and 2 – with job stress score <150). The validity and reliability of this questionnaire were calculated by previous study and the Cronbach’s alpha coefficient was 0.89.^[18]

The Suicide Behaviors Questionnaire (SBQ) was used to assess suicidal ideation and suicidal attempt. The validity and reliability of the translated version of this questionnaire were assessed by the researcher, and its Content Validity Rate (CVR) was 0.75 and Cronbach’s alpha was 0.52, which is acceptable considering the number of items in the questionnaire. The SBQ is a self-report assessment for suicide-related thoughts and behaviors. It consists of total of 4 items. Item 1 is to find the presence of suicidal ideation or attempt during the lifetime. Item 2 appraises the occurrence of suicidal ideation over the past year, item 3 measures threat or disclosure of the suicide attempts, while item 4 taps future probability of suicidal behaviors. Scoring the questions in the questionnaire is that the first question with four options (score 1–4), the second question with five options (score 1–5), the questions with three options (score 1–3), and the last question has seven options (score 0–6). The total score for the questionnaire is between 3 and 18. A score above 7 for healthy individuals and a score above 8 for individuals with mental disorders indicate suicide attempt rates.^[19] The higher the score on the questionnaire, the higher the probability of suicide.

Statistical analyses

SPSS software (SPSS V.22 Inc., Chicago, IL, USA) was used for statistical analysis. Linear regression and logistic regression were used to investigate the relationship between suicidal ideation and stress with educational and age variables. Logistic regression was also used to investigate the relationship between students’ stress level and suicidal ideation. The significance level in the statistical analysis was considered the $P < 0.05$.

Results

About 99% of Al-Zahra dormitory students were single and only 1% were married. Drug use among these students is about 15.3% and nearly 90% of these students are nonnative. The mean age of students was 21.52 (±2. 18) years. None of the students in this dormitory had any drug addiction. The mean score of job stress was 158.84. Table 1 shows the mean and standard deviation of the six sections of the Osipow Job Stress Questionnaire.

According to the classification of stress questionnaire scores, low, moderate, severe, and very severe stress levels were observed in 1%, 31%, 60%, and 6.3% of students, respectively. Results are reported in Table 2 on the level of suicidal ideation among students. These

Table 1: Mean (standard deviation) of six sections of the Osipow Questionnaire (n=300)

Variable	Mean (±SD)
Role workload	28.32 (±6.96)
Role inadequacy	30.98 (±6.29)
Role duality	27.2 (±6.14)
Role scope	25.47 (±5.33)
Responsibility	27.07 (±5.71)
Physical environment	20.53 (±6.8)
Total stress	158.84 (±27.07)

SD=Standard deviation

Table 2: Abundance of suicides thoughts and attention among students

Questionnaire item/options	Students, n (%)
First one: Suicidal thought	
Never	173 (57.5)
Transient thought	62 (20.7)
At least once	45 (15)
Intend	20 (6.7)
Second item: Suicidal thought in the recent year	
Never	179 (59.7)
Rarely	69 (23)
Sometimes	11 (3.7)
Often	21 (7)
Usually	20 (6.7)
Third item: Share with others	
No	210 (70)
Once	45 (15)
More than once	45 (15)
Fourth item: Suicide intent	
Never	165 (55)
Not likely	20 (6.7)
Very unlikely	42 (14)
Unlikely	8 (2.7)
Probable	49 (16.3)
High probability	14 (4.7)
Very likely	2 (0.7)
People with suicidal thoughts	28 (9.42)
People with suicidal attempt	22 (7.23)

are listed in the Materials and Methods section only reporting the results.

Among the variables studied, the effect of two semantic variables on students’ level of stress and suicidal thoughts was investigated. The results show that age has the highest effect on suicidal ideation, and semester has the highest effect on the stress level among students. Students at lower age and lower educational levels experienced higher levels of stress ($P = 0.031$) and higher suicidal thoughts ($P = 0.001$). Table 3 shows the relation between variables.

The NEWSTRESS variable represents two levels of high and low stress. Considering the significance of this variable, it can be concluded that severe stress level was 11.829 times more effective in having suicidal thoughts than low-stress level ($P < 0.001$) [Table 4].

Table 3: Relationship between age and semester with stress level and suicidal ideation

Variable	Stress		Suicidal thoughts		
	St T	Significant	EXP (B)	St Wald	Significant
Age	1.08	0.031	0.98	9.14	0.003
Semester	2.28	0.023	0.79	7.4	0.001

Significance level of correlation: $P < 0.005$ **Table 4: Relationship between stress and level of suicidal ideation in students**

Step 1	B	SE	Wald	Df	Significant	EXP (B)
Newstress (1)	2.471	0.291	72.033	1	0.000	11.829
Constant	-0.902	0.224	16.201	1	0.000	0.406

SE=Standard error

Discussion

The purpose of this study was to investigate the relationship between occupational stress and suicidal ideation among female medical students. Thirty-one percent of studied medical students experienced moderate stress level (stress score < 150) and 60% experienced severe stress level (stress score more than 150). Job-related stress is more prevalent among medical students than in other groups. Saipanish in his study reported that 61/4% medical students felt stress.^[20]

Three components of Osipow Questionnaire including role inadequacy, workload, and role dualism have the highest effect on stress among students, by the score of 30.98, 28.32, and 27.2, respectively. In the study of Rostamani *et al.*, these sections reported a mean of 30.96, 30.45, and 23.57, respectively, which is close to the results of the present study. Also in Hashemi's study, these values were 32.76, 31.28, and 31.65 which were similar and close to the results of the study.^[21,22]

Based on the three factors influencing stress among students in the present study, we conclude that students' work and study environment demands are the most affected by stress. Afterward, students' ability to balance their education with workplace requirements and lack of knowledge of evaluation priorities and criteria causes stress in students. Considering the effect of these factors, it can be concluded that the stress level of students in lower terms is higher than that of higher.

According to the findings of the present study, among the demographic variables, the semester shows the highest correlation ($t = 2.28$) with the level of stress among students. As a result, in lower education semesters, students experience higher levels of stress. The level of stress among newcomer students is much higher than that of recent graduates.^[13] Examinations, difficulty learning textbooks, and lack of time for Studying are some of the factors that make students stressful. Increasing educational semester imposes greater stress on students, in addition to

factors such as responding to the demands of educators and patients and dealing with the deaths of patients,^[20] Although The study of Nojomi and Gharayee, express that the level of stress increases as age increased among medical students. The reason for this relationship is the increase of responsibilities in the hospital and workplace, marriage, family, and financial issues.^[23] But in higher semesters, students are more capable of adapting to stressful and unfavorable moods than lower semester students.^[13] Medical students in the final semesters have the ability and skills to manage their tasks and are more capable of controlling the situation than lower semester students.^[24]

Another variable affecting stress levels among medical students is gender. The present study was conducted only on female students, and the effect of gender could not be investigated. However, studies have shown that the level of stress in female students is higher than that of male students.^[13] Some studies do not show significant differences in stress levels among female and male students.^[13,24]

The results of the present study indicate that having a level of stress in people is significantly associated with suicidal ideation. The high level of stress in students is 11.829 times more effective than in suicidal thoughts compared to the low level of stress. Suicidal thoughts are much higher in people with high-stress levels.^[25]

There is a significant relationship between one's mental state and suicidal ideation. Individuals, especially students with adverse psychological conditions such as high levels of stress, distress, and worry, living away from family and financial and economic pressures are at higher levels of suicidal ideation.^[26] Stress is involved in the development of mental symptoms and suicidal ideation. Living away from the family, in the dormitory, and alone are the risk factors that can affect suicidal ideation.^[27] Studies show a high prevalence of suicidal ideation from 9.1% to 48.2% among medical students.

Many factors are involved in the development of suicidal ideation in this particular group (medical students), which include behavioral and personality characteristics, mental-health problems, stressful personality, as well as school and university issues. Moreover, Moradi, *et al.* study shows that some factors such as quantitative workload excess, work-related role problems, and deficiencies in job resources such as a lack of social support are contributed in job burnout as the result of work-related stress. Therefore, causal factors are related to emotionally demanding situations in the workplace such as those that result from interactions with un-cooperative, aggressive, or distrustful patients, patients with impracticable expectations, or confrontations with illness, and death.^[28]

In addition, the results show that female students have a higher level of suicidal ideation. This stress causes medical students to experience a worrying level of burnout, anger, and depression, with studies proving that stress has a significant effect on suicidal ideation in students.^[29] The results of the present study show that 9.42% of students participating in the study have suicidal thoughts and 7.23% have attempted suicide. According to a study of suicidal thoughts and intentions among students from six countries, suicidal ideation levels were reported to be 11.6% and intent to commit suicide 2.4%.^[30] Furthermore, an international study by Eskin *et al.*, on suicidal thoughts and behaviors among students from 12 Asian and European countries, showed that the suicidal ideation level in the study population was 29% and 7% of the population attempted suicide.^[10] Suicidal thoughts are more prevalent among female students. The effect of gender differences in suicidal ideation in different studies shows different results. As reported by Sun *et al.*, suicidal thoughts were reported higher among men than women,^[9] while the study by Yang *et al.* showed no significant difference in suicidal ideation based on gender.^[31] Sleep disorder (lack of sleep and short sleep duration) has a significant relationship with students' thoughts and suicidal intentions. Medical students reduce their sleep time due to their increased study time, which can lead to sleep deprivation and its negative effects.^[32] Logistic regression was used to examine the relationship between demographic variables of age and educational level and suicidal ideation, which results indicate that the level of suicidal ideation is higher in the lower education classes. In the study of Torres *et al.*, there is no significant relationship between age, semester, and suicidal ideation, which is in contradiction with the results of the present study. In explaining this disagreement, the difference in information-gathering tools can be stated in the second study. Torres *et al.*'s study used the Beck's Depression Inventory (BDI) to measure the students' level of depression.^[27] Rosiek study reported a significant relationship between semester and age, indicating that medical students at lower ages and lower grades experienced more stress and consequently, suicidal thoughts are higher in them^[13] that are the same of the results of the present study. Bahrami-Ahmadi *et al.*'s study shows that in addition to adverse psychological effects, stress can cause physical complications in exposed individuals, so that in their study, the prevalence of musculoskeletal disorders in nurses who had high levels of stress was higher than nurses with low levels of stress.^[33] High job demands and low social/work support are psychological risk factors for musculoskeletal disorders.^[34,35]

Medical students should learn how and with what approach to control and manage exposure to stressors. Measures such as holding stress management training

courses, curriculum planning, and professional activities are among the effective measures in improving mental health and reducing stress levels and its effects.

Limitation and recommendation

One of the limitations of this study is the study of suicide and stress in female students only, while studies have also reported high levels of stress in male students. This study was also conducted only on the students of one university, which makes it difficult to generalize the results to a wider group of students. Increasing the sample size would be helpful in generalizing the results.

Conclusions

The results of the present study showed that in the junior semesters, medical students experience higher levels of stress. Furthermore, staying away from family and living in the dormitory are among the factors that increase stress in these individuals that can result in severe stress and suicidal ideation among these students. There are a variety of strategies to curb stress and reduce its consequences, one of which is exercise. It is also one of the most effective ways to assign responsibilities to junior students commensurate with their physical fitness, teaching them proper management and stress control techniques in the lower term.

For future researches, it would be better to conduct a detailed interview instead of using self-report questionnaires, especially for measuring the presence of suicidal ideation and stress. As these two are fairly sensitive topics, many people show reluctance in disclosing their thoughts regarding them, may be out of fear of stigmatization or due to the perceived negative image.

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Conflicts of interest

There are no conflicts of interest.

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