



A Comparative Study on the Effects of Positive Psychology and Stress Inoculation on Depression among Pregnant Women with Mitral Valve Prolapse

Azadeh Askari¹, Biuk Tajeri², Naser Sobhi-Gharamaleki³, Mohammad Hatami⁴

¹ PhD Student in Health Psychology, Department of Psychology, UAE Branch, Islamic Azad University, Dubai, United Arab Emirates

² Assistant Professor, Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran

³ Associate Professor, Department of Psychology, School of Psychology and Educational Sciences, Allameh Tabataba'i University, Tehran, Iran

⁴ Associate Professor, Department of Psychology, School of Psychology and Educational Sciences, Kharazmi University, Tehran, Iran

Corresponding Author: Biuk Tajeri; *Assistant Professor, Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran*

Email: btajeri@yahoo.com

Quantitative Study

Abstract

Background: The aim of the present study was to compare the effects of stress inoculation and positive psychology on depression in pregnant women with mitral valve prolapse (MVP).

Methods: This research falls among semi-probationary plans, with pretesting and posttesting in 2 experimental groups, and follow-up. The statistical population of the study included all pregnant women with MVP referred to Imam Khomeini Hospital in Tehran, Iran, in 2019. To form 3 groups, 45 people were first selected using purposeful sampling method (considering the inclusion and exclusion criteria). Then, 15 people were assigned to the first experimental group, 15 people were assigned to the second experimental group, and 15 people were assigned to the control group. The 3 groups were homogeneous and the dependent variable was measured in the experimental groups simultaneously. Moreover, the follow-up stage was performed on all 3 groups 3 months after the posttest. The research instrument was the Beck Depression Inventory (1989).

Results: The collected data were analyzed using mixed analysis of variance (ANOVA). The results of data analysis showed that stress inoculation and positive psychology had a significant effect on reducing depression in pregnant women with MVP in the experimental groups compared to the control group ($P < 0.05$). Furthermore, the effects of stress inoculation and positive psychology on reducing depression were not different ($P > 0.05$).

Conclusion: The results showed that immunization against stress and positive treatment have a significant effect on improving psychological well-being and depression in pregnant women with MVP. There was no significant difference between the methods of immunization against stress and positive treatment in terms of their effect on depression.

Keywords: Stress inoculation; Positive psychology; Depression; Pregnant women; Mitral valve prolapse

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Introduction

Cardiovascular diseases (CVDs) account for 46% of all deaths and were reported as the first cause of death in Iran in 2011. Most of these deaths are due to coronary heart disease (CHD) and its complications, so that out of 46% of cases, 24% were heart attacks, 10% strokes, and 12% CVDs (Shareh, 2019). One of the heart diseases is mitral valve prolapse (MVP). The tendency of the mitral valve to fall to the left atrium of the heart during cardiac contraction is called MVP. Sometimes, a MVP causes blood to return to the left atrium. This condition is called mitral regurgitation (Lee et al., 2013). This syndrome has major psychological symptoms, which may make it difficult for these people to cope with their disease. The psychological symptoms of this complication include panic attacks, anxiety, depression, and worry and fatigue (Lee, Chang, Youn, Joo, Yoo, & Lee, 2017). Panic attacks, because of their threatening and catastrophic interpretation, cause bodily sensations, heart palpitations, and chest pain (Seligman & Rozhanan, 2016). In addition to panic attacks, generalized anxiety disorder is one of the anxiety disorders that severely affect the health-related quality of life (QOL) in patients with MVP syndrome. Anxiety disorder is the result of distorted and threatening cognitive processes and the estimation of an external or internal event that leads to the expectation of a future catastrophe that may lead to feelings of lack of control and helplessness (Salehi, Asghari Ebrahimabad, Ghaderi, & AbdeKhodaei, 2021). Anxiety, stress, and panic attacks are the psychological aspect of MVP syndrome, and fatigue is a mental-physical aspect of the disease, which has a prevalence of 18 to 27% among these patients (Sadati Bala Dehi, Taghi Pour Javan, & Hassan Nattaj, 2019). Fatigue is a state of mind that is clearly associated with negative emotion. In these situations, the individual is unable to maintain attention on a particular issue and to engage successfully in a situation that requires physical activity (GhamkharFard, Bakhtiari, Hajiheidari, Pouravari, & Tahmasian, 2019).

Pregnancy is a new, interesting, and unfamiliar experience for many women. During this unfamiliar experience, pregnant women face a variety of stressful problems, including physical, physiological, social, emotional, and financial problems, issues regarding relationships with others, body image and medical problems, childbirth anxiety, and anxiety about the child's health (Tragea, Chrousos, Alexopoulos, & Darviri, 2014). Pregnancy and parturition as a physiological and natural phenomenon under the influence of endocrine hormones assumes its task for the birth of a child. One of the main hormones involved in childbirth is cortisol; it is secreted by the fetus in the third trimester of pregnancy, which increases the amount of cortisol in the mother's blood, thus leading to increased stress in pregnant women (Abedi Amiri, Avandi, & Esmailzadeh, 2018). Stress during pregnancy manifests itself as an unpleasant and vague feeling that often causes symptoms of autonomic nervous system stimulation (Azhari, Sarani, Mazlom, & Aghamohammadian Sherbaf, 2015). For example, anxiety stimulates the autonomic nervous system, contracts the muscles of the arteries, and reduces uterine blood flow to the placenta, thus resulting in oxygen delivery. These changes increase the chance of a premature birth (Ghazaei, Davodi, Neysi, Mehrbizadeh Honarmand, & Basak, 2018). In addition to its destructive effects on the mother, stress also affects the fetus. These effects include changes in the function of the hypothalamus and pituitary gland, increased levels of stress hormones, fetal weight loss, miscarriage, premature birth, suppression of the immune system and changes in fetal lymphocyte counts, increased fetal malformations, and neonatal mortality (Azhari et al., 2015).

Some women experience these irritating and nervous changes and changes in emotions and communication. Pregnancy is a stressful period for many women, and some kind of psychological adjustment is required to ensure maternal and fetal health (Yuksel, Akin, & Durna, 2014). Depression is another problem that affects a significant percentage of society. According to the World Health Organization (WHO), it is one of the major causes of disabilities (Clark, 2015).

Due to the adverse effects of depression and stress during pregnancy on the mother and fetus, it is necessary to use effective coping methods to successfully deal with stressful conditions during pregnancy (Alipour, Ghahremani, Amooee, & Keshavarzi, 2017). In this regard, one of the ways to reduce and manage stress is the immunization program against stress, which was first proposed by Mickenbaum. Stress immunization is based on facing stressful situations in order to develop coping skills (Khatoni, Teymouri, Pishgooe, & Khodabakhsh, 2020). The goal of this treatment is not to completely eliminate stress, but to learn adaptive responses to stressful situations and to increase the power of rapid recovery despite experiencing failure. Immunization against stress is performed in 3 stages (conceptualizing the problem, acquiring and practicing skills, and application and continuous follow-up) and using Socratic questioning techniques, cognitive reconstruction, mental imagery practice, problem-solving, and self-strengthening training. Training provides clients with the necessary skills to reduce and treat stress and stress-related problems with the aim of prevention and treatment (Moshgani Farahani, 2017).

Positive psychology is the scientific study of positive emotions, positive personal traits, and the structures that drive this growth. In a positive approach, unlike other approaches that focus on problems and weaknesses, increasing positive excitement and promoting the meaning of life is emphasized and considered. Principles used in positive interventions reduce depression, and increase happiness and psychological well-being by increasing positive emotions, positive thoughts, and positive behaviors and satisfying basic needs such as autonomy, love, and the sense of belonging (Honarmandzadeh & Sajadian, 2016). Concerning the effectiveness of positive therapy, Kordmirza Nikoozadeh (2011) found that positive psychotherapy was effective in promoting resilience in drug addicts. Furthermore, the results of a study conducted by Jabbari, Shahidi, and Mootabi (2014) showed that positive psychology training was more effective than cognitive-behavioral training (CBT) in reducing depressive symptoms, reducing dysfunctional attitudes. Both of these two training methods were effective in reducing anxiety symptoms. Given what was stated above and considering the research gap in this area, the present study was conducted with the aim to answer the following question: Is there a difference between the effects of positive psychology and stress inoculation on depression in pregnant women with MVP?

Methods

The present study was a quantitative study in terms of the nature of the collected data, an applied study in terms of objective, and a quasi-experimental, multi-group study with a pretest-posttest design, and follow-up (with one control group) in terms of method.

The statistical population of the present study included pregnant women with MVP, referred to Imam Khomeini Hospital in Tehran, Iran, in 2019. The study sample included 45 pregnant women with MVP referred to the heart clinic of Imam Khomeini Hospital. These patients were selected using convenience sampling method and were randomly divided into experimental and control groups. In the present study, non-random purposeful sampling method was used.

The study inclusion criteria included diagnosis of MVP based on medical records,

and age of between 18 to 45 years. The study exclusion criterion was not receiving CBT in the past 6 months.

After identifying pregnant women with MVP based on the patients' medical records, 45 patients who met the inclusion criteria were identified and randomly divided into experimental and control groups. For experimental and quasi-experimental studies, a sample size of at least 15 people in each group has been suggested (Delavar, 2019). After selecting the participants, they were provided with explanations on the topic, and treatment courses and their goals, and they were told that participation in treatment courses was voluntary and there was no coercion to participate in the courses. One-way analysis of variance (ANOVA) was performed to assess the similarity of groups in terms of the score of the variable of depression after filling out the questionnaires in the pretest. The results showed that the research groups were similar in terms of depression scores. The sampling method in this study was purposeful. To reduce bias, the research groups did not meet. The experimental groups were trained separately. For each experimental group, a health psychologist performed training programs separately. The aim of this research is to emphasize the difference in the content of educational interventions, not the number of sessions. Therefore, the protocols were implemented in consultation with professors in this field and after obtaining their approval. To conduct the study, the necessary coordination was made with Imam Khomeini Hospital. After coordination with the officials of Imam Khomeini Hospital and providing information about the sample (including age and education), a list of the sample group was provided to the researcher, questionnaires were distributed, and treatment protocols were performed in the groups. The summary of the treatment sessions of the two experimental groups is presented in tables 1 and 2.

Beck Depression Inventory

In this study, the second, 21-item, updated version of the Beck Depression Inventory (BDI) was used. The reason for using this questionnaire was that for the last 35 years, BDI-II has been the most accepted tool for identifying the severity of depression in research. The validity and reliability of this tool have been repeatedly estimated and approved in various studies. Therefore, BDI-II was used in the present study (Stefan-Dabson, Mohammadkhani, & Massah-Choulabi, 2007). BDI-II consists of 21 items, and each item is scored on a scale ranging from 0 to 3, based on the symptoms of the Depression Index and their severity. A score of 0 in each item indicates the absence of that symptom and a score of 3 indicates the high severity of that symptom. This test, as a scale of depression, is widely used in the United States and other countries. BDI is used alone or in combination with other depression tests to separate depressed and non-depressed people. This questionnaire has been translated into Persian and its validity and reliability have been evaluated. The internal consistency of this test for Iranian students was obtained at 0.87 and its test-retest reliability was obtained at $r = 0.79$ (Sayadi, Eftekhar Saadi, Makvandi, & Hafezi, 2019).

Results

Descriptive indices (mean and standard deviation) of depression scores are presented in table 3.

As shown, the mean in the positive psychology group and the stress inoculation group in the posttest stage decreased compared to the pretest stage. Based on the results presented in table 3, it can be stated that positive psychology therapy and stress inoculation decreased depression in pregnant women with MVP.

Table 1. The 14-session protocol of positive psychotherapy (Seligman, 2002)

Session	Session content	Description
1	Orientation	Lack of positive resources leads to continuous depression: -The role of lack of positive emotions, abilities of character, and meaning in the continuation of depression and emptiness of life are discussed. - The framework of positive psychotherapy, the role of the therapist, and the responsibilities of the clients are discussed.
2	Commitment	Identify your specific capabilities: -Clients identify their specific capabilities based on a positive introduction and discuss the situations that these particular capabilities and competencies have helped them in the past. - The 3 paths leading to happiness (pleasure, commitment, and meaning) are discussed.
3	Commitment/ pleasure	Development of special capabilities and positive emotions: - Development of specific capabilities is discussed. Clients are prepared to shape specific, objective, and achievable behaviors in order to develop specific capabilities and competencies. - The role of positive emotions in well-being is discussed.
4	Pleasure	Good memories versus bad memories: -The role of good and bad memories is discussed in terms of their role in maintaining depressive symptoms. -Clients are encouraged to express feelings of anger and bitterness. The effects of staying bitter and in the state of angry on depression and well-being are expressed.
5	Pleasure-commitment	Forgiveness: Forgiveness is presented as a powerful tool that can turn anger and bitterness into neutral emotions and even positive emotions for some people.
6	Pleasure-commitment	Gratitude: Gratitude is discussed as a lasting thanking, and good and bad memories are highlighted again with an emphasis on gratitude.
7	Pleasure-commitment	Mid-therapy check: In at-home tasks, forgiveness and gratitude are both pursued. This typically requires more than 1 session. - The importance of positive emotions is discussed. -Clients are encouraged to bring daily writing of gifts and participate in discussing them -Goals related to specific capabilities are reviewed. -Process and progress are discussed in detail. -Clients' feedback on therapy benefits is discussed.
8	Meaning/commitment	Satisfying versus maximizing: -Satisfying versus maximizing is discussed in the context of enjoyable hard work. -Satisfying through commitment versus maximizing is encouraged.
9	Pleasure	Optimism and hope: -Clients are guided to think about when they fail at an important task, when a major program fails, and when they are not accepted by one person. -Clients are asked to pay attention to which other doors open when one door closes.
10	Commitment and meaning	Love and attachment: -Active and constructive responses are discussed. - Clients are invited to identify other special capabilities of other people meaningful to them.
11	Meaning	Capabilities: -The importance of identifying the capabilities of family members is discussed
12	Pleasure	Savoring: -Savoring is introduced as awareness of pleasure and its deliberate creation in the past. - Pleasant hard work is specified as a possible threat to savoring and the way of protecting against it.
13	Meaning	Gift of time: -Regardless of financial situation, grateful clients have one of the greatest gifts, the gift of time. -Ways to use special capabilities to spend your time doing things to serve others; Such as educating children and providing social services.
14	Cohesion	Full life: - The concept of a "full life" that integrates pleasure, commitment, and meaning is discussed. -Clients complete the tests before the end of the session. - Progress is reviewed and the benefits and sustainability of capabilities are discussed.

Table 2. Meichenbaum’s group-based stress inoculation training protocol (Rabiee, Zaharakar, & Farzad, 2019)

Sessions	Descriptions
Session 1	Familiarization and introducing of individuals, explaining the goals and rules of the group, conceptualizing and describing stress, and its symptoms and consequences
Session 2	Relaxation and stress reduction techniques
Session 3	Familiarity with cognitive concepts, the role of thoughts in creating stress and the relationship of thoughts with emotions and behavior, familiarity with the characteristics of negative future thoughts, and introduction of cognitive errors
Session 4	Training how to cope with negative thoughts
Session 5	Guided self-talk training and the role of negative self-talk in creating stress
Session 6	Training of concentration and distraction techniques
Session 7	Problem-solving training
Session 8	Anger management skill training
Session 9	Practicing the skills learned in the previous sessions, explaining the need to apply them when coping with stressful situations, and summarizing and ending

To investigate the significant differences in mean depression scored among the 3 groups in the 3 stages of treatment, the assumptions of homogeneity of variances and sphericity were first examined. The results are presented in table 4.

As shown, the assumption of homogeneity of variances is confirmed ($P > 0.05$).

The variance of the difference between all combinations related to the groups (sphericity) must be the same. To test this hypothesis, Mauchly's test of sphericity was used, the results of which are presented in table 4.

As shown, the sphericity assumption is not confirmed ($P < 0.05$). Hence, the Greenhouse-Geisser criterion was used to test the hypotheses to obtain a more accurate approximation and the results of intragroup ANOVA were calculated accordingly due to lack of confirmation of the sphericity assumption. Summary of mixed ANOVA results for intragroup and intergroup factors are presented in table 5.

The results presented in table 4 show that concerning the intragroup factor, the value of F calculated for the effect of stages (pretest, posttest, and follow-up) is significant at the level of 0.05 ($F = 59.46$; $P < 0.05$). As a result, there is a significant difference between the mean pretest, posttest, and follow-up scores of depression. The Bonferroni post hoc test was used to evaluate the difference between the means in the treatment stages. The results showed that there was a significant difference between the depression scores in the pretest and posttest, and pretest and follow-up stages. Moreover, there was no significant difference between the scores of depression in the posttest stage and follow-up stage; the depression scores in the follow-up stage did not change significantly compared to the posttest stage.

According to the results presented in table 4 concerning the interaction of stage and group factors, the value of F calculated for the effect of stages (pretest, posttest, and follow-up) between the two groups of positive psychology therapy and stress inoculation was significant at the level of 0.05 ($F = P < 0.05$; $P < 0.05$); therefore, there is no significant difference among the mean pretest, posttest, and follow-up scores of depression in the experimental groups.

Table 3. Mean and standard deviation of depression components separately for test stages in groups

Group	Variable	Index	Pretest	Posttest	Follow-up
Positive psychology therapy	Depression	Mean ±	14.33 ±	10.23 ±	11.00
		SD	2.35	2.29	1.65
Stress inoculation	Depression	Mean ±	14.53 ±	11.47 ±	11.80
		SD	2.17	2.53	2.46
Control	Depression	Mean ±	14.60 ±	14.33 ±	14.47
		SD	1.88	1.95	2.33

SD: Standard deviation

Table 4. Levene's F test to check the homogeneity of variances in the control and experimental groups

Variables index	Depression
F	0.23
df 1	1.00
df 2	28.00
P	0.63
df	2
Mauchly's W	0.64
P-value	0.001

df: Degree of freedom

The diagram of interaction of the moderated means of depression scores in the positive psychology therapy and stress inoculation groups in the pretest, posttest, and follow-up stages is shown in figure 1.

Discussion

The results of data analysis showed that there was no significant difference between the effects of stress inoculation and positive psychology methods on depression in pregnant women with MVP and both methods had a significant effect on reducing depression compared to the control group. In explaining this result, it can be stated that there are differences and similarities between the stress inoculation and positive psychology methods regarding the views on psychological trauma. They overlap greatly in behavioral methods. In the stress inoculation method, it is believed that psychological trauma is the result of distorted thought patterns that can be identified and corrected through processes of cognitive change, positive debate, and reconstruction. Positive psychology, like the stress inoculation method, focuses on the opposite of negative thinking (Esmaeili, Esmaeili, & Dabbashi, 2016), but it seeks to increase one's psychological connection to one's thoughts and feelings. It seems that the 2 processes of cognitive reconstruction and denial have caused stress inoculation to affect depressive symptoms. The mechanism of action of both interventions seems to be through trying to create positive emotions. Immunization against stress by correcting negative thoughts and problem-solving training in the face of stressful situations creates positive emotions in the individual, and positive psychology tries to create positive emotions by giving meaning and purpose to life. Thus, both methods can have a significant effect on reducing depression in pregnant women with MVP.

Regarding the effect of immunization against stress on depression, it can be said that many women with MVP after learning that they pregnant are often stressed out due to the fear of pregnancy problems and MVP, and this stress can lead to feelings of helplessness, weakness, and helplessness, resulting in depression. Because stress management is a cognitive-behavioral approach, these sessions provided the individual with an opportunity to identify these negative spontaneous thoughts related to disability and helplessness, and after identifying negative thoughts, the person can try to correct her/his cognitive errors.

Table 5. Mixed analysis of variance test for depression component scores using the Greenhouse-Geisser criterion

Statistical index factors	SS	df	MS	F	P-value	Eta coefficient
test (repeated measures)	219.36	1.69	129.68	59.46	0.001	0.68
test*group interaction	3.36	1.69	1.98	0.91	0.40	0.03
intergroup	11.38	1.00	11.38	0.98	0.33	0.03

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

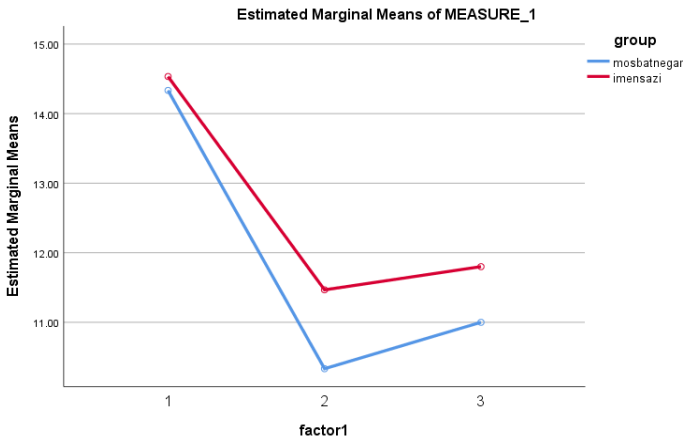


Figure 1. Modified means of depression scores in the positive psychology therapy and stress inoculation groups in the pretest, posttest, and follow-up stages

Hence, they free themselves from the shackles of do's and don'ts and idealistic thoughts, and accept their illness, and instead of feeling helpless, they seek a way to solve the problems related to their illness and pregnancy status. Through problem-solving training in stress management, a person can find better solutions to deal with existing situations by creating mental order, and therefore, the feeling of helplessness is reduced and leads to a positive mood in the person, and as a result, depression is reduced. In explaining the effectiveness of positive psychology therapy in reducing depression, it can be said that positive psychology education has a great emphasis on positive emotions, having meaning and purpose in life, and hope in achieving goals. The fact that pregnant women consider the experience of motherhood as a value and meaning in life and set a valuable goal such as raising a healthy and useful child for society leads to positive emotions in pregnant women with MVP. This results in increased attention to health and care for themselves and the fetus during pregnancy, and this meaningful and purposeful effort leads to a reduction in depression in them. Therefore, it can be said that the experience of positive emotions through increasing meaning and positivity has led to a reduction in depression in them.

The present study was the first study with this topic to be conducted among this community and on a sample of pregnant women with MVP.

Conclusion

It is recommended that health institutions hold a training workshop and courses based on positive psychology approaches and stress inoculation methods for people with heart disease, especially pregnant women with MVP. Since the present study was conducted in Tehran and various environmental and cultural-economic factors influence this syndrome, it is difficult to generalize the present study findings to other areas with different cultural-economic contexts. Some areas of the disease depend on environmental conditions.

Conflict of Interests

Authors have no conflict of interests.

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