



## Prediction of depression among undergraduate nursing students in North-Western Saudi Arabia: A quantitative cross-sectional study

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### ARTICLE INFO

#### Article history:

Received 27 October 2018

Received in revised form

17 January 2019

Accepted 21 January 2019

#### Keywords:

Nursing students

Depression

Self-esteem

Hail

Nursing education

### ABSTRACT

The objective of this study is to identify predictors (self-esteem, and demographic characteristics) that correspond to decrease depression level among Saudi nursing students. Participants included 152 nursing students who completed the center for epidemiology studies depression scale, the Rosenberg self-esteem scale, and the multidimensional scale of perceived social support. Data were subjected to a t-test, analysis of variance, and regression analysis. Results showed that Saudi nursing students are moderately depressed. Regression analysis indicated that a significant portion of the variance in the level of depression among nursing students was attributed to self-esteem and interest in the field of nursing. Presence of self-esteem was the best predictor of a decreased level of depression. These factors should be considered when designing strategies personalized to nursing students' problems and needs, which thus may inhibit depressive symptoms. So, Nursing educators can plan suitable strategies personalized to nursing students' problems and needs, which thus may simplify learning experience and inhibit depressive symptoms.

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### 1. Introduction

It is greatly acknowledged that nursing encounters increased amounts of strain and anxiety in contrast to various health and non-health related professions or disciplines (Aiken et al., 2001). Fatigue and tension may cause burnout and other mental issues such as depression (Aiken et al., 2008). Past studies have determined that nursing students experience high levels of stress compared to students of other courses (Deasy et al., 2014; Alsaqri, 2017). Early research has revealed that the principal causes of stress among nursing students included: adapting to a tedious theory program, complying with overwhelming number of assignments and workload, and acclimating to the rigors of the clinical exposure (Aiken et al., 2011; Alsaqri, 2017). Prolonged subjection to stressors may result in anxiety and discontentedness and even depression

(Yousef et al., 2017). Depression is considered as the disease of the twenty-first century (WHO, 2006). Statistics showed that there has been an alarming rate of depression affecting nursing students across the world. In Greece, out of the total number of nursing students, 43.9% manifested symptoms of depression (Melissa-Halikiopoulou et al., 2011). In Cyprus, about 61.8% exhibited symptoms of depression, from which 30.9% were classified as mild, 25.5% as moderate and 6.4% as severe (Papazisis et al., 2014). In the Middle East, about 44% were identified as suffering from mild to moderate depressions, accompanied with emotions of hopelessness (Ahmadi et al., 2004). There is also a notable number of cases of depression among nursing students in Saudi Arabia. A cumulative 21.9% showed symptoms of depression, 9.9% of which manifested major depression whereas 19.4% other type of depression, and 24.4% among any type of depression (Amr et al., 2013). Nurse professionals in the Arab World are prone to experiencing burnout more in comparison to other health professionals (Elbarazi et al., 2017). There is a deficiency of over 4.3 million nurses globally as estimated by the WHO (2006). Given the issues on shortage of nurses and number of nursing students who leave the program, it is imperative that nursing educators identify the

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<https://doi.org/10.21833/ijaas.2019.03.011>

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elements or factors that lead to the development of symptoms of depression among nursing students. There is also a need to formulate strategies and techniques in order to correctly manage the pressures and depressive problems of nursing students throughout the course of their studies (Hsiao et al., 2012). Therefore, this study aimed to identify the level of depression among Saudi nursing students and predictors of depression among Saudi nursing students in terms of self-esteem, social support, and selected demographic characteristics.

## 2. Methods

### 2.1. Ethical considerations

After securing institutional review, board approval from both the primary investigator's academic institution and selected college used as study site was acquired. Respondents were briefed and informed that their involvement was voluntary and would not affect their academic performance. They were also advised that they could withdraw or discontinue from the study at any time. The respondents were given consent forms which were carefully explained by the surveyors. All gathered data and information were treated with strict confidentiality and anonymity.

### 2.2. Study design, setting, and sample size

A cross-sectional design was employed for this descriptive, quantitative research study. A descriptive design was appropriate in order to describe the phenomenon of depression as it currently exists without manipulation. This study was conducted at the College of Nursing at Hail University in the north-western region of Saudi Arabia. In acquiring the required sample size, a convenient sampling technique was used employing the statistical software G-Power version 3.1.3 (Faul et al., 2009) with multiple regression (fixed model,  $R^2$  increase), the number of predictors as 6, a power = 0.95, a medium effect size = 0.15, and alpha error probability = 0.05. Hence, a sample size of 152 students were engaged in this study. In the selection of respondents, the following inclusion criteria were considered: (1) Inclusion criteria were being a Saudi nursing student, (2) agreeing to participate in the study, (3) conversant in English (able to read, understand and write in English), and (4) voluntarily participate in the study. Students who were not present during data collection or who were taking time off the program were excluded.

### 2.3. Instrument

The research instrument utilized in our study consisted the following information regarding participant demographics: age, gender, academic year, previous employment, marital status, and interest in field of nursing.

Depression is characterized as a person's general view of his/her negative emotions, somatic complaints and erratic relationships. The Center for Epidemiology Studies Depression Scale (CES-D) (Radloff, 1977), a 20 item, structured, self-report was utilized to assess depression among nursing students over the course of seven days. Students were requested to respond to the items based on feelings or behavior ranging from "rarely or none of the time" (0) to "most or all of the time" (3). Possible total scores range from 0 to 60. Higher aggregate scores indicate more depression (Radloff, 1977).

Self-esteem is described as one's perception of his or her self-worth as viewed by others. The Rosenberg Self-esteem Scale (R-SE) (Rosenberg, 1989) is a 10 item, 4-point Likert, self-report scale used to measure self-esteem. Responses vary from "strongly disagree" (1) to "strongly agree" (4). Possible total scores range from 10 to 40. Higher scores indicate higher self-esteem (Rosenberg, 1989). Social support is described as one's general perception of being accepted, loved and cared for by family members, friends and significant others. The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988) is a 12-item, 7-point Likert self-report scale used to measure different sources of emotional support with 4 items each for the sources of family, friends and significant other. Responses vary from "very strongly disagree" (1) to "very strongly agree" (7). Total sub-scale scores can range from 4 to 28. Higher scores indicate more perceived support (Zimet et al., 1988).

In order to evaluate the readability and clarity of the instruments, a pilot study was conducted using a convenient sample of 15 students who shared similar characteristics to those of the study subjects. All respondents stated that both the wording of the instruments and instructions were clear. The CES-D, R-SE and MSPSS were evaluated for reliability. Internal consistency reliability was determined by a Cronbach  $\alpha$  of .890 for CES-D, .71 of R-SE and .95 for MSPSS.

### 2.4. Data collection

Prospective research respondents were given invitation to participate in the study through an advertisement in the Banner System of the University of Hail. The actual data gathering was held in the lecture halls of Building 9. The aims and objectives of the study as well as the rights of the participants were explicitly delineated and explained to them before the research instrument was distributed. Students were requested to accomplish the research instrument and subsequently place them in a designated drop box. Data were collected over a two-month period from January 2018 February June 2018.

### 2.5. Data analysis

Data analysis was comprised of both descriptive and inferential analysis. Descriptive statistics

(means, standard deviations, percentages) were utilized to assess the sociodemographic characteristics of the sample as well as calculate the results of CES-D, R-SE and MSPSS. An independent-sample t test was employed to examine differences in the level of depression with respect to gender, marital status and previous employment.

One-way analysis of variance was used to examine differences in the level of depression with respect to age, academic year, and interested to field of nursing. Pearson and Spearman rank order correlation analysis was performed to examine the association among level of depression, social support, self-esteem, age, academic year, marital status, interested to field of nursing program.

To examine the extent to which social support, self-esteem, and demographic characteristics parameters have a predictive power to depression, stepwise multiple linear regression analysis was performed.

### 3. Results

#### 3.1. Demographic characteristics of participants

The sample consists of 152 students. Most of the students were females ( $n = 108$ ; 71.1%) and unmarried ( $n = 103$ ; 67.8%) who were fourth Year ( $n = 44$ ; 21.6%). A little more than half of the student respondents belonged to the age range less than or equal to 21 ( $n = 79$ , 52%) (Table 1).

Most of the students (77.6 %,  $n = 118$ ) had previous employments. High interest in nursing profession was the most prevalent among the students at the time of data collection ( $n = 92$ ; 60.5%). Analysis of the results revealed that the mean (SD) level of depression among nursing students was 40.8 (4.328) (range, 0-60). The possible range of score on this scale is (0 to 60), with a higher score indicating a higher level of depression (Radloff, 1977). The mean (SD) level of social

support among nursing students was 38.9 (19.99) on the MSPSS. The possible range of score on this scale is 12 to 84, with higher scores indicating higher levels of social support (Zimet et al., 1988).

The mean (SD) level of self-esteem among nursing students was 29.1 (4.88). The possible range of score on this item was 10 to 40, with higher scores indicating higher levels of self-esteem (Rosenberg, 1989).

**Table 1:** Demographic characteristics of undergraduate nursing students, N=152

Nursing Students, N=152			
Variable		n	%
Age	18-20	26	17.1
	21-24	79	52.0
	≥25	47	30.9
Gender	Male	44	28.9
	Female	108	71.1
Academic Year	First Year	38	22.50
	Second Year	37	19.56
	Third Year	33	19.27
	Forth Year	44	21.68
Previous Employment	No	34	22.4
	Yes	118	77.6
Marital status	Unmarried	103	67.8
	Married	49	32.2
Interested to Field of Nursing	Low	12	7.9
	Average	48	31.6
	High	92	60.5

Pearson product-moment correlation (Pearson  $r$ ) coefficient for a 2-tailed test of significance was used to determine the relationship between the independent variables (social support, and self-esteem) and the dependent variable, depression (Table 2).

The results of this study revealed that there was a weak statistically significant negative relationship between self-esteem and level of depression ( $r = -0.224$ ;  $n = 152$ ;  $P < 0.01$ ), with a high level of self-esteem associated with a lower level of depression. On the other hand, there was not a statistically significant relationship between social support and level of depression ( $r = 0.129$ ,  $n = 152$ ,  $P < 0.05$ ).

**Table 2:** Correlation matrix of level of depression and selected demographic characteristics, (N=152)

Variable	1	2	3	4	5	6	7	8	9
r	1								
p									
r	-.42*	1							
p	.00								
r	.20*	.02	1						
p	.01	.73							
r	.34*	-.06	.09	1					
p	.00	.43	.26						
r	.56*	-.24*	.02	.26*	1				
p	.00	.00	.71	.00					
r	-.01	.04	-.10	.02	.04	1			
p	.84	.54	.19	.78	.55				
r	-.12	.07	-.05	-.08	-.10	-.18*	1		
p	.13	.35	.51	.32	.18	.02			
r	-.03	-.06	-.03	.10	-.03	.03	-.22*	1	
p	.71	.45	.69	.19	.63	.64	.00		
r	-.02	.02	-.00	-.06	.06	.17*	.12	-.17*	1
p	.79	.79	.96	.43	.44	.02	.11	.03	

\* Correlation is significant at the 0.05 level (2-tailed).

1. Age, 2. Gender, 3. Academic Year, 4. Previous employment, 5. Marital Status, 6. Interest to field of Nursing, 7. Depression, 8. Self-Esteem, 9. Social Support

Spearman rank order correlation (p) coefficient for a 2-tailed test of significance was used to

determine the relationship between the independent variables (age, academic year, marital status, and

interested to field of nursing and the dependent variable, depression (Table 2). The results of this study revealed that there was no statistically significant difference in the mean level of depression between males and females. There was no statistical difference in the mean level of depression between different levels of age groups, and different interests to field of nursing (Table 3).

Stepwise linear multiple regression analysis was conducted to identify predictors of depression. The results of this study revealed that a final model contained 2 variables (Self-esteem, interested to field of nursing). This model explained 8.2% of the variance in level of depression ( $R^2 = 0.082$ ,  $P \leq 0.05$ ).

Each of the predictor variables is assigned a weight (" in column), which, when placed in a prediction equation, corresponds to its power to affect the level of depression. For each unit change in the independent variables, there is an expected change equal to the sizes of these values in depression. Self-esteem had the most significance on the level of depression ( $\beta = -0.218$ ,  $P = 0.006$ ), followed by interest of field of nursing ( $\beta = -0.177$ ,  $P = 0.025$ ). The direction of influence for each of these predictors was a negative one; that is, as the value of these predictors increased, the level of depression decreased.

**Table 3:** Difference between groups for selected demographics and level of depression (N = 152)

Variables	n	Mean	SD	F- Ratio	df1	df2	p
Age				1.26	2	149	.28
18-20	26	23.8	13.8				
21-24	79	20.6	10.0				
>25	47	19.4	11.9				
Interest in field of nursing Program							
Low	48	22.8	7.2	2.68	2	149	.07
Average	92	19.2	12.8				
High	12	25.3	11.3				
Academic Year				0.71	3	148	.54
First Year	38	22.5	10.1				
Second Year	37	19.5	10.5				
Third Year	33	19.2	6.9				
Forth Year	44	21.6	15.1				
Sex				t	df		p
Male	44	19.5	10.3	-.93	150		.35
Female	108	21.3	11.7				
Previous Employment				.99	150		.32
No	34	22.5	9.4				
Yes	118	20.3	11.8				

#### 4. Discussion

The results offer a summary of the growth of depression among Saudi nursing students in the university and show similitude and contrast with the extant international literature. The outcomes of this research reinforce and justify earlier research findings that nursing students experience moderate depression (Christensson et al., 2011).

Tertiary education is an essential and critical phase in the lives of students, which has explicit academic, financial and social implications. Experiencing these stressful changes may increase the likelihood of developing depression. Most students joining the University of Hail leave their homes for the first time. Being away from their residences may place them in a state of losing familial support and supervision. They also need to adjust to living with other students and building new peer relationships. Adding to the burden is the drastic change in the manner of teaching which is completely different from what they had in secondary and primary education. All these changes may predispose University of Hail students to suffer from depression. Several indicators specific to nursing students included taking care of and interacting with patients, communicating with health care professionals, and dealing with patient death. All of which were pointed out in the study by

Mikolajczyk et al. (2008). These may have caused unnecessary stress and psychological problems to the nursing students.

Our study discovered that both factors, self-esteem and interest in nursing, were significantly associated with depression. Our study found that self-esteem had a significant negative correlation with depression, and this result is found in other findings of previous studies (Ross et al., 2009; Yousef et al., 2017; Orth and Robins, 2013), in which higher depression scores were associated with lower self-esteem. This study has also revealed that the best significant predictor to decrease students' depression level is self-esteem. This result is also similar to the findings of previous studies (Ratanasiripong, 2012; Ross et al., 2014). Self-esteem is associated with the sense of worth that the respondents perceived being nursing students. Their self-esteem was determined through their sense of worth related to their perception of level of professionalism, socialization into the profession and motivation being nursing students. In our sample the self-esteem level was also measured using Rosenberg's scale and normal self-esteem levels were found in the majority of the students (20.4%).

The self-esteem of nurses is usually considered to be low (Arthur, 1992), perhaps due to the well-documented oppression that exists within the



profession (Deasy et al., 2014). Low self-esteem is an important concept to measure as it has been linked with depression and in the literature on self-esteem and stress it has been consistently found that high self-esteem acts as a buffer against stress (Lo, 2002). Most importantly for nursing care, enhanced self-esteem can lead to improved quality in interpersonal relations between nurse and patient. There are limited published studies evaluating nursing student's self-esteem. Irish nursing students' reported self-esteem rose as they neared the end of their education program and their fear of negative evaluation decreased, however, their overall self-esteem levels at their highest were only average (Begley and White, 2003).

In our study, there was a significant negative correlation between interest in nursing program and depression. Considered as an important factor, interest in nursing, is pivotal in decreasing the level of depression among nursing students. A sense of fulfillment in the chosen field of study is a powerful impetus in having enthusiasm and in the decrease of the prevalence of depression. In any situation, imbining an attitude of optimism towards the future plays a significant role in attaining success and in preventing failure and humiliation. This result is found in the findings of Furegato et al. (2008) and Rezayat and Nayeri (2014).

The present study also revealed that the prevalence of depression according to age of nursing students were not significantly different among the age groups. This result does not coincide with the results of Weissman and Klerman (1985), who suggested that the prevalence of depression and depressive symptoms increases with age. However, this result condones with the results of Rezayat and Nayeri (2014), and Okyay et al. (2012) who suggests that there is no difference between point averages of depression for students in accordance with age variables.

Similar studies involving respondents of similar ages have recorded a higher prevalence of depression among female students compared to male students (Mallen et al., 2008; Augestad et al., 2008; Bostanci et al., 2005). In our study, there has been no statistically significant gender differences in the mean level of depression. This result is similar to the findings of previous studies (Quince et al., 2012; Cheung and Yip, 2015; Chen et al., 2013). This could be rightly so because female students in Saudi universities have the same privileges, merit similar supporting rights and encounter the same pressure as male students, and even have equal chances to employments (Chen et al., 2013).

Two earlier studies reported that depressive symptoms tend to increase among students in their second and third years (Melissa-Halikiopoulou et al., 2011; Papazisis et al., 2008). This may be due to students approaching the transition from academic to clinical life (Papazisis et al., 2008) however, our study did not find any significant differences in depression level between academic years of study.

This study showed that there are no statistical significant differences in the level of depression between employed (Bridging) and unemployed (regular) students as well as between married and unmarried students. This result is consistent with the findings of a previous study (Chen et al., 2013; Rezayat and Nayeri, 2014; Oskoue and Kahkeshan, 2013). These differences in findings might be explained by different measurement tools or sample errors.

#### 4.1. Limitations

This study is subject to several limitations. This study utilized convenience sampling and limited data collection to only one college in northwestern Saudi Arabia. It also lacked qualitative data on the experiences of Saudi nursing students; which may have introduced a bias regarding the population which limited the generalization of the study results. A qualitative study of the experiences of nursing students would also provide deeper insight into their mental health, self-esteem, and related issues. Furthermore, the cross-sectional design of this study provided information about level of depression at only 1 point of time, whereas levels of depression may vary with different situations and at different times.

However, this study gave an insight on depression among nursing students which is a pioneering study in Saudi Arabia involved in identifying predictors that correspond to lessening depression among Saudi nursing students.

#### 4.2. Implications for nursing practice

Several implications can be deduced from the results of this study. First, given that depression is one of the most common mental health problems that Saudi nursing students experience, it is imperative that nurse educators assess the mental status and wellness of nursing students. Saudi nursing students also encounter moderate prevalence of depression, similar to students from other nations, that needs to be given serious attention. Capitalizing on Kernan and Wheat (2008) recommendations for nurse educators, the initial step is early detection of emotional issues and concerns among nursing students and creation of centers in the campus with mental health professionals to enable timely referrals. It is crucial that, for nursing students to be able to complete the course and graduate, early detection and prompt treatment of symptoms of depression must be readily made. Nurse educators and nursing students may resort to using the internet in identifying the signs and symptoms of anxiety and depression as well as pursue treatment recommendations, in the absence of mental health professionals. Second, self-esteem is an important variable that has been shown to be negatively related with depression among Saudi nursing students in this study. These findings entail that by increasing the self-esteem of Saudi

nursing students, a decrease in the prevalence of depression could be expected. There are several ways on how to boost the self-esteem of Saudi nursing students. These include promoting self-awareness, specifically their needs and wants, introducing self-care habits such as regular exercise, healthy diet and positive thinking. Lastly, Interest in nursing program, is the second most important predictor after self-esteem in decreasing depression among Saudi nursing students. Our study would encourage the nurses to exhibit a positive image of the profession by acting as role models and serve as good example in hospitals where the nursing students are affiliated. In this way, nursing students would embody and practice the characteristics of a nurse which would encourage future students to enroll in the nursing program. Our study could also inspire nurse educators to formulate and develop plans that would increase the interest of students in nursing by allowing them to actively participate in nursing activities and exposing them to various clinical experiences and nursing skills laboratory activities. Furthermore, open ideas to future researchers regarding the need to further investigate on the different factors affecting the low interest of students in the nursing profession and its realistic resolutions which is a major concern in majority of countries like Saudi Arabia.

## 5. Conclusion

We discovered that the extent of depression among Saudi nursing students in Hail City is moderate with no preponderance between males and females. Self-esteem and interest in nursing emerged as significant predictor variables in this study. Interest in nursing is less important as a predictor of lowering depression than self-esteem was. Our findings point to importance of screening of this vulnerable population and taking appropriate interventional measures to prevent the complications of depression. Further research studying sociodemographic factors and the effect of depression on the academic performance is needed.

## Acknowledgment

We thank our colleagues Mr. Reinhard Roland Ehol who provided insight and expertise that greatly assisted the research.

## Compliance with ethical standards

## Conflict of interest

The authors declare no personal or financial conflict of interest.

## Ethical approval

The study was approved by the Director of Institute and the Nursing Department Ethical

Committee. Students who agreed to participate were informed about the purpose of the study and that their participation is voluntary and the data will be treated with confidentiality.

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