

# Determinants of Depression among Nursing Students in Jordan

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## Abstract

Many students suffer from exhaustion and tension, especially nursing students, and they are vulnerable to depression, due to the study requirements related to the clinical and applied aspects of the curriculum and life pressures, which affect their physical and mental health, and the level of their educational and academic performance. The aim of the current research work is to identify the determinants of depression for nursing students at Mutah University in Jordan. A cross-sectional study was applied to a suitable sample of 385 nursing students. A questionnaire was used to obtain socio-demographic information and another questionnaire was to assess burnout and its association with depression using the Oldenburg Burnout Inventory scale, and Patient Health Questionnaire-9 to assess level of depression. Multivariate linear regression was used in the analysis to determine the associations and independent determinants of depression. The average age of the students was (22.32 ± 3.64), and most of them were female (81%). The prevalence rate of depression according to the PHQ-9 among the students was 80%, while the major depressive disorder was 31%. Based on multivariate linear regression analysis, the independent associations of depression were represented as follows: crises and life-changing circumstances (aOR: 2.16; 95% CI: 1.31, 3.59; p-value<0.01), study levels (aOR: 0.78; 95% CI: 0.58, 0.96; p-value=0.02), total OBLI scale score (aOR: 1.2; 95% CI: 1.13, 1.31; p-value<0.01). The prevalence of depression among nursing students in Jordan was high. Therefore, it is necessary to identify and evaluate the determinants on the basis of which the prevalence of depression among nursing students is determined for early detection and treatment of depression. So, one of the most important recommendations is the need to strengthen and find strategies and means in order to confront and reduce the spread of depression among nursing students in particular, and university students in general.

**Keywords:** Depression • Nursing students • Oldenburg burnout inventory • Patient health questionnaire-9

## Introduction

Depression is a severe and common mental health disorder worldwide, with an estimated 4.4% of the world's population suffering from a mental disorder that indicates depression [1-3]. In addition, the World Health Organization stated that 615 million people in the world's population suffer from depression [4]. Depression is considered a mental health disease with a high prevalence rate, chronic, and difficult to recover from, and therefore increases the burden on individuals within the family and society [5-7]. Research studies have shown that depression has many risks, the most important of which is that it may lead to other diseases such as heart disease, diabetes, cancer, and high mortality rates and it also causes fatigue and health and psychological problems, which leads to a decline and stumbling in the quality of life [7-8]. Moreover, the symptoms of depression were disturbed sleep, feelings of sadness and guilt, loss of interest in enjoyable activities, difficulty concentrating, and low self-esteem [3,9]. A study also stated that out of the 450 million people in the world's population who suffer from mental health disorders, approximately 150 million of them suffer from depression [9-10].

Numerous studies have shown that nursing students suffer from higher rates of anxiety, stress, and depression in all countries of the world compared to students of non-medical majors [11-16]. This is due to several reasons, the most important of which is that nursing students suffer from pressures due to training, rotation of clinical practice, long full-time hours, and adaptation to theoretical programs and rigorous examinations [17-18]. In addition, there are many factors that lead to the prevalence of high levels of depression among nursing students, including exposure to high levels of stress as a result of prolonged practice and clinical training, night shifts, workload during study, adaptation to the academic environment of such as the new college, academic load, information overload, pressures for

good academic achievement [4,11-16,19-20]. There are other factors that increase the level of depression among nursing students and affect their lives, physical health, and psychological well-being, and these factors are related to the material, social and psychological aspects, such as staying in hostels, thinking about the unknown future, financial constraints, lack of free time to rest, pressures related to family life, increasing financial requirements, competition to obtain the highest grades in academic subjects, lack of skills, experience, study strategies, and motivation among students [4,6,20-22].

Nursing students face many challenges that make them suffer from depression, such as academic pressures and planning for future work [7,23-24]. Therefore, prolonged exposure to depression leads to a significant negative impact on performance and academic success, where it was found that students who suffer from severe and moderate levels of depression have poor academic performance due to their absence from lectures and attendance [19,25]. As a result of excessive exposure to stress and tension, it can generate depression in nursing students [11]. Depression is defined as a syndrome that has a group of symptoms associated with changes in patterns of perception, behaviour, mood, and thought, with emotional and mental stresses and physical complaints [26]. Furthermore, depression does not only affect the academic side of nursing students, but may lead to them practicing dangerous behaviours such as smoking, thinking about behaviours aimed at self-harm, and behaviours of dissatisfaction with life [7,27-28]. The prevalence of depression among university students, especially nursing students, may be related to pre-school and college-entry factors, including a low level of self-confidence, family history associated with treated depression, self-blame, isolation, feelings of stress, loss of control, and tense and unstable personal and emotional relationships [29-30].

It is considered important and necessary from the point of view of public

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health specialists to identify early students who suffer from depression, especially in an Arab country such as Jordan, in order to reduce the spread of depression and its negative effects on academic and professional performance in the future. Thus, the need for health facilities in nursing institutions and colleges to take care of the mental health of students [19] can be confirmed. Where these facilities evaluate the mental and psychological health of students on a regular basis and treat those affected early, this helps nursing students to succeed scientifically and professionally in the future [24].

Many researches have dealt with the study of anxiety and depression among university students, specifically students of medical colleges such as nursing in various countries of the world [4,14,18,19,24,31-33], but there are few researches that have dealt with the study of depression among nursing students in Arab countries, especially Jordan [11,25,34-35]. In addition to that, there is no study in Jordan concerned with determining the factors and causes of the spread of depression among nursing students, so it was important to study and identify the factors associated with depression and identify the determinants of depression among nursing students. Thus, the main purpose of this study was to determine depression, its effects, and its determinants for nursing students at Mutah University in Jordan.

## Materials and Methods

### Study design and setting

This research adopted the descriptive analytical approach and cross-sectional design for nursing students who were selected from different educational levels at the Nursing College, Mutah University, Jordan, in the period from September to November 2022. The questionnaire consists of sections that include (25) paragraphs related to collecting information related to the socio-demographic characteristics of the participants, as well as the use of two standard questionnaires, one of which is related to the Patient Health Questionnaire 9 for the participating students, and the aim of its application is to assess the level of depression they have [36], while the second questionnaire is the Oldenburg Burnout Inventory (OLBI). OLBI is a questionnaire consisting of 16 paragraphs that include the negative and positive aspects of evaluating the level of exhaustion through cognitive strain and physical strain. This questionnaire includes a scale ranging from one to four, from strongly agreeing to strongly disagree. The OLBI scale questionnaire was used based on the version that was used by Reis et al. [37]. The questionnaire was used as a tool for this research, as it was distributed to the nursing students in a clearly printed and organized form, and it was reviewed and approved by a special research committee. The questionnaire was distributed to the participants and they were given a specific and suitable time to answer the paragraphs of the questionnaire and return it at a time convenient for them. 385 questionnaires were obtained in this study.

### Participants and procedure

The sample size was 385 participating students, which is a random sample of nursing students from the Faculty of Nursing at Mutah University in Jordan during the academic year 2021-2022, and their ages ranged between 19 and 25 years, and the number of females was (n=312, 81%) and the number of males was (n=73, 19%). Data were collected related to the socio-demographic characteristics of the participant's students, which were as follows: age, gender, nationality, academic year, mother's education, father's education, marital status, monthly income, and interest of study nursing. The 385 students agreed to participate with a 100% response rate and completed the questionnaire based on their full-time availability for all levels. In addition to that, a member of the research team supervised the follow-up and completion of the questionnaires, clarifying the paragraphs and items of the questionnaires, and answering the students' questions related to them. Moreover, the presence of the researcher supervising the questionnaires does not affect the responses of the participants. Participating nursing students completed questionnaires prior to the exam

period and final assessment to avoid the potential impact of the exams on their levels of stress, anxiety, and depression.

### Data and statistical analysis

Statistical analysis was performed, examining and coding the data obtained from the study questionnaires and entering them into the statistical program IBM SPSS (Statistical Package for Social Sciences) version 21. Where the data were analysed through descriptive statistics such as frequencies, percentages, and mean to display and clarify the patterns and levels of answers related to the sections of the questionnaires for this study. All results are presented as frequency and percentage, and the variables are presented as depression and stress scores as mean  $\pm$  Standard Deviation (SD) in different tables. Continuous variables are presented as mean  $\pm$  SD. The symptoms of depression were examined and diagnosed among the participating nursing students through the PHQ-9 questionnaire, which is a self-questionnaire consisting of 9 items concerned with displaying the recurrence of symptoms of depression, such as feeling sad, hopeless, irritability, difficulty concentrating loss of appetite, and others. The scale includes the sum of scores within the range from 0 to 27, where if the students get a score greater than 4, this indicates their level of depression. Also, there are four levels of severity of depression in PHQ-9, are as follows: mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20-27) [36]. Thus, values were obtained that determine the prevalence of depression among the participants. In addition, the mean of the total scores of the OLBI scale was calculated in the category of students suffering from depression and the category of students who did not suffer from depression and compared them by using t-test. The t-test was also used to determine the independent variables associated with the regression model and to assess the level of burnout and whether it was significantly associated with depression. To analysis the association between the two groups through their clinical variables related to depression, the Chi-square test was used. Variables were evaluated using a multivariate logistic regression model to determine independent factors and correlates for depression. Odds Ratios (ORs) are presented as results (OR) with 95% CI and a value of  $p < 0.05$  was set to represent the significant level.

## Results

### Sociodemographic characteristics of respondents nursing students

The results of this research shown in Table 1 related to the socio-demographic characteristics showed that the majority of the participating students were female (81%, n=312) and most of the participants have ages were over 22 years old, therefore the mean (SD) for age was (22.32  $\pm$  3.64) years. Regarding nationality, most of the students surveyed (98%, n=376) were Jordanian. This study included all academic years of undergraduate nursing students and more than half were studying in the third and fourth year (63%, n=242) of baccalaureate studies. As for the marital status of the participants, the majority of them were single (89%, n=341). Participants reported that more than half of their mothers (65%, n=235) had a high school diploma or less, while more than half of their fathers had a certificate higher than a secondary school (67%, n=214). Regarding the monthly income of the participants' families, two-thirds of their families (76%, n=293) have a low income as shown in Table 1. Finally, more than half (69%, n=267) of the participants reported that they were interested to study nursing by self-interest (Table 1).

### Determinants of depression among nursing students

Through the results obtained from the univariate analysis and presented in Table 2, we noticed that the variables that were significantly associated with depression among nursing students are marital status (OR: 0.53, 95%; CI: 0.28, 1.1; p-value=0.04) and chronic disease (OR: 3.88, 95%; CI: 0.88, 34.82; p-value=0.03) where OR (Odds Ratio) and CI (Confidence Intervals). While there was no correlation or statistically significant relationship between the rest of the variables in the univariate analysis and depression

among nursing students in this current study.

In addition, we have noticed through the results obtained from the univariate analysis of the continuous associations of depression among nursing students (Table 3) that the most important variables associated with depression are age (p-value=0.02), total OLBI score (p-value<0.01) and study levels (p-value<0.01). This means that there is a significant difference (p<0.05), and there is a statistically significant relationship between the variables (age, OLBI score, and study levels) and depression among the participating students.

Through the results of the multivariate logistic regression analysis, we noticed that there are only three variables that have independent correlations with depression, which are crises and life-changing circumstances, study levels, and the Oldenburg burnout inventory (OLBI), and the results were as follows (aOR: 2.16; 95% CI: 1.31, 3.59; p-value<0.01), (aOR: 0.78; 95% CI: 0.58, 0.96; p-value=0.02), and (aOR: 1.2; 95% CI: 1.13, 1.31;

p-value<0.01), respectively as shown in Table 4.

### Prevalence of depression among nursing students

Table 5 describes the prevalence levels of depression among the participating nursing students. Almost half of the participating students 49% (PHQ-9=4-9) had mild depressive symptoms, while 23% (PHQ-9=10-14) of students suffer from moderate depression, and 6% (PHQ-9=15-19) of them suffer from moderately severe depression, while 2% of them suffer from severe depression. Thus, the most important results obtained were that 31% (PHQ-9 ≥ 10) of the total number of students participating in the current study suffer from clear and significant symptoms of depression (Table 5). Where the results also showed that the overall prevalence rate of depression among the participating nursing students was 80% (PHQ-9>4). Regarding participants who received a score of 1 on any PHQ-9 question, 46 (12%) reported that managing problems cited as an answer to the PHQ-9 questions was "difficult."

**Table 1.** Socio-demographic factors and the information of nursing students respondents (n=385).

Demographics variables	Categorization	Total number of responded (n=385)	Percentage (n, %)
Gender	Male	73	19%
	Female	312	81%
Age	19-21	47	12%
	Above 22	338	88%
Nationality	Jordanian	376	98%
	Other nationalities	9	2%
Academic year	First	62	16%
	Second	81	21%
	Third	117	30%
	Fourth	125	33%
Marital status	Single	341	89%
	Married	39	10%
	Divorced	5	1%
Mother's education	Have a high secondary school certificate or below	235	65%
	Have a certificate higher than a secondary school	128	35%
Father's education	Have a high secondary school certificate or below	106	33%
	Have a certificate higher than a secondary school	214	67%
Monthly income	Low income	293	76%
	Medium income or high income	92	24%
Interest of study nursing	Self- interest	267	69%

**Table 2.** Represents a univariate analysis of categorical correlates that associations with depression among 385 nursing students at Mutah University.

Variable	Categorization	Total Participants		Depression		Adjusted OR	95% CI	p-Value
		Total number of responded (N=385)	Percentage (n, %)	Total number n	Percentage (n, %)			
Gender	Male	73	19%	53	73%	0.84	0.48, 1.46	0.5
	Female	312	81%	214	69%	1		
Marital status	Single	341	89%	245	72%	0.53	0.28, 1.1	0.04
	Married	39	10%	9	23%	1		
Monthly income sufficient	Yes	98	25%	61	62%	0.64	0.28, 1.1	0.065
	No	287	75%	206	72%	1		
Desire to care and help for others	Yes	315	82%	221	70%	1.54	2.96, 0.85	0.16
	No	70	18%	55	79%	1		
Repeat the course more than once	Yes	151	39%	106	70%	1.06	0.66, 1.63	0.86
	No	234	61%	161	69%	1		
Exam repetition	Yes	198	51%	139	70%	0.99	0.65, 1.54	0.96
	No	187	49%	133	71%	1		
Satisfaction with test results	Yes	121	31%	85	70%	0.97	0.60, 1.59	0.89
	No	264	69%	188	71%	1		
Remorse choosing nursing studies	Yes	43	11%	29	67%	0.9	0.46, 1.83	0.77
	No	342	89%	238	70%	1		
Crises and life-changing circumstances	Yes	14	4%	12	86%	1.67	1.07, 2.56	0.07
	No	371	96%	257	69%	1		
You have a chronic disease	Yes	20	5%	18	90%	3.88	0.88, 34.82	0.03
	No	365	95%	238	65%	1		

**Table 3.** Represents a univariate analysis of categorical continuous correlates that associations with depression among 385 nursing students at Mutah University.

Variable	Total number of responded (N)	Total number of responded (N)				Depression			No depression			p-Value
		Mean	SD	Min	Max	Total number (n)	Mean	SD	Total number (N)	Mean	SD	
Ager	338	22.32	3.64	15	45	215	21.95	2.95	123	22.92	4.65	0.02
Monthly income sufficient	293	29.85	21.46	0	184.64	194	31.12	23.14	89	34.25	28.81	0.46
Cumulative GPA	244	2.65	0.55	0	6	202	2.68	0.59	42	2.81	0.49	0.21
Study Levels	385	1.19	0.98	0	8	255	1.09	0.97	130	1.38	0.99	<0.01
Total OBLI score	385	37.51	4.81	24	56	249	38.95	4.87	136	35.92	3.95	<0.01
Total of hours spent studying nursing	363	4.76	3.12	0	21	230	4.77	3.09	133	4.72	3.17	0.88

**Table 4.** Represents multivariable logistic regression of independent correlates that associations with depression among 385 nursing students at Mutah University.

Correlates variable	Multivariate logistic regression		p-Value
	Adjusted OR (Odds Ratios)	95% CI (Confidence Intervals)	
Age	0.97	0.89, 1.06	0.3
Marital status Married Single	0.96	0.37, 2.63	0.94
Monthly income sufficient Yes No	0.67	0.38, 1.18	0.14
Crises and life-changing circumstances Yes No	2.16	1.31, 3.59	<0.01
You have a chronic disease Yes No	1.7	0.35, 6.44	0.49
Study Levels	0.78	0.58, 0.96	0.02
Total OBLI score	1.2	1.13, 1.31	<0.01

**Table 5.** Represents the category and parameters of the prevalence of depression among 385 nursing students at Mutah University.

Category and parameter of depression	PHQ-9 Score	Total number of responded (N=385)	Percentage (N, %)
None	0	31	8%
Minimal	01-Apr	46	12%
Mild	05-Sep	189	49%
Moderate	Oct-14	87	23%
Moderately severe	15-19	24	6%
Severe	20-27	8	2%
Overall depression	----	308	80%

## Discussion

The results reached in the current research, which are related to the relationship between social and demographic characteristics and the prevalence of depression among nursing students in Jordan, indicate that there are some characteristics that play an important role as a determinant of depression, as we found that most of the participating students (80%) are female, and this directly affects the results of the prevalence of depression among nursing students, as it is known that the prevalence of depression among females is higher than among males, and many studies have reported that [18,32,38-41]. We also found that the majority of participating students (88%) are over 22 years old, and their average age is 22.32 ± 3.64, which means that students of this age cannot bear a lot of stress, especially those related to the academic side, and this result is consistent with what was found in the study by Sigdel and Pokhrel [42]. In addition, we found that marital status is a factor associated with the prevalence of depression, as (89%) of the students were single, and this may affect the psychological and emotional stability of students, which leads to the prevalence of depression, and this is consistent with the results of the study by Olum et al., where they were mentioned that the prevalence rate of depression among single students higher than their married peers, and the reason for this may be that

the presence of a partner is important for psychological and social support [32].

The results of the univariate analysis indicated that there is a significant correlation between depression and marital status (p-value=0.04). This confirms what has been discussed regarding the relationship between the prevalence of depression and demographic and social characteristics, and the same result was obtained by studies conducted in Cameroon, Ghana, and Pakistan [43-45].

Moreover, we found through the results of the univariate analysis that there is a statistically significant relationship between the presence of chronic illness and depression (p-value=0.03). This means that chronic disease is considered one of the indicators of the spread of depression among nursing students, and the reason for this may be that chronic diseases make the sufferer weak and unable to bear pressure and exhaustion, especially those related to study and academic achievement and that some chronic diseases the depression is from their symptoms. This result is consistent with the results of studies conducted in Iran and Turkey [46-47]. The results of the univariate analysis of the continuous associations of depression among students indicated that there is a significant relationship between depression and the variables of age and levels of study for students. Depression among students may be related to age and levels of study, and



since the ages of students ranged between 19-25, they may suffer from depression for several reasons, which are living, social and financial fears, psychological stress, and educational fears. All these factors may lead to the spread of depression among students, especially in a country like Jordan, where there are many difficulties that students may face. This obtained result is consistent with the results of studies conducted in Pakistan and Egypt [45,48].

Regarding the levels of study, we found through the results that they are related to depression and are considered a determinant of depression, meaning that there is a statistically significant relationship between the levels of study of students and depression. Where we found that symptoms of depression are more prevalent among students in their third and fourth study years, it was (30%) and (33%) of the total number of participating students studying in the third and fourth levels, respectively. This result is consistent with the results of previous studies [49,50]. As indicated by the results here, we find the prevalence of depression among nursing students in the upper years, this can be explained by the fact that when students move to higher levels, they turn to the applied field, and thus the responsibilities and duties that they must perform become more difficult. In addition, the weakness in coping skills and the inability to adapt to the new stage, which is the stage of clinical life, are all factors that increase the prevalence of depression among nursing students, as indicated by a study conducted by Yousef et al. [11].

Moreover, the results in the current study showed that there is a correlation between the degree of the OLBI scale and depression, as it was found that the students who scored one or two points higher than the students who do not suffer from depression in OLBI scale, this indicates that these students suffer from burnout syndrome associated with depression. As many studies have mentioned that burnout syndrome is widespread among students studying in medical fields such as nursing and medicine, and this indicates the students' intention to stop and not continue their studies in these fields [51-54]. Nursing students in Jordan suffer from many difficulties, starting from admission exams to studying, which consumes a lot of time, and the financial cost of studying. All of this leads to mental and physical exhaustion and lack of time to rest, so students suffer from exhaustion, which is also associated with depression.

Finally, one of the most important results reached in this research work is the prevalence of depression among nursing students in Jordan was at high rate. We found that 80% is the prevalence rate of depression in general and that 31% of students suffer from major depressive symptoms. Moreover, we found that the prevalence of depression among nursing students in Jordan is higher than in similar studies conducted in many countries which a

re Brazil, Cameroon, China, and Malaysia (19.2%), (26.40%), (22.9%), and (29.4%) respectively [7,19,55,56], while it was lower than in Iran (38.7%), Brunei (43.36%), Thailand (47.01%), and Nepal (63%) [35,57-59]. These differences can be explained by the results of the prevalence of depression for nursing students between Jordan and the rest of the countries, through the fact that the environment in which the students exist differs, as there may be possibilities for studying in some of these countries better than in other countries, and also the different methods and measures used to determine depression among students. Therefore, we need to pay attention to the existence of health training centres with the provision of specialists in the field of mental health care, to which students turn to relieve their suffering from study pressures, fatigue, and life crises. Thus reducing the prevalence of depression among students, especially students in medical departments such as nursing in Jordan.

## Conclusion

Our current study showed that more than a quarter of nursing students in Jordan suffers from depression, and therefore the prevalence of depression among students was high. Therefore, it is very necessary to identify and evaluate the determinants on the basis of which the prevalence of depression among nursing students was determined in this study, with

the aim of identifying the factors that lead to the emergence of depression and are associated with it, such as burnout, study levels, and life crises, and thus early detection and treatment of depression can be possible. We suggest, through the results reached in this study, the need to strengthen and find strategies and means in order to confront and reduce the spread of depression. In addition, health facilities must be provided within medical colleges for therapeutic interventions, health examinations, and counselling for nursing students who suffer from burnout syndrome, anxiety, and depression. We also recommend expanding future studies on this topic to include other medical colleges and other universities in Jordan and a larger number of students to identify and evaluate depression among students and to ensure the correctness of the relationship between burnout and depression more accurately and broadly. This is for the purpose of helping to provide health education programs and guide policies related to psychological and mental health.

## Limitations

This study was one of the few studies in Jordan that included the assessment and determination of depression among nursing students at a single university. Therefore, one of the limitations of this cross-sectional study was that the number of nursing students who were selected as a random sample was small, and therefore the results cannot be generalized to include all nursing students in Jordan. One of the limitations included in this current study is that the data obtained depend on self-report, which is controlled by the desire and tendencies of students, which may negatively affect the results. Moreover, the tools and measures used illustrate some of the determinants of depression but do not diagnose depression among nursing students. So, the study needs to be expanded in the future to include clinical interviews with students in order to ascertain the presence and diagnosis of depression symptoms. Thus, when interpreting the results of this study, consideration must be given to the limitations it contained.

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