The Effect of Written Emotional Disclosure on Depression, Anxiety, and Stress of Patients after Open Heart Surgery

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Abstract

Background and Aim: So far, several strategies have been used to reduce and minimize the stress and anxiety of patients admitted in open heart surgery. Writing about the most important and traumatic experiences of life can improve the physical and emotional health state of patients. The purpose of this study was to investigate the effect of written emotional disclosure on depression, anxiety, and stress in hospitalized patients after open heart surgery.

Methods: This study was an experimental study with two groups and two control groups before and after the intervention. A total of 100 patients admitted in the open heart surgery department of Amiralmomenin-e-Kordkuy Hospital (2018) were assigned in the form of random numbers to four groups of emotional disclosure of negative, positive, neutral and non-interventional. The groups exhibited 10-15 minutes of emotional disclosure written in four periods for one week. Data were collected by the DASS21 questionnaire before, one week and one month after the intervention by the groups. Data were analyzed by SPSS software version 22 and descriptive and inferential tests (repeated variance analysis and one way ANOVA). The significance level was considered as $P<0.05$.

Results: The severity of stress, anxiety and depression in the two groups of test and control before and after the intervention using ANOVA repeated measure showed significant difference (P=0.0001), (P=0.0001), (P=0.0001) (P=0.0001), respectively. But there was no significant difference between the two groups before and after the intervention ($P<0.05$).

Conclusion: Written emotional disclosure reduces depression, anxiety and stress in patients after open heart surgery.

Keywords: Narration; Emotions; Self-Disclosure; Depression; Anxiety; Patients; Surgery.

1. Introduction

Currently, cardiovascular disease is the most common cause of death worldwide (Black et. al., 2009). Several methods are used to treat cardiovascular diseases, one of which is surgical (Fayazi et. al., 2012). Heart surgery is one of the most important surgical procedures that are often done these days (Guo et. al., 2012). According to studies, more than 515,000 coronary artery bypass surgery in the United States and 17,000 cases in Australia are carried out, annually (Sharif et. al., 2012). The statistics show that, 30 to 40 thousand cardiac surgeries per year occur in Iran, with more than 50-60% of these surgeries being heart bypass surgery, whose prevalence in Iran has increased with respect to lifestyle (Dehdari et. al., 2009). The number of heart surgeries and post-admissions hospitalization in Iran has been reported to be 1260 and 8540, respectively, and the most important reasons for returning to the hospital are recurrence of illness, lack of proper understanding of the patient's progress in treatment and lack of follow-up (Moein & Davoodi, 2013). Some researchers have examined the role of depression simultaneously as a risk factor for heart disease as well as the emergence of problems following heart surgery, and emphasize that the role of this mood disorder in problems after surgery is far more important, to the extent that it can cause many physical problems, such as delayed recovery, disability in everyday life, high prevalence of post-surgical pain, hospitalization, unexpected cardiac attacks, and reduced survival of patient (Arrowsmith et. al., 2000; Rahimi et. al.,2000). In the early stages of recovery, patients have the moderate symptoms of anxiety, stress and depression (Albert et. al., 2009; Gartner et. al., 2005), and in the following, these symptoms can be accompanied by signs such as tiredness, sleep disorders and mood changes such as stress, fear, disgust, dizziness, restlessness, agony, panic and anger due to feelings of worthlessness, lack of control and self-confidence (Ziegelstein et. al., 2000). In this regard, a study by Rahimi et al. on behavioral changes in patients between 4 and 6 months after intrusive cardiac interventions was performed. The researchers found that patients undergoing more psycho-emotional changes, so that serious non-intervention could disrupt their recovery (Rahimi et. al., 2000). Researchers estimated the incidence of depression after heart surgery to be 8%-47% (Karlsson et. al., 2008). A patient undergoing open heart surgery is anxious due to various reasons, including severe chest pains and fatigue resulting in anxiety and distress in the patient. Fear of death and disability, as well as the persistence of symptoms, despite the surgical treatment and the lack of readiness of the patient for surgery, contribute to these problems (Tully et. al., 2008). Today, though, therapeutic methods are used to reduce the effects of stress, anxiety and depression in cardiac patients, but these methods can be associated with some side effects (Kshettry et. al., 2006; Özer et. al., 2013), therefore, it is important to pay attention to the needs of the patients, including their psychological needs, for the nurse as the first person who is related to the symptoms and needs of the patient. The purpose of these methods is to control the risk of moderated factors, provide health-care education and management of the patient's physical-psychological problems, which is possible through regular and accurate follow-up (Akbari et. al., 2015). Research findings show that people share much of their everyday experiences with others, but refuse to share a small part of their experiences with others (Niederhoffer et. al., 2009). Some of these experiences and thoughts are different from, or are so painful to, individuals' personal values that it is very difficult to remember and talk about. Under such conditions, people are prevented from revealing their thoughts and feelings. The attempt to conceal thoughts and feelings suppresses them, and the suppression of painful emotional experiences leads to their manifestation in the form of dreams, intrusive thoughts and mental ruminations (Ghorbani, 2008). Understanding the fact that unforeseen emotional memories and experiences play an important role in different aspects of health and the disclosure of these can have therapeutic effects. Exposure disclosure actually means that a person expresses his deepest emotional experiences spoken or written to others or himself (Pennebaker & Chung, 2007). Based on the theory of cognitive change, emotional disclosure, through exposure to harmful experiences, helps people to reconsider, better understand, and have a new meaning in life events. This ultimately causes emotional experiences to be absorbed into a new structure in the cognitive system, and the person accepts it as one of the usual experiences of life (Pennebaker & Seagal, 1999). Several studies have been conducted on various methods of disclosure and its consequences for increasing psychological health, improving the immune system, reducing physical

problems and reducing disturbing thoughts and symptoms of depression (Gartner et. al., 2005; Pennebaker & Chung, 2007; Ahmadi et. al., 2011). Pennebaker's research considers emotional disclosure as one of the ways to prevent and treat emotional disturbances and focuses on emotional disclosure (Pennebaker et. al, 2001). Lepore concluded in his study that emotional disclosure moderates the effect of disturbing thoughts on depressive symptoms, thereby reducing symptoms of depression (Lepore, 1997). Also, Ahmadi et al., in their study, stated that spontaneous and verbal excitement reduced the symptoms of depression, anxiety and stress among people with these clinical symptoms (Ahmadi et. al., 2011).

Considering the very limited history of emotional disclosure in the mental dimension of patients after open heart surgery in Iran and abroad, the present study seeks to investigate the effect of written emotional disclosure on stress, anxiety and depression in patients after open heart surgery.

2. Method

This experimental study was carried out before and after four groups (two experimental and two control groups) on patients admitted to the open heart surgery department of Amiralmomenin-e-Kordkuy Hospital affiliated to Golestan University of Medical Sciences in 2018. Sample size were determined by Ahmadi Tahour (Ahmadi et. al., 2011) and at confidence level of 0.95 and test power 0.80, and using the multi-group mean comparison formula, 100 people (25 people in each group). The sampling method was that patients were selected according to entry criteria and divided into four groups using the random numbers table. Inclusion criteria included hospitalization in open heart surgery department, reading and writing literacy, non-use of drugs associated with psychiatric disorders in the past six months, non-use of psychotropic drugs / known drug addiction, lack of major stressful events, such as the death of loved ones in the past six months, at the time of the study, and satisfaction to participate in the study. It should be noted that the cancellation of patients for any reason at the time of the study to continue and participate in the study, the death or hospitalization of patients due to complications of the disease, as well as those who have disclosed in the emotional exacerbation group less than three times, were excluded from the study. In order to observe ethical considerations, the researcher first explained the purpose of the research to the research units and the participants in the study and assured them that the information would be confidential and that there was no need to write the name and to participate in the research according to their personal desire. Also, the approval of the Ethics Committee in Golestan University of Medical Sciences was also approved by IR.GOUMS.REC.1397.348 code of ethics. The data collection tool was a demographic and clinical profile that included age, gender, ethnicity, marriage, occupation and educational level, clinical status, duration of hospitalization, and the DASS21 questionnaire. The 21-item questionnaire, with the subscales of the questionnaire, anxiety, stress and depression, was first introduced by Lovibond (Lovibond, 1995). The scores in this questionnaire were determined on the basis of the Likert scale of four options at never, low, medium and high. The lowest score for each question is zero (it does not apply to me at all) and the highest score is 3 (quite true in my case). In this tool, 7 questions related to the depression (questions 3, 5, 10, 13, 16, 17, 21), 7 questions related to the anxiety (questions 2, 4, 7, 9, 15, 19, 20) and 7 questions about stress (questions 1, 6, 8, 11, 12, 14, 18). The final score of each of them was obtained through the total score of the questions related to it. The severity of the symptoms for each of the subscales was five, which included normal, mild, moderate, severe and very severe. The severity of the depression subscales was considered to be from 0 to 9 normal, 10 to 13 mild, 14 to 20 moderate, 21 to 27 severe and above 28 was very severe. The severity of the anxiety subscale was considered to be from 0 to 7 normal, 8 to 9 mild, 10 to 14 mild, 15 to 19 severe and above 20 was very severe. The severity of the anxiety subscale was considered to be from 0 to 14 normal, 15 to 18 mild, 19 to 25 moderate, 26 to 33 severe and above 33 was very severe. Determination of validity and reliability of the instrument has been confirmed in several internal and external studies of its reliability with acceptable Cronbach's alpha coefficient (0.7-0.94) (Chinchai et. al., 2003; Kavosi et. al., 2017; Sahebi et. al., 2005). The method of this study was to first select the

participants according to the access criteria and use the random numbers table to be divided into four groups. (The groups were identified as follows: test group one = emotional disclosure of negative emotions and unpleasant memories related to the length of admission, test group two = emotional disclosure emotions and positive memories related to the length of admission, control group one = emotional disclosure emotions and memories with neutral topics, daily life and control group two = no action). After determining the groups, the DASS21 questionnaire was completed before and after the hospital discharge by all patients and in all groups. Then, a booklet was sent to the groups for the disclosure of emotion and from patients the test group on received a request for one week and four specific times for 10 to 15 minutes through writing deals to the emotional disclosure of negative emotions and unpleasant memories of the length of admission, at home and in the privacy room, and in the booklet. Similarly, in the patients in the test group two, during the same time period and place to reveal emotional emotions and positive memories related to the length of admission and record in the manual. From patients in the control group one were also asked to record their emotions and memories with neutral topics, daily life, and in the booklet in this period of time and in four occasions of 10 to 15 minutes, but in the control group, however, no specific action was taken during this period. It should be noted that during one week of disclosure, all groups were followed up by a researcher. Also, during the phone call, the reciprocal disclosure guidelines for each group were briefly recaptured. Finally, after one week and one month of intervention, the DASS21 questionnaire was completed again by all patients. Data were analyzed by SPSS software version 22 and descriptive statistics (frequency, mean, standard deviation) and inferential statistics (repeated variance analysis and one way ANOVA). Normality of data was confirmed by Shapiro-Wilk test. Chi-square test was used to test the homogeneity of demographic characteristics in the groups. The significance level was considered as $P<0.05$.

3. Results

According to the Kolmogrov-Smirnov test and observing the normalization assumptions ($P<0.05$), using one-way ANOVA, the results were obtained so that the mean and standard deviation of the age in the test group one were 57.08±1.97, in the test group two were 57.96±8.29, in the control group one were 56.08±10.14, in the control group two were 57.20±9.13, which there was no significant difference ($p=0.91$). Also, patients in the four groups did not differ significantly in terms of demographic variables such as gender, ethnicity, education, marriage, occupation (Table 1).

Table 1. Distribution of Absolute and Relative Frequency of Demographic Characteristics in the Two Groups of Test and Control

Variable / Group		Test group one (Negative memories)	Test group two (Positive memories)	Control group one (Neutral topics)	Control group two (Non-intervention)	P-Value
		Frequency (percent)	Frequency (percent)	Frequency (percent)	Frequency (percent)	
Gender	Male	(76)19	(68)17	(60)15	(64)16	Pearson Chi-Square 0.66
	Female	(24)6	(32)8	(40)10	(36)9	
Ethnicity	Fars	(60)15	(76)19	(76)19	(80)20	Pearson Chi-Square 0.46
	Turkmen	(28)7	(16)4	(12)3	(20)5	
	Baloch	(12)3	(8)2	(12)3	(0)0	
Education	Under the diploma	(64)16	(76)19	(52)13	(84)21	Pearson Chi-Square 0.28
	Diploma	(12)3	(12)3	(20)5	(8)2	
	Higher than diploma	(24)6	(12)3	(28)7	(8)2	

Marriage	Single	(4)1	(4)1	(0)0	(0)0	Pearson Chi-Square 0.56
	Married	(96)24	(96)24	(100)25	(100)25	
Occupation	Housewife	(24)6	(32)8	(40)10	(36)9	Pearson Chi-Square 0.70
	Worker	(20)5	(12)3	(8)2	(20)5	
	Employee	(12)3	(24)6	(8)2	(12)3	
	Free	(44)11	(32)8	(44)11	(32)8	
Age		57.08±1.97	57.96±8.29	56.08±10.14	57.20±9.13	ANOVA Test 0.91

Repeated Measures ANOVA test showed a significant difference in the mean and standard deviation of stress, anxiety and depression among all groups before intervention, one week and one month after the intervention ($P<0.05$). But ANOVA test showed no significant difference between the mean of stress, anxiety and depression of the experimental group with the control group before, one week and one month after the intervention. ($P<0.05$) (Table 2).

Table 2. Comparison of mean and standard deviation of severity of stress, anxiety and depression before, one week and one month after the intervention in two groups of test and control

Variable / Group		Test group one (Negative memories)	Test group two (Positive memories)	Control group one (Neutral topics)	Control group two (Non-intervention)	P.value ANOVA
		SD±Mean	SD±Mean	SD±Mean	SD±Mean	
Severity of stress	Before intervention	17.52±7.66	14.88±7.81	17.28±7.13	14.72±6.99	0.38
	One week after the intervention	9.52±7.37	7.60±4.72	6.96±4.62	6.72±4.96	0.27
	One month after the intervention	3.92±4.98	3.20±2.64	2.56±1.68	2.16±1.62	0.19
P.value (Repeated Measures ANOVA)		0.0001	0.0001	0.0001	0.0001	
Severity of anxiety	Before intervention	14.72±8.75	13.28±7.11	12.96±7.02	9.36±6.99	0.058
	One week after the intervention	7.04±6.40	6.0±3.91	4.96±3.06	4.72±4.96	0.23
	One month after the intervention	2.64±3.54	1.60±2.38	1.12±2.0	1.36±1.89	0.26
P.value (Repeated Measures ANOVA)		0.0001	0.0001	0.0001	0.0001	
Severity of depression	Before intervention	14.32±8.71	12.32±8.65	13.44±7.01	1280±7.04	0.51
	One week after the intervention	6.64±6.04	5.44±4.37	5.76±3.28	5.12±4.08	0.46
	One month after the intervention	2.40±3.65	1.12±2.00	1.36±1.60	1.12±1.52	0.18
P.value (Repeated Measures ANOVA)		0.0001	0.0001	0.0001	0.0001	

4. Conclusion

The results showed that emotional disclosure on stress, anxiety and depression was effective in two groups before, one week and one month after the intervention and could reduce them. The results of our study are based on the results of (Nakhjavani, & Badri's, 2015; Monazamitabar, 2015; Issazadegan et. al., 2011; Alipour et. al., 2011; Ahmadi et. al., 2010; Shen et al., 2018; Perez et. al., 2017; Kerpan et. al., 2013; Kacewicz et. al., 2007; Gartner et. al., 2005). The reason for the effectiveness of emotional disclosure, based on inhibition theory and cognitive change, relates to the fact that deep emotional disclosure, firstly, confronts a person with his emotional experiences and a real touch of emotions, and secondly revives events and emotional experiences and change the way they organize and re-engage. The emotional disclosure shatters the inhibition process and

once the person is exposed in the face of deep emotions and feelings that have been painful and distressing to them. The disclosure of these emotions, due to the revival of negative memories, in the short term affects the mood of the individual, but in the long run, regains these experiences as a normal experience in the cognitive system and positive emotions are replaced by negative emotions. (Lu, & Stanton, 2010)

It should be noted that the results of our study are not consistent with the results of the study by (Milkavich et al., 2005). In their opinion, they prefer to share a lot of harmful experiences like some obsessive thoughts and the spread of like AIDS illnesses, not with written and in person structures, but only with specific individuals, including psychologists. Also, the results of this study are not consistent with the research by (Van Middendorp et al., 2009). They believe that individuals prefer to disclose negative emotions in life, while in the present study, at least one test group and a control group of individuals have exposed the themes of positive experiences and memories, neutral topics, everyday life that has less emotional load. The result of the study by Manier and Olivares (2005) is not consistent with the present study (Manier, & Olivares, 2005). Because they believe that written emotional disclosure is not good for people who experience a very painful incident and suffer from more severe discomfort. In addition, emotional disclosure for those who do not report any problems also has no effect. According to the results of this study, the most benefit from emotional disclosure is those who have experienced moderate levels of discomfort and stress. For this reason, it turns out that the study of an event with an emotional load looks like it narrates, and the unspeakable and inaudible emotions and tricks come up in the words of meaning that is no longer unspoken and inaudible. Obviously, everything that is unspeakable and unsophisticated, it is more fearful and less aware of the crisis than it is, the event has a better outcome (Alipour et. al., 2015). Also, the results showed that stress, anxiety and depression decreased after intervention in control groups. It seems that the passage of time and the acceptance and adaptation of patients in the control group to their physical condition when they were hospitalized and undergone cardiac surgery were at the height of stress and anxiety, also, the psychological support of the family during the treatment period has reduced stress, anxiety and depression. The study of (Peru et. al., 2012) about emotional-written disclosure on depression, anxiety and stress in psychopathologist students showed that two-minute written emotional exertion significantly increased negative emotions and in the long run reduced depression and anxiety (Parv et. al., 2013). The results of (Ahmadi et. al., 2010) about the effectiveness of emotional disclosure (verbal and written) on depression, anxiety and stress symptoms of 40 students who had high scores in subscales of depression, anxiety and stress; The process of changes in symptoms of depression, the process of changing the symptoms of depression, anxiety and stress in intervention groups over time is significant (Ahmadi et. al., 2011). In a study by Stanford University's Psychiatry and Behavioral Sciences at Koopman et al. (2005), women with a history of abuse and violence on the part of their spouse, expressing feelings and emotions by writing did not have a significant overall impact on the level of perceived pain and depression and stress disorder, but long-term follow-up in patients who had an officer depression before intervention was significantly reduced by depression and stress (Koopman et. al., 2005). Regarding the fact that stress, anxiety and depression were decreased in all groups, but in comparison between the control and experimental groups, the statistical test did not show significant difference before, one week and one month after the intervention.

Of course, the results of this study are consistent with the results of studies by (Travagin et. al., 2015; Niels et. al., 2014; Mogk et. al., 2006) but do not consistent according to (Baikie et. al., 2012; Zare et. al., 2011; Harizchi et. al., 2009). The reasons for the difference in results may be the difference in the research community, their culture and education, the time of research, the difference in the used questionnaires, the duration of the intervention, the number of participants in the sample.

As mentioned in the study results, long-term emotional disclosure has been effective in reducing stress, anxiety and depression in patients undergoing open heart surgery. It helps to improve the mental and physical health of individuals. In sum, emotional disclosure can be

considered as a simple, constructive, low-cost, and effective way to confront and cope with life-threatening experiences of life, which its preventive role is preceded by its therapeutic role. Limitations of this research can be to limit the limited number of samples and not to have access to them all, not to follow the effects of emotional disclosure in the course of several months, the lack of control of the researcher on the problems and pressures of life in patients who could affect their stress, anxiety and depression, not employing more valid methods of clinical assessment, such as interviews, as well as mental and psychiatric conditions that affected the way in which questions were answered, Therefore, in order to conduct further studies, it is suggested that the constraints expressed be controlled. Also, because of the fact that the samples were heart patients only, they underwent open heart surgery in the Amiralmomenin-e-Kordkuy Hospital, which would not normally represent the entire community of heart patients in Iran, which can be effective in generalizing the results of this research. It is suggested that the present study should be conducted in other samples with different demographic characteristics and its effectiveness should be compared with other existing treatments.

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