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Psychological symptoms and coping strategies of nurses caring for patients with COVID-19 pneumonia

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Abstract

Introduction: Since the outbreak of Coronavirus worldwide, the working conditions of medical personnel, specifical nurses, have changed dramatically. Therefore, medical staff has undergone more physical and psychological distress than before. The primary purpose of this study was to investigate symptoms of stress, anxiety, and depression and coping strategies in nurses who worked during the COVID-19 pandemic. The second aim was to assess the influence of coping mechanisms on the occurrence of the symptoms.

Materials and Methods: This cross-sectional descriptive-analytical study was conducted during April and May 2020. Through the convenience sampling method, 76 nurses involved in caring for COVID-19 patients at Ghaem Hospital in Mashhad city (the second populous city of Iran) were selected. They were evaluated by Depression, Anxiety, and Stress Scale-21 (DASS-21), and Billings and Moos coping responses inventories. Mann-Whitney test, Spearman correlation coefficient, and multiple regression analysis were used through SPSS 16.0.

Results: The findings demonstrated that nurses suffered severe mental problems. Symptoms of stress were discovered in 48.7%, anxiety in 77.6%, and depression in 60.5% of the nurses. The primary strategy applied by them was emotion-focused types. Regression analysis revealed a positive correlation between psychological distresses and emotion-based approaches and a negative correlation between problem-focused skills and incidence of depression.

Conclusion: The COVID-19 outbreak has caused critical conditions and, as a result, psychological pressures on nursing staff. Training on problem-solving strategies in the nursing community would help to cope with such health-related crises.

Keywords: Coping strategy, COVID-19, Nurses, Psychological symptoms

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Introduction

In December 2019, a novel coronavirus (COVID-19) spread to Wuhan, Hubei, China, and rapidly disseminated to most countries, causing a pandemic worldwide (1). In late February 2020, the outbreak was officially reported by Iranian health officials. The pandemic has increased the number of hospitalizations and deaths of many patients, causing an estimated 300,000 people to be infected and a total of around 16,000 deaths in Iran by now (1). As expected, the workload of medical staff increased dramatically, and medical staff encountered various challenges. On the one hand, the rise in hospitalization and patient mortality, insufficient protective facilities, work overload, exhaustion, and the risk of infection for staff and their families were seen worldwide. On the other side, problems such as impaired work-life balance, little relations with friends and companions diminished sufficient social support and led medical workers to bear a great deal of physical and mental distress (2,3). Recent studies have demonstrated nurses who are on the first line of patient care are more susceptible to higher levels of psychological problems like anxiety and depression, in comparison with other groups like physicians and other healthcare workers (2-5).

In stressful situations, people utilize various coping strategies to modify stressful circumstances, including a collection of cognitive and behavioral strategies. Two main coping mechanisms are emotion-focused and problem-focused. The emotion-focused strategies attempt to regulate the emotional consequences of a traumatic event by controlling overwhelming emotions, including expressing emotions, seeking social support, or avoiding stressful situations or painful feelings by abusing alcohol or substances. Problem-focused strategies could include activities and responses to remove or alter the source of stress, such as applying cognitive and problem-solving skills (6). Typically, when people can deal with stressful situations, they use problem-oriented coping strategies, and if they are unable to change the situation, they might cope with emotion-focused responses (7). On most occasions, combining these two approaches is likely to be more helpful (8).

Nurses often do not receive enough psychological self-help training to deal with challenging conditions, leading to ineffective emotion regulation and increasing tension. Through proper counseling and training, effective coping strategies could be used by nurses to overcome recurrent stressful conditions and alleviate their tension and distress (2).

As the COVID-19 pandemic continues to accelerate and subsiding is unpredictable, paying attention to staff mental health and providing protective equipment seems essential in Covid-19 treatment centers (3). In the current study, we aimed to investigate the prevalence and severity of stress, anxiety, and depression and types of coping responses in nurses working within the inpatient facilities for caring COVID-19 patients. We also assessed the correlation of different coping strategies with levels of distress and psychological symptoms. We estimate that this research will be effective in planning and implementing more effective psychological interventions for improving staff mental health.

Materials and Methods

This cross-sectional descriptive study was conducted during April and May 2020, and 76 nurses participated. The study population was nurses working in Ghaem Hospital (one of the main centers of COVID-19 inpatient care in Mashhad city). The questionnaires were provided to the volunteers through the Nursing Services Office in the hospital.

Since one of the main objectives of this study was measuring the level of stress in nurses working with COVID-19 patients, the sample size was calculated based on confidence interval for one proportion (Simple asymptotic (Wald) method with continuity correction) (9).

The sample was calculated based on the frequency (21.8%) of stress in nurses working in Intensive Care Unit (ICU) (10), the confidence of 95%, target width of 0.2 using PASS 15.0 (Confidence Intervals for one proportion section) (11). They participated in the study through the convenience sampling method. According to the ethics of research by the Ethics Committee in Vice Chancellor of Research of

Mashhad University of Medical Sciences, the study was approved (code: IR.MUMS.REC.1399.098).

Initially, the participants completed the consent form and then responded to the demographic checklist, Billings and Moos coping strategies questionnaire, and Depression, Anxiety, and Stress Scale-21 (DASS-21). Participants, who answered the questionnaires partially, were excluded.

Research instrument

A) Demographic Checklist: It contains the primary information of the participants, including gender, age, marital status, educational level, work experience, and working hours per week.

B) Depression, Anxiety, and Stress Scale (DASS-21): This scale is designed by Lovibond and Lovibond. It has two forms, with 42 questions in the main form and 21 questions in the short form. We used the short form in this study. The short form evaluates each of the symptoms of depression, anxiety, and stress with seven different sentences. The DASS-21 items were designed to represent all sub-scales. The scores must be multiplied by 2 to convert to the complete 42-point DASS scales to score the subscales. The subject should indicate the severity of the symptoms in each phrase he or she has experienced over the past week. Phrases are graded on a four-point Likert scale from 0 ("did not apply to me at all") to 3 ("applied to me very much, or most of the time"). Depression, stress, and anxiety levels are obtained from a summation of the scores; and are classified based on normal, mild, moderate, severe, and very severe. Cut-off points are 18, 9, and 13 for stress, anxiety, and depression, respectively. Lovibond and Lovibond (1995), using a large non-clinical sample (n=2914), reported the internal consistency of the Depression, Anxiety, Stress Scales as 0.91, 0.84, and 0.90, respectively (12). Sahebi et al. calculated the internal consistency of the translated questionnaire scales using Cronbach's alpha, which was 0.77 for depression, 0.79 for anxiety, and 0.78 for stress (13). The validity and reliability of this questionnaire in Iran by Samani and Jokar have also been investigated. They reported Cronbach's alpha for factors of stress, depression, and anxiety is 0.87, 0.85, and 0.75, respectively (14). The reliability of the questionnaire was confirmed in our study by having Cronbach's alpha of 0.88, 0.89, and 0.85 for the subscales of stress, depression, and anxiety, respectively.

C) Coping Responses Inventory (CRI): In 1981, Billings and Moos designed the questionnaire to investigate how individuals respond to stressful events, which originally contained 19 yes/no questions that measured three types of copings: active behavior, cognitive behavior, and social-cognitive. In 1984, Billings and Moos raised the items in the previous questionnaire to 32 in a study of coping behaviors in a group of depressed patients, using a Likert scale of four degrees instead of yes/no. This newer questionnaire measures five coping strategies: problem-solving, emotional inhibition, cognitive evaluation, somatic inhibition, and social support. Each question is related to one of the subscales, so the subscale score is calculated by summing up the points for each group of queries. The final score of this questionnaire is obtained in the form of problem-focused and emotion-focused coping. The sum of the two subscales (problem solving and cognitive evaluation) provides the problem-focused coping strategy, and the sum of the three subscales, including emotional inhibition, social support, and somatic inhibitions, gives the estimation for emotion-focused coping strategy. Scoring questions is based on four degrees from 0 ("never") to 3 ("always") (6). In Hosseini Ghadamgahi et al. research in Iran, the reliability coefficient obtained for this questionnaire through the test-retest method was 0.79, and Cronbach's alpha subscale of problem-solving was 0.90, cognitive evaluation 0.68, emotion-focused 0.65, social support 0.90, and 0.90 was obtained based on somatic inhibition (7). The Cronbach's alpha of emotion-focused and problem-focused domains of the CRI questionnaire in our study was 0.79 and 0.83.

Variables were described according to the type of variable (quantitative or qualitative) using descriptive statistics (mean, standard deviation, frequency, and percentage). The Mann-Whitney

test was used to analyze ordinal variables in subgroups. The Spearman correlation coefficient also measured the correlation between quantitative and ordinal variables. Moreover, multiple regressions were used to investigate the simultaneous effect of sex, age, marital status, weekly shifts during a week, work experience, problem-focused coping, and emotion-focused coping with depression, stress, and anxiety. All analysis was performed using SPSS 16.0 (SPSS Inc., Chicago, IL, USA), and the significance level was set at 0.05.

Results

The survey was conducted on 53 females (69.7%) and 23 males (30.3%). The mean age was 32 ± 5.9 years; most were married [54(71.1%)]. All of the participants had bachelor's degrees. The mean occupational experience was 8.3 ± 5.7 years, and the average number of weekly shifts was 41.1 ± 11.1 hours. Moreover, all of them were officially employees.

Table 1 shows the results of the DASS-21 questionnaire according to the existence and severity of stress, anxiety, and depression. As a result, symptoms of stress, anxiety, and depression were 48.7%, 77.6%, and 60.5%, respectively.

Table 1. Frequency of stress, anxiety and depression symptoms based on DASS-21

DASS	Mild	Moderate	Severe	Extremely severe	Total	Scores (Mean ±SD)
Stress	11(14.5%)	13(17.1%)	13(17.1%)	0(0%)	37(48.7%)	15.8 ± 8.4
Anxiety	10(13.2%)	21(27.6%)	11(14.5%)	17(22.4%)	59(77.6%)	13.2 ± 8.2
Depression	11(14.5%)	20(26.3%)	6(7.9%)	9(11.8%)	46(60.5%)	12.9 ± 9.4

Table 2 demonstrates an outline of coping strategies, which all nurses have used during the COVID-19 crisis. Using emotion-focused strategies was more prevalent than problem-focused ones. Among the sub-scales, applying emotional inhibition was the highest, while problem-solving was the lowest used strategy.

The relationship between the demographic characteristics of sex, marital status, and questionnaire scores was evaluated using the Mann-Whitney test. There was a significant relationship between marriage and using cognitive evaluation strategy (P=0.04). A negative correlation was found between work experience and anxiety, using the Spearman coefficient (P=0.45, R2=-0.231).

In terms of correlation between CRI items and working hours during the week, nurses growingly used emotion-focused strategies as the number of working shifts increased.

Spearman coefficients between CRI total scores and DASS-21 total scores in all dimensions are shown. Findings of Table 3 indicated that the scores of depressions had a significant positive correlation with the scores of three coping strategies, including emotion inhibition, somatic inhibition, and emotion-focused strategies. There was also a negative correlation between depression with cognitive evaluation and problem-focused approaches. There were significant relationships between stress, anxiety, and depression in participants (stress and anxiety r=0.725; P<0.001, stress and depression r=0.767; P<0.001, anxiety and depression r=0.684; P<0.001).

In the Stepwise multiple regression analysis, emotion-focused coping and problem-focused coping scores, sex, age, marital status, hours of work per week, and occupational experience were regarded as independent variables. In contrast, stress, anxiety, and depression were used as dependent variables (Table 4).

Among all mentioned variables, the emotion-focused strategy had a significant association with stress. The emotion-focused strategy positively impacted stress, which means that as the score of the emotion-focused strategy of a person increased, the score of stress increased (β=0.38, P=0.001). Emotion-focused coping strategy (P<0.001), problem-focused strategy (P=0.003), and marital status had a significant relationship with depression of nurses. These three variables explained 28% of the variation in depression. The emotion-focused coping had a

positive impact on depression (β=0.37, *P*<0.001), while problem-focused coping had a negative impact on depression (β=-0.27, *P*=0.014). Moreover, the mean score of depression in those married nurses was lower than single nurses (β=0.27, *P*=0.014).

Out of sex, age, marital status, hours of work during a week, occupational experience, stress, problem-focused coping, and emotion-focused coping strategy, the only significant variable was an emotion-focused strategy positively associated with anxiety (β=0.36, *P*=0.001).

Table 2. Frequency of coping strategies in nurses based on CRI

	Mean	Standard Deviation	Minimum	Maximum
Problem solving	5.79	1.49	2	9
Cognitive evaluation	9.21	2.69	4	15
emotional inhibition	10.97	3.28	5	21
Somatic inhibition	6.86	3.39	0	13
Social support	10.52	2.28	5	16
Problem-focused	15	3.71	7	23
Emotion-focused	28.21	5.92	17	41

Table 3. Relationship between CRI total scores and DASS-21 total scores

	Stress		Anxiety		Depression	
	Correlation Coefficient	P	Correlation Coefficient	P	Correlation Coefficient	P
Problem solving	-0.084	0.469	-0.057	0.623	-0.139	0.230
Social support	-0.043	0.712	-0.050	0.672	-0.109	0.351
Cognitive evaluation	-0.203	0.079	-0.159	0.171	-0.313	0.006**
Emotion inhibition	0.321	0.005	0.216	0.061	0.424	<0.001**
Somatic inhibition	0.443	<0.001	0.501	<0.001	0.450	<0.001**
Problem-focused	-0.191	0.098	-0.151	0.193	-0.286	0.012*
Emotion-focused	0.391	<0.001	0.365	<0.001	0.442	<0.001**

*significant at 0.05 level.
** significant at 0.01 level.

Table 4. Stepwise regression analysis results of coping strategies and DASS-21

Dependent variable	Included predictors in stepwise model	Non-standardized coefficients		Standardized coefficients	t	P
		B	Std. Error	Beta		
Stress	(Constant)	0.401	4.424		0.091	0.928
	Emotion-focused	0.548	0.154	0.383	3.571	0.001
	F (1,74)=12.75, P=0.001, R^2=14.7%, Durbin Watson=1.2					
Depression	(Constant)	18.255	8.206		2.225	0.029
	Emotion-focused	0.597	0.160	0.374	3.731	0.000
	Problem-focused	-0.841	0.271	-0.330	-3.097	0.003
	Marital status	-5.561	2.200	-0.269	-2.528	0.014
	F (3,72)=9.46, P<0.001, R^2=53.2%, Durbin Watson=1.1					
Anxiety	(Constant)	-1.010	4.376		-0.231	0.818
	Emotion-focused	0.507	0.152	0.362	3.338	0.001
	F (1,74)=11.14, P=0.001, R^2=13.1%, Durbin Watson=1.3					

Discussion

During the outbreak of contagious and viral diseases, medical staff is at the highest risk of infection exposure. Recent epidemics, such as SARS, MERS, and Ebola, have illustrated that health care workers experience severe emotional stress and some degrees of Post-Traumatic Stress Disorder (PTSD) in the progression of the disease (4,15-17). The condition can be complicated by variables such as the unpredictable nature of the disease, pattern of virus transmission, rapid global dissemination, and tremendous mortality rate. These issues cause nurses to be overburdened during the outbreak and endure the long-term consequences of mental disorders (17-19).

Since nurses are at the front line of the battle against the epidemic and have experienced the most work-related pressures, we have noted to identify mental health issues and methods to cope with these populations' challenges. In addition to examining mental health and coping skills, the main goal of this research is the impact of various approaches employed in the development or prevention of psychological problems.

The study indicates that, in an overview, around half of nurses experience stress, anxiety, and depression during the outbreak. These results are similar to a study performed on 125 nurses in March 2020 in Iran, in which the DASS-21 questionnaire was used (20). Moreover, due to recent research conducted in non-crisis situations in Iran, anxiety in 19% and depression in 32% were observed. The measurement tool was also the DASS-21 questionnaire (21). The current study represents a remarkable enhancement in the severity of symptoms, particularly anxiety and depression, because of a crisis. Statistics show severe stress levels, anxiety, and depression in 17%, 28%, and 15% of nurses, respectively. These results are most relevant to recent research conducted among 350 nurses during the COVID-19 pandemic in Singapore and India, which indicated anxiety at 15.7% and depression at 10.6% in samples (22).

On the other hand, a similar survey found different rates of anxiety (5.9%) and depression (28%) in all medical workers (3). These results could be diverse because of different measuring tools (Zung self-rating anxiety scale, Chinese version of the Center for Epidemiologic Studies Depression Scale) and samples (3).

Results of coping strategies have shown that nurses use more emotional than problematic strategies; emotional inhibition strategy is the most common; that explains a deficiency in verbal and nonverbal communications and contact with other people (23). Folkman and Lazarus suggest that if individuals find the stressor controllable, they would be more inclined to use problem-focused coping; otherwise, they might utilize emotion-focused indeed (23). So that perhaps nurses use emotion-focused approaches more frequently because they think the situation is beyond their control. Furthermore, the usage of emotional approaches in the early stages of any crisis is more common than problem-solving (24), and this research was conducted at the outset of the epidemic. Also, the absence or deficiency of training in problem-solving skills for nurses may be an explanation for these outcomes.

Improvement of problem-oriented abilities by training is closely related to constructing better mental health and a substantial reduction in depression rates in nursing students (25). One of the most important aspects of problem-solving teaching is changing people's expectations and attitudes, leading to increased problem-oriented confrontations and reduced emotional coping strategies (26).

In the present study, there was a negative correlation between work experience and anxiety among demographic factors. Research about burnout factors in nurses demonstrated job experience could manage work-related tension, and individuals with higher work experience are often better able to cope with challenging circumstances (27).

As a result, depression levels in married persons were considerably lower than in singles. Researchers also proved this significant relationship among 413 occupied nurses in Iran (28). Married people have also been more likely to use cognitive evaluation and problem-solving strategies, leading them to decrease the incidence of depression (26).

Regarding the impact of coping strategies on depression, regression analysis revealed that greater use of emotion-oriented styles contributed to a rise in depression scores among dimensions of coping strategies. In contrast, the levels of depression are lower among nurses who utilize problem-focused skills, especially cognitive evaluation strategies. The use of emotion-oriented strategies also showed a positive association with increased stress and anxiety. The findings correspond to several kinds of research which were conducted among 200 university students. Both studies used Moos and Billings questionnaire to assess coping strategies (26,29).

It has been shown that the use of emotional approaches prohibits individuals from direct and efficient contact with the problems and limits the capacity to solve them. This condition impairs the thinking process and induces emotional turmoil, which disturbs the ability to correctly identify the source of stress and adversely affects mental wellbeing (13).

One of the strengths of the study is that it was conducted in the early crisis when individuals were facing more challenges. Also, the psychological health of the nurses is an important issue that could impact patient care.

Study limitations are summarized in two key elements: place and time. In terms of place, the sample size of the study was selected from just one hospital in Mashhad. Data collection was limited to the period of crisis, and the information of sample size before this situation is not available. These factors may limit the generalization of research results to other similar cases. We suggest that in future studies, the research population and sample size can be selected from various regions and preferably with different cultures so that it would help to compare and generalize the results. Moreover, studies that compare the target population's information before, during, and after the outbreak of the disease may be beneficial.

Conclusion

In conclusion, from a practical point of view, the use of emotion-based dysfunctional strategies can lead to high psychological disorders in nurses, especially in sensitive and critical situations. Simultaneously, problem-solving strategies would help to cope with these conditions and play an important role in protecting them from psychiatric disorders. Therefore, problem-oriented skills must be trained to deal with difficult situations and improve care providers' mental health, particularly in a health-related crisis.

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References

1. World Health Organization. Statistics of confirmed cases over time. [cited 3 Agust, 2020]. Available from: https://covid19.who.int/region/emro/country/ir.

2. Huang J, Han MF, Luo TD, Ren AK, Zhou XP. [Mental health survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19]. Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi 2020; 38(3): 192-5. (Chinese)

3. Siyu C, Xia M, Wen W, Cui L, Yang W, Liu S, et al. Mental health status and coping strategy of medical workers in China during The COVID-19 outbreak. medRxiv 2020. (preprint)

4. Cai H, Tu B, Ma J, Chen L, Fu L, Jiang Y, et al. Psychological impact and coping strategies of frontline medical staff in Hunan between January and March 2020 during the outbreak of Coronavirus disease 2019 (COVID-19) in Hubei, China. Med Sci Monit 2020; 26: e924171-1-6.

5. Lu W, Wang H, Lin Y, Li L. Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study. Psychiatry Res 2020; 288: 112936.

6. Billings AG, Moos RH. The role of coping responses and social resources in attenuating the stress of life events. J Behav Med 1981; 4(2): 139-57.

7. Hosseni Ghadamgahi J, Dejkam M, Bayanzadeh SA, Phaze A. [The quality of relationship, stress and coping strategy in patients with coronary heart disease]. Iranian journal of psychiatry and clinical psychology 1998; 4(1): 14-25. (persian)

8. Ghazanfari F, Ghadam Pour EA. [The relationship between mental health and coping strategies in citizenship of Khoramabad city]. Journal of fundamentals of mental health 2008; 10: 47-54. (Persian)
9. Fleiss JL, Levin B, Paik MC. Statistical methods for rates and proportions. USA: John Wiley and Sons; 2013: 203.
10. Taleghani E, Noroozi M, Hadavi M. [Prevalence of stress, anxiety and depression among nursing staff in intensive care units of Ali Ebn-e Abitaleb Hospital in Rafsanjan in 2017]. Journal of community health 2018; 12(2): 11-21. (Persian)
11. PASS 15 Power Analysis and Sample Size Software. NCSS, LLC. Kaysville, Utah, USA, 2017. Acailable from: ncss.com/software/pass.
12. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther 1995; 33(3): 335-43.
13. Sahebi A, Asghari MJ, Salari R. [Validation of depression anxiety and stress scale (DASS-21) for an Iranian population]. Iranian psychology 2005; 1: 50-60. (Persian)
14. Samani S, Jokar B. [Investigation the validity and reliability of the short version of DASS]. Journal of social sciences and humanities of Shiraz University 2007; 26(3): 65-78. (Persian)
15. Kim Y. Nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea. Am J Infect Control 2018; 46(7): 781-7.
16. Lehmann M, Bruenahl CA, Löwe B, Addo MM, Schmiedel S, Lohse AW, et al. Ebola and psychological stress of health care professionals. Emerg Infect Dis 2015; 21(5): 913-4.
17. Maben J, Bridges J. Covid-19: Supporting nurses' psychological and mental health. J Clin Nurs 2020; 29(15-16): 2742-50.
18. Lancee WJ, Maunder RG Goldbloom DS. Prevalence of psychiatric disorders among Toronto hospital workers one to two years after the SARS outbreak. Psychiatr Serv 2008; 59(1): 91-5.
19. Sepahvand R, Momeni Mofrad M, Taghipour S. [Identifying and prioritizing the psychological consequences of the Covid 19 virus in nurses]. Journal of hospital 2020; 19(2): 25-32. (Persian)
20. Sarboozi Hosein Abadi T, Askari M, Miri K, Namazi Nia M. [Depression, stress and anxiety of nurses in COVID-19 pandemic in Torbat Heydariyeh Hospital, Iran]. Journal of military medicine 2020; 22(6): 526-33. (Persian)
21. Alipoor R, Ebrahimi A, Omidi R, Hedayati A, Ranjbar H, Hosseinpour S. [Depression, anxiety, stress and related demographic variables in nurses of Valiasr hospital in Fasa University of Medical Sciences in 2014]. Pajouhan scientific journal 2015; 13(4): 51-9. (Persian)
22. Chew NWS, Lee GKH, Tan BYQ, Jing M, Goh Y, Ngiam NJH, et al. A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak. Brain Behav Immun 2020; 88: 559-65.
23. Folkman S, Lazarus RS, Gruen RJ, DeLongis A. Appraisal, coping, health status, and psychological symptoms. J Pers Soc Psychol 1986; 50(3): 571-9.
24. Macnair R, Elliott T. Self-perceived problem-solving ability, stress appraisal, and coping over time. J Res Pers 1992; 26(2): 150-64.
25. Shamsikhani S, Farmahini Farahani M, Shamsikhani S, Sobhani M. [Effectiveness of problem solving training on depression in nursing student]. Iranian journal of psychiatric nursing 2014; 2(1): 63-71. (Persian)
26. Nezamipour E, Abdolmanafi A, Besharat MA. [Comparison of copying strategies and problem solving styles in depressed and non-depressed students]. Shenakht- journal of psychology and psychiatry 2015; 2(2): 59-69. (Persian)
27. Demir A, Ulusoy M, Ulusoy MF. Investigation of factors influencing burnout levels in the professional and private lives of nurses. Int J Nurs Stud 2003; 40(8): 807-27.
28. Khamseh F, Rouhi H, Ebady A, Hajiamini Z, Salimi H, Radfar S. [Survey relationship between demographic factors and stress, anxiety and depression in nurses working in selected hospitals in Tehran city]. Journal of holistic nursing and midwifery 2011; 21(1): 13-21. (Persian)
29. Farzin Rad B, Asgharnejad Farid AA, Yekkeh Yazdandoust R, Habibi Asgarabad M. [Comparison of copying strategies and personality styles in depressed and non depressed students]. Journal of behavioral sciences 2010; 4(1): 17-21. (Persian)