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## Comparing Depression, Anxiety and Stress among the Nurses in the Critical care and Internal Surgical units at the Selected Hospitals of the Social Security Organization of Tehran in 2016

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### ABSTRACT

Nurses are among the working groups who would be affected by themental illnesses and the stresses within their environment, thus depression and anxiety are their common problems. The aim of this study is to compare depression, anxiety and stress among the nurses in critical care and internal-surgical unitsat the selected hospitals of social security organization of Tehran. This descriptive-comparative study is performed on 220 nurses working in the selected hospitals of Tehran social security who are selected by simple random sampling in the period of March 2016 to October 2016. The necessary data are collected using a two-part questionnaire, including demographic information and a DASS-42 standardized questionnaire. This 42-item questionnaireis formed from three subscales of 14 questions related to depression, anxiety and stress. Data are analyzed using spss-22 software. The working place of nurses are significantly associated with incidence of depression and stress among the nurses in the critical care unit ( $\text{sig} < 0.002$ ). But incidence of depression and stress among the nurses in internal and surgical units is less than the critical care units. The anxiety scale has no significant difference between the two groups  $\text{sig}: 0.868$ . Depression is mostly related to hemodialysis and stress is mostly related to CCU. No significant correlation can be seen that would be associated with incidence of depression, anxiety and stress between variables of age, type of employment, education, marital status and working experience ( $p > 0.005$ ) But there is a significant correlation between gender and incidence of depression, anxiety and stress among the nurses ( $p < 0.005$ ) and the incidence of mood disorders in nurses and the rate of depression, anxiety and stress in female nurses is more than male nurses ( $p < 0.005$ ) High levels of depression and stress among thenurses in the critical care unitis alarming. Progress in providing service and adequate supports leads to the health of nurses and therefore to the development of health in the society.

**Keywords:** Depression, Anxiety, Stress, Nurse, Critical Care, DASS-42, Workplace.

### INTRODUCTION

The accelerating expansion of the scope of psychology and its influence in various social, economic and industrial fields has brought the shape of societies in fresh color in terms of individuals' relationships with each other, as far as it can be said, without considering psychological problems, we cannot take any step to solve them correctly and logically (1). So, paying attention to mental health is important in all arenas of life including personal, social and occupational (14). Ages ago, many countries in the world had less attention toward mental health because of the main attention to health priorities, such as infectious and contagious diseases. But in recent years, stresses and

psychosocial and mental problems of societies have been increased day by day because of social and economic changes and the world has witnessed major changes in the epidemiology of diseases and the health needs of individuals (19). Despite technological advances disorders like depression, anxiety and stress are common disorders of the century (21). According to the world health organization, about 500 million people in the world are suffering from a mental disorder that among these, 200 million people are suffering from mood disorders such as depression and anxiety (17). Especially depression, is known as the fourth cause of disability all over the world and it is predicted that by 2020, it would become the second leading cause of disability in human beings (4). Studies show that prevalence of depression in a lifetime, will be 10% in men and 20% in women (5). Psychiatric disorders especially depression, 7% in men and 12% in women have been reported in America (10). In the general population of Iran, unwanted mental health is different from 11.9% to 23.8% (17). Nurses are an essential component of the workforce in the health care system in each country (11). Nurses as the powerful arm of the health care services system, play an important role in the evolution and development of affairs such as health care, therapeutic, health promotion and improvement in the society (14). Research has shown that nurses and health caregivers as a group at high risk, always face with various stresses caused by job (15). In fact, the nursing profession is stressful and challenging for several reasons. Permanent confrontation with patients, having responsibility for human health, doing clinical processes, dealing with dying patients, dealing with emergency and unpredictable situations, excessive noise at workplace and the shift work incirculation are among stressors in nursing profession (4). Working conditions and the section type of the nurses' workplace also are among the very influential factors affecting mental health (17). In other words, the job environment always affects the individual. In fact, job characteristics and psychological characteristics are constantly in mutual and dynamic connection (21). Nurses often work in an environment where unpleasant emotions and death has penetrated in patients, and they must have the highest attention and skills in responding to a variety of situations (12). There is a positive and high relationship between workplace stresses and its consequences, depression and anxiety in different studies (18).

Since the importance of the nurse's role in saving the patients' lives is obvious, the periodic studies about depression, anxiety and stress of special nurses, is an essential task toward precautionary efforts of the health system. Doing comparative researches and checking these indices among the nurses working in different units can be underlying of psychological security and job welfare of nurses. So, the researcher hopes to identify people at risk by determining and comparing the incidence of depression, anxiety and stress among nurses in critical and internal-surgical units, so that we could take a step toward preventing and reducing the existing tensions, and to control and treat the complications resulting from it. Obviously, this does not only affect the mental health promotion and improvement of nurses, but it also has an impact on the quality of the patient care and the reduction of the healthcare costs and staffing in hospitals and organizations and it provides more favorable conditions for the nurses' activity. Due to these dimensions, this research is done with the aim of determination and comparison of the stress, depression and anxiety among then uses in critical care and internal-surgical units at the selected hospitals of social security organization of Tehran in 2016.

## MATERIALS AND METHODS

The recent epidemiological studies have shown that 13.3% of Hong Kong nurses suffer from mood disorders, especially depression and anxiety (10). While nursing community has reported that the most concern of the nurses, 70.5%, is caused by job stress (2). Also in Iran, the prevalence rate of mental health disorders has been reported 33.2% in the nurses' population against 48.8% in the general population (17). While working in the nursing profession can be stressful by itself and will lead to job burnout in the long run but it does not seem that the individuals working in this profession would be equally affected by the adverse results of stress (4). So that nurses in the critical care unit experience more anxiety, depression and stress than the other nurses and they have more irritability, anger and excitability because of the complexity, the use of sophisticated and technical accessories and equipment (17). While the study of Allaf Javadi shows that nurses in the internal-surgical unit have a lower quality of life than the other group, they have earned lower marks in the mental health dimension (3). On the other hand, the results of various researches show that work-related mental pressure, is not only the cause of disease and absenteeism but it is also effective on the relocation of employees and on reducing their efficiency and performance in the organization. To deal with this problem, stress management techniques have been developed to teach people to prevent, reduce, confront and cope with job stresses (7).

### *Type of Method*

Nurses as the main members of therapeutic care team, have an essential role in maintaining and improving the health of individuals and society and are always at risk of depression, anxiety and stress because of the challenges of job that it can affect the physical and mental health of nurses and quality of their work. This is a descriptive – comparative research which has been done by the aims to evaluate and compare the depression, anxiety and stress

among nurses in critical care and internal-surgical units in 2016 and in this regard, the following questions were proposed and tested:

1. What is the rate of depression among the nurses in the critical care unit?
2. What is the rate of depression among the nurses in the internal and surgical units?
3. Is the rate of depression different between the nurses in the critical care and internal surgical units?
4. What is the level of anxiety among the nurses in the critical care unit?
5. What is the level of anxiety among the nurses in the internal and surgical units?
6. Is the level of anxiety different between the nurses in the critical care and internal surgical units?
7. What is the level of stress among the nurses in the critical care unit?
8. What is the level of stress among the nurses in the internal and surgical units?
9. Is the level of stress different between the nurses in the critical care and internal surgical units?

### **Population and Sample**

The study population include the employed nurses in the selected hospitals of social security organization of Tehran in 2016. The inclusion criteria include: Willingness to participate in there search, having undergraduate and graduate education, at least one year of working experience in critical care and internal-surgical units, no history of mood disorders such as stress, anxiety and depression in the past 6 months, no use of psychiatric drugs and current treatments of psychiatry and lack of participation in similar researches simultaneously. The exclusion criteria include: Unwillingness to participate in the research, history of mood and mental disorders and the use of the drug or psychiatric services or other methods, a history of severe emotional and physical crises in the past six months such as the death of someone close, divorce, serious accidents. With official and written permission from the research department of social security organization of Tehran, we went to training unit of selected hospitals and its subsidiaries for sampling. With simple random sampling and by considering percent rate of depressive disorders, anxiety and stress and calculating the number of samples based on ( $\alpha=0.05$ ) and prevalence rate in similar studies ( $P = 28\%$ ) in total, 220 questionnaires were distributed and collected in person. The examined units include internal and surgical units and intensive care units such as CCU, ICU, NICU, OPEN HEART and Hemodialysis of selected hospitals of social security organization of Tehran. According to the number of nurses, a sufficient number of samples is selected based on the list by simple random sampling from each section. The purpose of research is described to the staff through a personal visit, and a written consent is obtained for participating in research after giving assurance for confidentiality of information. It is pointed out to participants to complete the questionnaires at the appropriate time and with calmness.

### **Data Collection**

The data collection tool is a two-part questionnaire: The first part gathers personal information including: Age, sex, marital status, education, work experience, employment and working shifts. The second part of the questionnaire is standardized questions of DASS-42 questionnaire which examines depression, anxiety and stress among the nurses. This questionnaire that was first presented in 1995 by Lovibond & Lovibond, has options of not at all, low, medium and high. The lowest score of each question is zero and the highest score is three. According to a study, Beck depression and anxiety inventory showed a high correlation with depression, anxiety and stress of DASS-42 (9). Crawford and Henry, compared DASS-42 with two other tools related to depression and anxiety and a tool related to positive and negative affection and concluded that the best mode for DASS-42 is when all three factors are taken into account (20). The reliability of this scale in Iran in a general population sample of Mashhad ( $n = 400$ ) have been reported to be 0.7 for depression, 0.66 for anxiety and 0.76 for stress (21). Moradi Panah, reported the internal consistency of scale through Cronbach Alpha scale to be 0.94 for depression, 0.92 for anxiety and 0.89 for stress (16).

### **Data Analysis**

After collecting the questionnaires, the calculation of the subscale scores of DASS-42 questionnaire is done. Then the collected data is analyzed using the Kolmogorov-Smirnov test that did not have a normal distribution. The data analysis is performed using the spss-22 software.

## **RESULTS**

### **3-1. Descriptive Statistics**

Statistical indicators related to demographic characteristics are shown in Table 1. The average age of nurses participating in the study is 34.92 and their average working experience is 11.57. Of the total participants in the study, 47 individuals are working in the morning shift, 2 in the evening, 25 at night, 65 in evening and night, 14 in morning and evening and 67 on a rotating shift. Also of the total participants, 124 people are working in formal

employment, 46 people in conventional employment, 30 people in contractual employment and 2 people are working hourly.

**Table 1. The absolute and relative frequency distribution of demographic characteristics**

Personal Information	Variable	Number	Percent
Gender	Woman	135	61.4%
	Man	85	38.6%
Marital status	Single	111	50.5%
	Married	109	49.5%
Education	BS	179	81.4%
	MA	41	18.6%

The obtained frequency of depression is 44.2% in the critical care units, 29.2% relates to anxiety and 61.6% to stress, respectively. While the frequency of depression is observed: (38%) in internal and surgical units, (23%) anxiety and (51%) stress. The highest average of depression related to hemodialysis and the highest average of stress related to CCU are reported. In the anxiety subscale, no significant difference is observed between critical care units and the internal-surgical nurses. In terms of DASS-42 subscales associated with demographic characteristics, no significant relationship with age, education, work experience, type of employment and working shifts is seen. Only depression scores are positively and significantly more in female nurses than in male nurses.

### 3-2. Statistical Results of the Research Questions

Table 2 shows the statistical results of the first and the second questions. The frequency and percentage distribution of "depression rate" in nurses is shown by degree of depression differentiation. As the results of percentage distribution show, the mean rate of depression among the nurses working in internal and surgical unit is less and has an average of 8.26 and the standard deviation of 8.829 and conversely, the nurses who are working in the intensive care unit, suffer from depression to a greater extent than other nurses and has an average of 11.72 and the standard deviation of 11.632. The results of this table also show that 8.3% of intensive care nurses have severe depression, 12.5% very severe depression, 14.2% moderate depression, 9.2% minor depression and 55.8% nurses are normal. While this rate among nurses in internal and surgical units is 6% with severe depression, 5% with very severe depression, 11% with moderate depression, 16% with minor depression and 62% are normal. In the research of Mami et al in 2013, 70% of nurses were asymptomatic in terms of depression, 15% had mild symptoms, 8% with moderate symptoms and 7% had severe symptoms which are consistent with the percentage distribution frequency of depression in the people of the present study. In a study by Robert Janda et al. in 2015, there is a significant relationship between depression and anxiety and workplace of nurses ( $p < 0.005$ ) and the result of the study is consistent with the current research.

**Table 2. Frequency distribution in terms of "depression rate"**

The rate of individuals' depression	Type of care		Total
	Special	Non-Special	
Normal	67	62	129
	55.8%	62.0%	58.6%
Mild	11	16	27
	9.2%	16.0%	12.3%
Medium	17	11	28
	14.2%	11.0%	12.7%
Severe	10	6	16
	8.3%	6.0%	7.3%
Very severe	15	5	20
	12.5%	5.0%	9.1%
Total	120	100	220
	100.0%	100.0%	100.0%
Average	11.72	8.26	10.15
Standard deviation	11.632	8.829	10.571

Tables 3 and 4 in relation to the third research question, compare and analyze the average depression between the two groups of nurses working in intensive care units and internal and surgical. In this table, the results of independent t statistical test have been brought to compare the mean of depression among nurses in two groups. The first group includes nurses working in the intensive care unit and the second group includes nurses working in internal and surgical unit. Since Levene's test is equal to 9.454 and its significant level is less than 1 percent ( $\text{sig} =$ ), the t test value and its significance is calculated based on unequal variance. According to t-test value (2.795) and according to the degree of freedom  $d.f = 212$ , by accepting error of less than 0.01 ( $\text{Sig} = 0.006$ ) and degree of reliability more than 0.99 can be concluded that there is a significant difference between these two groups in terms of average depression. Means cannot accept the null hypothesis ( $H^0$ ) which indicates no relationship and reject it. Based on the results given in table, the average depression in intensive care nurses is 11.73 and the average

in internal and surgical nurses is 7.95. The average depression in intensive care unit nurses was more than the average score of other nurses with the amount 3.78 of score. In a study by Kazemi et al. in 2011, 68.8% of critical section nurses and 69.4% of nurses in public sectors suffer from depression which nurses in the public sector have more depression with a little difference and that its results correspond with the present study. In a study by Janda et al in 2015, both nurses in internal and surgical units are experiencing 15% of depression and there is no significant difference between the two groups that the result of this study is not in line with current research.

**Table3. Comparing the average depression of individuals among two groups of nurses working in the intensive care and the internal and surgical units**

	Type of care	Number	Average	Standard deviation
Individuals' depression	Special	120	11.73	11.632
	Non-Special	100	7.95	8.307

**Table4. Results of Levene's test and the independent t-test of the individuals' anxiety among two groups of nurses working in the intensive care and the internal and surgical units**

Individuals' depression	Levene's test		Independent t-test			
	F-test	Significant Sig	T-test value	Degree of freedom	Significant Sig	Mean difference
Equal variance	9.454	0.002	2.709	217	0.007	3.78
Unequal variance			2.795	212.841	0.006	3.78

Table 5 is in relation to the fourth and fifth research questions and shows frequency and percentage distribution of "anxiety level" in the nurses by degree of anxiety differentiation. As the results of percentage distribution show, the anxiety level between nurses working in internal and surgical units and nurses who are working in intensive care units is almost at the same level and more than 70 percent of these nurses are normal in terms of anxiety. The average anxiety level is 5.99 with a standard deviation of 6.7 and is 5.83 in internal and surgical units with a standard deviation of 7.5. In a study by Kazemi et al in 2011, the critical section had 70.1% of anxiety and the public sectors nurses had 65.2% of anxiety which its percentage distribution frequency is not in line with the present study. In a study by Roldan Janda et al. in 2013, there is a significant relationship between anxiety and difficulty of work and physical violence in the workplace ( $p=0.000$ ).

**Table5. The frequency distribution in terms of the "anxiety level"**

Anxiety level of people	Type of care		Total
	Special	Non-Special	
Natural	85	77	162
	70.8%	77.0%	73.6%
Mild	8	6	14
	6.7%	6.0%	6.4%
Medium	17	7	24
	14.2%	7.0%	10.9%
Severe	4	4	8
	3.3%	4.0%	3.6%
Very severe	6	6	12
	5.0%	6.0%	5.5%
Total	120	100	220
	100.0%	100.0%	100.0%
Average	5.99	5.83	5.92
Standard deviation	6.784	7.533	7.118

Tables 6 and 7 are in connection with statistical results of research sixth question and to compare anxiety in two groups of nurses working in intensive care units and internal and surgical. In this table, the results of independent t statistical test to compare the average anxiety of nurses have been brought into two groups. The first group is consisted of nurses working in intensive care units and the second group is consisted of nurses working in internal and surgical unit. Since Levene's test is equal to 0.010 and its significance level is more than 5% ( $\text{sig} = 0.920$ ), the t test value and its significance is calculated based on equal variance. According to t-test value (0.167) and according to the degree of freedom  $d.f=212$ , by accepting error of less than 0.05 ( $\text{Sig} = 0.868$ ) and degree of reliability lower than 0.99 can be concluded that there is no significant difference between these two groups in terms of average anxiety level. Means can accept the null hypothesis ( $H^0$ ) which indicates no relationship and cannot reject it. In a study by Gao et al in 2012, it was shown that 21% of nurses in public sectors and 20% of the critical care unit suffer from anxiety disorders. The results of this study are in line with current research.

**Table 6. Comparing the individuals' average anxiety level among two groups of nurses in the intensive care and the internal and surgical units**

	Type of care	Number	Average	Standard deviation
Individuals' anxiety	Special	120	6.00	6.841
	Non-Special	100	5.84	7.617

**Table 7. Levene's test and the independent t-test of individuals' anxiety among two groups of nurses working in the intensive care and the internal and surgical units**

Individuals' anxiety	Levene's test		Independent t-test			
	F-test	Significant Sig	T-test value	Degree of freedom	Significant Sig	Mean difference
Equal variance	0.010	0.920	0.167	212	0.868	0.16
Unequal variance			0.165	195.114	0.869	0.16

Table 8 is in relation to the seventh and eighth research questions and shows frequency and percentage distribution of "amount of stress" in the nurses by degree of stress differentiation. The amount of stress between nurses working in internal and surgical units with an average of 9.77 and standard deviation of less than 7.70 and nearly 50 percent of these people are in normal state and vice versa nurses who are working in intensive care units with an average of 13.96 and standard deviation of 11.483, at a rate of 49% are experiencing more stress than other nurses. In a study by Kazemi et al. in 2011, 67.4% of critical care unit nurses and 68.8% of nurses in public sectors had normal stress that its percentage distribution frequency is in one direction with the current study.

**Table 8. The frequency distribution in terms of the "amount of stress"**

Individuals' stress	Type of care		Total
	Special	Non-Special	
Natural	46	49	95
	38.3%	49.0%	43.2%
Mild	25	19	44
	20.8%	19.0%	20.0%
Medium	25	20	45
	20.8%	20.0%	20.5%
Severe	6	11	17
	5.0%	11.0%	7.7%
Very severe	18	1	19
	15.0%	1.0%	8.6%
Total	120	100	220
	100.0%	100.0%	100.0%
Average	13.96	9.77	12.05
Standard deviation	11.483	7.705	10.142

Tables 9 and 10 are in connection with statistical results of research ninth question and to compare stress level of research units in two groups of nurses working in intensive care units and internal and surgical. In this table, the results of independent t statistical test to compare the average stress of nurses have been brought into two groups. The first group is consisted of nurses working in intensive care units and the second group is consisted of nurses working in internal and surgical unit. Since Levene's test is equal to 6.570 and its significance level is lower than 5 percent (sig = 0.011), the t test value and its significance is calculated based on unequal variance. According to t-test value (3.268) and according to the degree of freedom d.f=209, by accepting error of less than 0.01 (Sig = 0.001) and degree of reliability more than 0.99 can be concluded that there is a significant difference between these two groups in terms of average stress level. Means cannot accept the null hypothesis ( $H^0$ ) which indicates no relationship and reject it. Based on the results given in table, the average stress level in intensive care nurses is 13.96 and the average in internal and surgical nurses is 9.96. Thus, the average stress level in intensive care unit nurses was more than the average score of other nurses with the amount 4.30 of score. In a study by Asad Zandi et al. in 2011, nurses working in public sectors have experiencing less stress than the critical care unit which the results of this study are consistent with current research.

**Table 9. Comparing the individuals' average stress level among two groups of nurses in the intensive care and the internal and surgical units**

	Type of care	Number	Average	Standard deviation
Individuals' stress	Special	120	13.96	11.483
	Non-Special	100	9.66	7.846

**Table 10. Levene's test and the independent t-test of the individuals' stress among two groups of nurses working in the intensive care and the internal and surgical units**

Individuals' stress	Levene's test		Independent t-test			
	F-test	Significant Sig	T-test value	Degree of freedom	Significant Sig	Mean difference
Equal variance	6.570	0.011	3.150	216	0.002	4.30
Unequal variance			3.268	209.827	0.001	4.30

## DISCUSSION

In 2013, 70% of nurses were asymptomatic in terms of depression, 15% had mild symptoms, 8% with moderate symptoms and 7% had severe symptoms which is consistent with the percentage distribution frequency of depression in the people of present study (6) which 8.3% of intensive care nurses have severe depression, 12.5% with very severe depression, 14.2% with moderate depression, 9.2% with minor depression and 55.8% are normal. While this rate among nurses in internal and surgical units is 6% with severe depression, 5% with very severe depression, 11% with moderate depression, 16% with minor depression and 62% are normal. There is a significant difference between two groups of the critical care unit and internal and surgical nurses in terms of depression with (sig: 0.002) and the critical care unit are far more depressed. The results of this study are consistent with previous studies due to high levels of depression and stress in intensive care units (21, 5). According to a study in 2011, the critical care unit had 70.1% of anxiety and the internal- surgical unit nurses had 65.2% of anxiety (5) which its percentage distribution frequency with current study had no significant difference (sig: 0.868) in the level of anxiety in different parts. The results of a study in 2012 showed that, nurses working in internal- surgical unit have experiencing less stress than the critical care unit (21) which the results of this study are consistent with current research (sig: 0.001). Also, a study in 2015 showed that there is a significant relationship between depression and anxiety and workplace of nurses ( $p < 0.005$ ) (13) that the result of this study is consistent with current research. Nurses working in intensive care units compared to internal- surgical unit nurses are faced with stress and negative consequences to a greater extent. Awareness of these symptoms lead to future interventions and improve the mental health and job satisfaction in this group (21). Results showed that the average of depression, anxiety and stress level in two groups of nurses in intensive care and internal-surgical units is more in men than women. In a study by Asad Zandi et al. in 2011, scores of depression, anxiety and stress among nurses is more than men which the results of this study are consistent with current research.

## CONCLUSION

Research findings suggest that the average rate of depression in the intensive care unit nurses with sig: 0.002 and stress with sig: 0.001 is more than internal and surgical units' nurses in the studied hospitals while there are no differences in either group in the anxiety scale sig: 0.868. Also, no significant relationship is seen between age, marital status, type of employment and staff work experience and the onset of mood disorders ( $p > 0.005$ ) but there is a relationship between gender and depression, anxiety and stress in nurses and the incidence of mood disorders in nurses and rate of depression, anxiety and stress in female nurses is more than male nurses ( $p < 0.005$ ) which is consistent with previous studies. Therefore, evaluating the mental health of this group of nurses should be given more attention.

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