

# Causal Model for Depression Based on Psychological Capital by Mediating of Hospital Stress and Anxiety in Woman Nurses

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## Abstract

**Background:** In modern societies, nurses' issues and investigation of their problems has found a vital importance.

**Objectives:** The present study investigated the mediating role of hospital stress and anxiety in relationship between psychological capital and depression in women nurses.

**Methods:** This research was a correlational study. Data was analyzed by the path analyze method and by using Amos (v. 22). Participants included 178 nurses (females) in hospitals from Borujerd city, Lorestan Province, that were selected by the accidental sampling method. Participants completed the hospital stress scale, psychological capital scale, as well as they negative emotions scale. To examine reliability of measures, cronbach coefficient, and to determine validity, internal consistency was used. The results showed an acceptable reliability and validity of the instruments

**Results:** Results showed that: (1) the variables of self-efficacy ( $\beta = -0.041$ ,  $P = 0.007$ ), resilience ( $\beta = -0.071$ ,  $P = 0.008$ ), hope ( $\beta = -0.067$ ,  $P = 0.004$ ), and optimism ( $\beta = -0.087$ ,  $P = 0.003$ ), had a negative and indirect effect on depression; (2) the variables of self-efficacy ( $\beta = -0.025$ ,  $P = 0.014$ ), resilience ( $\beta = -0.155$ ,  $P = 0.006$ ), hope ( $\beta = -0.040$ ,  $P = 0.007$ ), and optimism ( $\beta = -0.245$ ,  $P = 0.006$ ), had a negative and indirect effect on anxiety; (3) hospital stress ( $\beta = 0.175$ ,  $P = 0.006$ ) had a positive and indirect effect on depression.

**Conclusions:** According to these results, increasing of dimensions of psychological capital leads to reduction of hospital stress, anxiety, and depression in female nurses.

**Keywords:** Psychological Capital, Hospital Stress, Anxiety, Depression, Nurses

## 1. Background

According to some psychologists (1), mental health is the state in which one has a sense of full control over the inner and outer world. In contrast with this situation is severe depression, in which one has no control over these 2 worlds. The intermediate of this continuum are 2 unpleasant states of "stress" and "anxiety". In the state of stress, one has this sense of control but it is undermined, and in the state of anxiety, one loses his control over the internal world but is hopeful about the external one.

Depression is a disorder that reduces the proper functioning in people, which is associated with symptoms of loss of interest, loss of life enjoyment, loss of energy and activities, feeling guilty and worthlessness, impaired quality of sleep and appetite as well as poor concentration (2).

One of the variables that can be an antecedent of depression is anxiety. Anxiety is a global phenomenon anyone may experience in life (3). According to Kyrios, Moulding, and Nedeljkovic (4), anxiety is the natural physiologic reaction to a threat, and the anxiety disorder occurs when this reaction is associated with a higher level of arousal and adopting ineffective coping strategies. Another negative

emotion, which is placed between mental health and depression and before anxiety, is stress (1). Studies showed that one of the stresses one may experience is their job. According to the definition, job stress is one's response to the pressures he suffers from the workplace and occurs when the expectations of one's performance is more than his/her powers and abilities (5). In this context, the nursing profession is a stressful job. They are faced with a series of special stressful factors such as infectious diseases, harmful chemicals and rays, disproportion between the numbers of patients and numbers of nurses, employment in non-fixed shifts, and dealing with the death of patients. In this regard, it is believed that many stressful factors in this profession will cause physical and psychological disorders (6).

One variable that is expected to influence one's perception and dealing with challenges is psychological capital (7).

Psychological capital includes self-efficacy, resilience, optimism, and hope (7). Self-efficacy is one's belief in one's ability to succeed in specific situations or accomplish a task (8). Another aspect of psychological capital is resilience. According to Masten (9), resilience represents a

dynamic system capacity for successful adjustment with disorders that threaten the performance, existence, or the development process of that system. Therefore, those are resilient who have positive developmental results unlike threats against their adjustment (10).

Resilience that is the ability to cope with changes (11) is a multidimensional structure that improves the quality of life (12) and psychological well-being (13). Optimism is another aspect of psychological capital. We may generally define it as the tendency to believe, expect, or hope that things will turn for the better (14).

Concerning the results and consequences of optimism, Scheier, Carver, and Bridges (15) argue that optimists, in challenging with problems, choose effective coping strategies and never give up to adjust their states and follow their valuable goals. Hope, as another psychological aspect, insists on achieving the goals and changing them if necessary (7).

Generally speaking, nursing is one of the fundamental elements of health care systems in any society, and nurses' health is of great importance both for them and for other people in the society. On the other hand, the studies on the variables show that most of them have studied the variables directly and have only studied a simple relation between 2 or more variables. In general, there are few studies on mediating variables.

In this research, the proposed model (Figure 1) consists of 7 variables, which present the dimensions of psychological capital and includes self-efficacy (SE), resilience (Re), optimism (Op), and hope (Ho) as the output variables and hospital stress (St), anxiety (An) and depression (De) as the input variables. In addition, hospital stress and anxiety are mediating variables.

According to the conceptual model, the basic research hypotheses are:

- 1- Dimensions of psychological capital predict depression indirectly.
- 2- Dimensions of psychological capital predict anxiety indirectly.
- 3- Dimensions of psychological capital predict depression indirectly.

## 2. Objectives

The present study attempted to investigate the important role of hospital stress and anxiety in mediating between psychological capital and depression as well as the role of anxiety in mediating between hospital stress and depression. Furthermore, the present study attempted to investigate the important role of hospital stress in mediating between psychological capital and anxiety.

## 3. Methods

The methodology used in this paper is correlational. Considering the mediating roles of hospital stress and anxiety, this paper is going to study the roles of different aspects of psychological capital on predicting depression in female nurses through the path analysis method. The population consists of female nurses in Borujerd city hospitals. The most important reason for choosing female nurses as statistical population was to control the effect of gender on the research variables. Another reason for this choice was that a very high percentage of this city's population of nurses was female. Therefore, the participants in this study included 178 female nurses selected by random sampling by using the Morgan table after the necessary permits from regulatory authorities have been obtained. The study was conducted in the winter of 2014. The participants were reminded that the data from the questionnaires will be used in a research activity and participation in this study is completely voluntary.

### 3.1. Research Instruments

#### 3.1.1. Depression Anxiety Stress Scales (DASS)

Measuring depression and anxiety, this paper used the negative emotions scale. This scale has been proposed by Lovibond P. F. and Lovibond S. H. (1) and consists of 2 short and long forms. The main and long form consists of 42 questions measured by 3 negative emotions: depression, anxiety, and stress. Therefore, each of the emotions are evaluated by 14 questions. The short form consists of 21 4-option questions scaling from 0 (totally agree) to 3 (totally disagree); each emotion is measured by 7 questions. The tool designers reported the reliability of depression and anxiety scales using the Cronbach's alpha coefficient, 0.88 and 0.82, respectively (1). In Iran, Samani and Jokar (16) measured the validity and reliability of this scale. They calculated the reliability of depression and anxiety using Cronbach's alpha coefficients as 0.85 and 0.75, respectively. Furthermore, to verify the validity, the main components were used for factor analysis. The load factor was reported for depression from 0.76 to 0.36 and 0.73 to 0.39 for anxiety. In the present study, reliability was tested by Cronbach's alpha coefficient where the coefficients obtained for depression and anxiety were 0.86 and 0.79, respectively. The internal consistency was used for validity; and the obtained coefficient varied from 0.73 to 0.38 for depression and ranged from 0.70 to 0.41 for anxiety.

#### 3.1.2. Hospital Stress Rating Scale (HSS-35)

Measuring the hospital stress, we used the hospital stress rating scale (HSS-35). This scale has 35 items and Bodaqi (17) measured its psychometric adequacy. It has

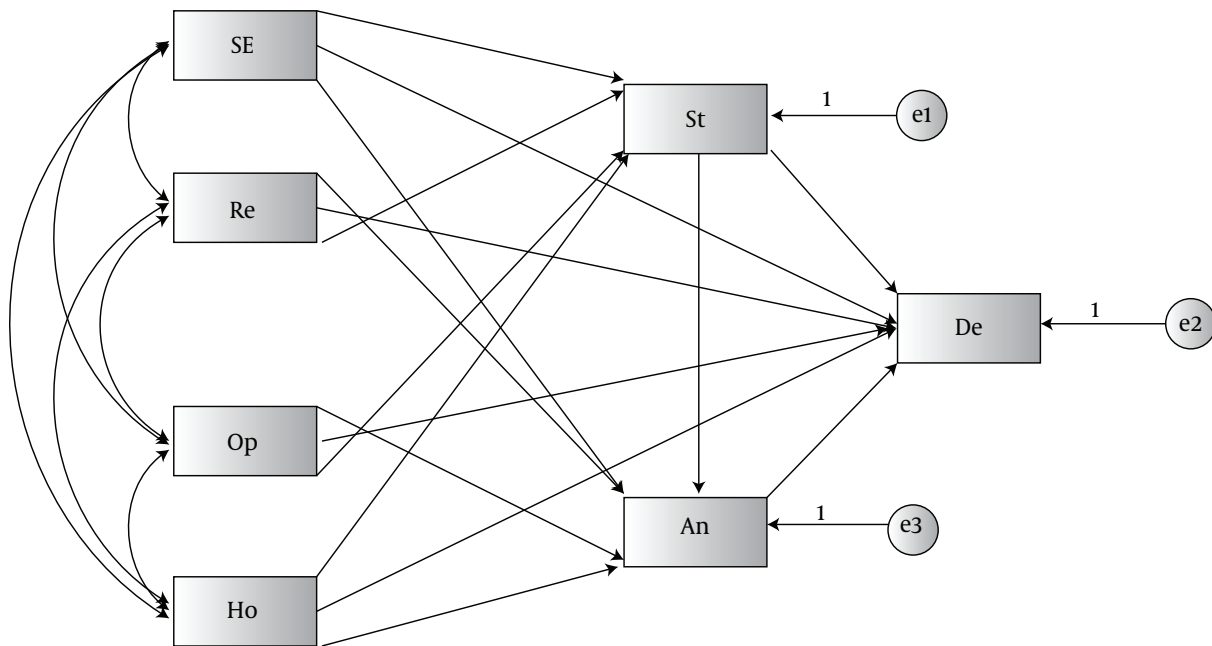


Figure 1. The Proposed Model

been proposed to measure the stressful factors in hospitals and medical centers. This scale measures 11 subscales of role overload by 5 questions, role underload by 4 questions, role incompatibility by 4 questions, role ambiguity by 4 questions, relationship with superiors by 3 questions, relationship with colleague by 3 questions, shifts by 2 questions, physical factors by 3 questions, chemical factors by 2 questions, biological factors by 2 questions, and ergonomic factors by 3 questions. Each item has been graded on the Likert five-part scale from score 1 (never) to score 5 (always). The scores from 35 to 175 were classified. Bodaqi (17) used Cronbach's Alpha coefficient for the reliability of scale. He reported the reliability of this scale as 0.84. Cronbach's Alpha coefficient was used in this paper to measure the reliability of the scale and was measured as 0.79. The internal correlation method was used to measure the validity; the correlation coefficients of items and total score are ranged between 0.32 and 0.49, and all were significant at the level of 0.001.

### 3.1.3. Psychological Capital Questionnaire

Measuring the aspects of psychological capital, we used the psychological capital questionnaire by Luthans et al. (7). This questionnaire consists of 24 items, measuring hope, optimism, resilience, and self-efficacy. Each 6 questions measure one aspect. Luthans et al. (18) used Cronbach's Alpha coefficient for the reliability of scale. They

reported the reliability of hope, optimism, resilience, and self-efficacy scales using the Cronbach's alpha coefficient, 0.72, 0.74, 0.71, and 0.75, respectively. They used the confirmatory factor analysis for validity. Results indicated the model fit: SRMR = 0.051, RMSEA = 0.046, CFI = 0.934. This questionnaire was frequently used in various researches and a good reliability was reported for that (19). In Iran, the reliability of the questionnaire was obtained as 0.85 using Cronbach's alpha (19). In the present study, reliability was tested by Cronbach's alpha coefficient where the coefficients obtained for hope, optimism, resilience, and self-efficacy were 0.71, 0.69, 0.73, and 0.67, respectively. The internal consistency was used for validity and the obtained coefficient varied from 0.65 to 0.39 for hope, 0.61 to 0.34 for optimism, 0.58 to 0.41 for resilience, and ranged from 0.56 to 0.40 for self-efficacy.

## 4. Results

Participants of the study included 181 nurses (females) selected from Borujerd city, Lorestan Province, which were selected by the accidental sampling method. The participants whose questionnaires were completed incorrectly were excluded from the final analyses ( $n = 3$ ). Therefore, 178 nurses were included in the final analysis. SPSS 22 and Amos 22 performed all descriptive statistics and path analysis. The means age of the nurses was 32.50 (SD = 5.21).

The findings of the study are presented in 2 parts of the descriptive and path analysis. The descriptive findings including mean and standard deviation and correlation matrix of variables are shown in [Tables 1 and 2](#).

**Table 1.** Mean and SD of Variables

Variables	Mean	Standard Deviation
1- Self-Efficacy	20.04	4.79
2- Resilience	22.40	4.93
3- Optimism	22.16	3.47
4- Hope	19.05	3.36
5- Hospital stress	58.76	7.61
6- Anxiety	9.29	3.99
7- Depression	8.98	3.65

As shown in [Table 2](#), a positive significant relationship was found between the self-efficacy with resilience ( $r = 0.41$ ,  $P < 0.001$ ), optimism ( $r = 0.34$ ,  $P < 0.001$ ), and hope ( $r = 0.43$ ,  $P < 0.001$ ) and a negative significant relationship was found between the self-efficacy with hospital stress ( $r = -0.44$ ,  $P < 0.001$ ), anxiety ( $r = -0.39$ ,  $P < 0.001$ ), and depression ( $r = -0.32$ ,  $P < 0.001$ ). A positive significant relationship was found between the resilience with optimism ( $r = 0.33$ ,  $P < 0.001$ ) and hope ( $r = -0.41$ ,  $P < 0.001$ ) and a negative significant relationship with hospital stress ( $r = -0.49$ ,  $P < 0.001$ ), anxiety ( $r = -0.44$ ,  $P < 0.001$ ), and depression ( $r = -0.29$ ,  $P < 0.001$ ). A positive significant relationship was found between the optimism with hope ( $r = 0.36$ ,  $P < 0.001$ ) and a negative significant relationship with hospital stress ( $r = -0.51$ ,  $P < 0.001$ ), anxiety ( $r = -0.53$ ,  $P < 0.001$ ), and depression ( $r = -0.38$ ,  $P < 0.001$ ) and found a negative significant relationship between hope and hospital stress ( $r = -0.50$ ,  $P < 0.001$ ), anxiety ( $r = -0.39$ ,  $P < 0.001$ ), and depression ( $r = -0.31$ ,  $P < 0.001$ ). Furthermore, hospital stress had a positive significant relationship with anxiety ( $r = 0.55$ ,  $P < 0.001$ ) and depression ( $r = 0.30$ ,  $P < 0.001$ ) and anxiety had a positive significant relationship with depression ( $r = 0.60$ ,  $P < 0.001$ ).

The path analysis method was used to investigate the hypothesis of the research and to enhance the model; the paths whose coefficients were insignificant were eliminated. The diagram of the path and the coefficients resulted from the modified model are shown in [Figure 2](#).

By entering data into the program AMOS-22, the fitness of the model was assessed. Regarding the values obtained for the indexes in [Table 3](#), data were fitted with the proposed model of the research. The Chi-square ( $\chi^2$ ) is obtained 9.22 for the model and 7 degrees of freedom.

The following is based on the result that are shown in

[Table 4](#); the direct and indirect hypotheses were discussed.

Direct hypothesis examination indicated that: 1- the coefficient of standard path between self-efficacy ( $\beta = -0.14$ ,  $P = 0.019$ ), resilience ( $\beta = -0.24$ ,  $P = 0.023$ ), optimism ( $\beta = -0.30$ ,  $P = 0.011$ ) and hope ( $\beta = -0.23$ ,  $P = 0.007$ ) with hospital stress was significant; as a result, self-efficacy, resilience, optimism, and hope had a direct effect on reducing the hospital stress. 2- The coefficient of standard path between resilience with anxiety ( $\beta = -0.19$ ,  $P = 0.011$ ) and optimism with anxiety ( $\beta = -0.32$ ,  $P = 0.016$ ) was negative and significant and the coefficient of standard path between hospital stress with anxiety was positive and significant. Therefore, resilience and optimism had a negative effect and hospital stress had a positive effect on the anxiety; as a result, self-efficacy and hope do not have a direct effect on reducing the anxiety. 3- The coefficient of standard path between anxiety and depression ( $\beta = 0.60$ ,  $P = 0.019$ ) was positive and significant. Therefore, anxiety had a direct effect on increasing the depression. However, the coefficient of standard path between self-efficacy, resilience, optimism, hope, and hospital stress with depression were not significant. Thus, these variables did not have a direct effect on depression.

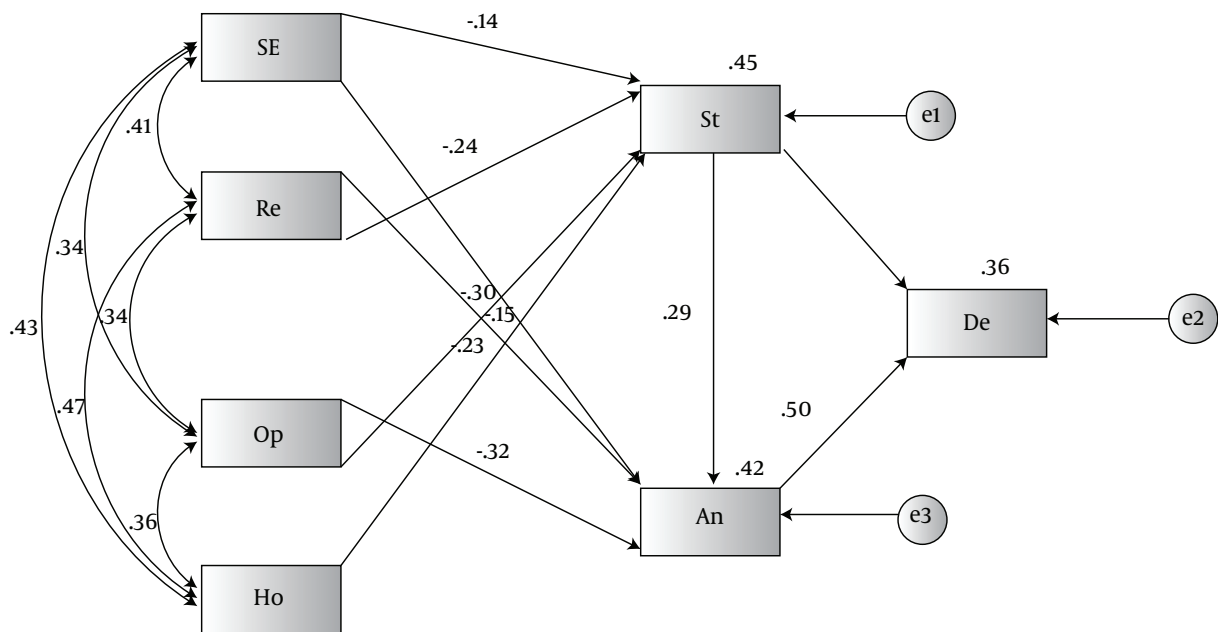
Through investigation of indirect effects of independent variables on dependent variables ([Table 4](#)), it was found that: 1- the variables of self-efficacy ( $\beta = -0.041$ ,  $P = 0.007$ ), resilience ( $\beta = -0.071$ ,  $P = 0.008$ ), hope ( $\beta = -0.067$ ,  $P = 0.004$ ), and optimism ( $\beta = -0.087$ ,  $P = 0.003$ ), had a negative and indirect effect on anxiety; 2- the variables of self-efficacy ( $\beta = -0.025$ ,  $P = 0.014$ ), resilience ( $\beta = -0.155$ ,  $P = 0.006$ ), hope ( $\beta = -0.040$ ,  $P = 0.007$ ), and optimism ( $\beta = -0.245$ ,  $P = 0.006$ ), had a negative and indirect effect and hospital stress ( $\beta = 0.175$ ,  $P = 0.006$ ) had a positive and indirect effect on depression.

The general effect showed that: 1- the variables of self-efficacy ( $\beta = -0.014$ ,  $P = 0.019$ ), resilience ( $\beta = -0.24$ ,  $P = 0.023$ ), hope ( $\beta = -0.023$ ,  $P = 0.007$ ), and optimism ( $\beta = -0.30$ ,  $P = 0.011$ ), had a negative effect on hospital stress; 2- variables of self-efficacy ( $\beta = -0.041$ ,  $P = 0.007$ ), resilience ( $\beta = -0.26$ ,  $P = 0.009$ ), hope ( $\beta = -0.067$ ,  $P = 0.004$ ), and optimism ( $\beta = -0.409$ ,  $P = 0.006$ ) had a negative effect and hospital stress ( $\beta = 0.29$ ,  $P = 0.006$ ) had a positive effect on anxiety; 3- variables of self-efficacy ( $\beta = -0.025$ ,  $P = 0.006$ ), resilience ( $\beta = -0.155$ ,  $P = 0.007$ ), hope ( $\beta = -0.040$ ,  $P = 0.006$ ), and optimism ( $\beta = -0.245$ ,  $P = 0.014$ ), had a negative effect and hospital stress ( $\beta = 0.175$ ,  $P = 0.006$ ) and anxiety ( $\beta = 0.60$ ,  $P = 0.019$ ) had a positive effect on depression. Calculation of the affectivity degree of independent variables on dependent ones indicates that the proposed model explains 36% of the changes in depression variable, 42% of changes in anxiety variable, and 45% of changes in hospital stress.

**Table 2.** Correlation Matrix Between Variables

Variables	1	2	3	4	5	6	7
1- Self-Efficacy	1						
2- Resilience	0.41 <sup>a</sup>	1					
3- Optimism	0.34 <sup>a</sup>	0.33 <sup>a</sup>	1				
4- Hope	0.43 <sup>a</sup>	0.41 <sup>a</sup>	0.36 <sup>a</sup>	1			
5- Hospital stress	-0.44 <sup>a</sup>	-0.49 <sup>a</sup>	-0.51 <sup>a</sup>	-0.50 <sup>a</sup>	1		
6- Anxiety	-0.39 <sup>a</sup>	-0.44 <sup>a</sup>	-0.53 <sup>a</sup>	-0.39 <sup>a</sup>	0.55 <sup>a</sup>	1	
7- Depression	-0.32 <sup>a</sup>	-0.29 <sup>a</sup>	-0.38 <sup>a</sup>	-0.31 <sup>a</sup>	0.29 <sup>a</sup>	0.60 <sup>a</sup>	1

<sup>a</sup>All Coefficients are significant.



**Figure 2.** Modified Model

**Table 3.** Indexes of Modified Model

Index	$\chi^2/DF$	GFI	AGFI	RMSEA	IFI	CFI
Acceptable range	$\chi^2/DF < 3$	GFI > 0.9	AGFI > 0.9	RMSEA < 0.08	IFI > 0.9	CFI > 0.9
Value obtained	1.32	0.98	0.94	0.04	0.99	0.99
Conclusion	Confirm	Confirm	Confirm	Confirm	Confirm	Confirm

### 5. Discussion

This paper aims at predicting depression according to the factors of psychological capital, hospital stress, and anxiety, as well as predicting anxiety according to the factors of psychological capital and hospital stress. It also

predicts anxiety according to hospital stress among the female nurses. However, the most important objective of this paper was studying the mediating role of hospital anxiety and stress on the relationship between the psychological capital and depression. In this context, concerning the model and hypotheses proposed in this study, the results

**Table 4.** The Standard Coefficients of Direct Effects, Indirect Effects and Total Model

Effect	Predictor Variable	Criterion Variable		
		Hospital stress	Anxiety	Depression
Direct	Self-Efficacy	-0.14 <sup>a</sup>	000	000
	Resilience	-0.24 <sup>a</sup>	-0.19 <sup>a</sup>	000
	Optimism	-0.30 <sup>a</sup>	-0.32 <sup>a</sup>	000
	Hope	-0.23 <sup>a</sup>	000	000
	Hospital stress	000	0.29 <sup>a</sup>	000
	Anxiety	000	000	0.60 <sup>a</sup>
Indirect	Self-Efficacy	000	-0.04 <sup>a</sup>	-0.025 <sup>a</sup>
	Resilience	000	-0.07 <sup>a</sup>	-0.155 <sup>a</sup>
	Optimism	000	-0.09 <sup>a</sup>	-0.245 <sup>a</sup>
	Hope	000	-0.07 <sup>a</sup>	-0.04 <sup>a</sup>
	Hospital stress	000	000	0.175 <sup>a</sup>
	Self-Efficacy	-0.14 <sup>a</sup>	-0.04 <sup>a</sup>	-0.025 <sup>a</sup>
Total	Resilience	-0.24 <sup>a</sup>	-0.26 <sup>a</sup>	-0.155 <sup>a</sup>
	Optimism	-0.30 <sup>a</sup>	-0.41 <sup>a</sup>	-0.245 <sup>a</sup>
	Hope	-0.23 <sup>a</sup>	-0.07 <sup>a</sup>	-0.04 <sup>a</sup>
	Hospital stress	000	0.29 <sup>a</sup>	-0.175 <sup>a</sup>
	Anxiety	000	000	0.60 <sup>a</sup>
	Coefficient of determination, %		45	42

<sup>a</sup>All coefficients are significant.

are going to be discussed in 2 parts: the results of direct hypotheses and those of indirect ones.

Concerning the relationship between the factors of psychological capital and hospital stress, it can be said that the nurses with higher levels of hope can manage the stressful conditions well, adjust themselves with changes, and be resilient and creative against challenges (20, 21), which results in decreased level of job stress in hospitals. Resilient can also help them have a sense of control over the environment and direct the life events to reach their goals. This sense gives the feeling of development as well as balance in them and causes a low level of stress in the workplace. On the other hand, as stated by Scheier, Carver, and Bridges (15), optimists select effective coping strategies in facing with challenges, making them more patient in stressful situations. Self-efficacy, that is one's belief in one's ability to succeed in specific situations or accomplish a task (8), allows one to act appropriately and hence, it is expected for one to feel low levels of stress.

Clarifying the relationship between resilience and optimism as factors of psychological capital and the variable of anxiety can be said that resilient people are more able

to cope with challenges (11), have creative thinking and are flexible in facing with problems (22), and are calm emotionally and can cope with hard and serious problems (23). Hence, when they are faced with problems and challenges, they experience low level of anxiety. Optimists feel lower anxiety (24, 25) due to high abilities to cope with general tensions in life (24), expect good events more than the others, and are more self-confident.

Regarding the relationship between hospital stress and anxiety as well as the relationship between anxiety and depression, we may consider Lovibond P. F. and Lavibond S. H.'s viewpoint (1) based on which stress and anxiety are placed on a continuum and somewhere between mental health and depression. According to them, when one feels stress, his control over inner and outer worlds reduces and the continuation and aggravation of this situation, one loses his control over his inner world and feels anxiety, and if it lasts more, one may have no control over his inner and outer world. This may result in depression. The most important result obtained in this study is the mechanism of influencing the psychological capital on depression and anxiety, as well as the impact of hospital stress on depres-

sion. Based on the results, dimensions of psychological capital reduce depression through reduction of hospital stress and anxiety. In addition, the hospital stress increases depression in female nurses with having positive effects on anxiety.

These results indicated that psychological capital consists of abilities that may contribute to decreasing stress in hospitals and decreased anxiety reduces depression in female depression. Considering this fact that psychological capital can be acquired, we may enhance the capabilities of self-efficacy, resilience, optimism, and hope in order to help the female nurses to feel fewer negative emotions. Therefore, it is suggested that appropriate educational programs be on the agenda of health centers' managers and planners to increase psychological capital in nurses. Furthermore, it is suggested that in future studies, in addition to the individual variables, family and social variables are studied in order to examine the effect of interaction among individual, family and social variables on hospital stress, anxiety, and depression. Among the limitations of this study was sampling nurses in health care centers of one city in Iran. Therefore, in generalizing the results to other cities and regions, one should be cautious.

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## Footnotes

**Authors' Contribution:** All authors have participated equally in study.

**Financial Disclosure:** The study is self-funded.

**Implication for Health Policy/Practice/Research/Medical Education:** In this study, we seek to investigate the mediating role of hospital stress and anxiety in relationship between psychological capital and depression in women nurses from Borujerd city, Lorestan Province, Iran.

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