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International Journal of Body, Mind and Culture

Assessment of the Effectiveness of the Self-Review Technique on Quality of Life and Self-Efficacy in Patients with Multiple Sclerosis

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Emperical Study

Abstract

Background: Due to the high prevalence of multiple sclerosis (MS) in the country and the mental and physical constraints resulting from it, applying psychological interventions to overcome and improve the limitations patients, who are often of a young age (with an average age of 20-40), are faced with in their lives seems essential. Although MS is a progressive autoimmune disease, its mental symptoms can affect many aspects of life. The aim of this study was to investigate the effect of the self-review method on life satisfaction, efficacy, and quality of life (QOL) of MS patients.

Methods: This study evaluated the effectiveness of the "self-review" method as a cognitive intervention in improving efficacy and QOL in patients with MS through a semi-experimental design with a pretest-posttest design and control group. Through convenience sampling, 26 members of the Iranian MS Society (12 women and 14 men) were selected and were randomly divided into control and experimental groups (each group containing 13 subjects). After responding to the Multiple Sclerosis Self-Efficacy Scale (MSSS) and Multiple Sclerosis Quality of Life (MSQOL-54) questionnaire, the experimental group received therapy sessions based on the "self-review technique" for about 3-4 weeks. The control group did not receive cognitive therapy.

Results: To evaluate the difference between the obtained scores, the self-review method was considered as the independent variable, and self-efficacy and QOL (a combination of physical and mental health) were considered as dependent variables. The results from the slope of regression lines on the combination of physical health ($P < 0.001$; $F = 19.29$; $df = 24$) and mental health ($P < 0.001$; $F = 13.34$; $df = 2$) indicated that the slope of the regression lines was not homogeneous. The findings of this study indicated that using the self-review treatment method in individual counseling sessions improved self-efficacy and QOL in MS patients. This method positively changed patients' perception of their physical health, and improved their mental health.

Conclusion: The results show a meaningful change in self-efficacy and QOL in patients with MS who have undergone the therapy sessions. In this study, we concluded that the psychological intervention with a self-review method is effective in improving the level of self-efficacy in MS patients. It can be stated that the self-review method consists of a

psychological intervention, which positively affects the perception of patients by decreasing the psychological energy spent for negative events through content and feelings reflection technique, as well as promoting their level of self-awareness. Thus, the intervention can promote the QOL of patients, which in turn affects their perception of the disease.

Keywords: Multiple Sclerosis, self-efficacy, Quality of life, Self-review technique

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Introduction

Multiple sclerosis (MS) is an autoimmune and progressive disease of the central nervous system known to produce extensive lesions or plaques in the brain or the spinal cord. The diagnosis of MS is based on different symptoms in each individual due to the loss of the myelin sheath in various parts of the brain and the spinal cord; no two patients with MS show the same symptoms. Although the exact causes of MS are yet to be identified, the current trend of the literature suggests that MS is a multifactorial disease, which occurs when these multiple factors exist in a specific ilness. Until today, genetics, viruses, environmental factors including lack of sunlight and vitamin D, stress, immune deficiency, and smoking (Mayer-Rienecker, Wegener, & Hitzschke, 1984; Summerday, Brown, Allington, & Rivey, 2012; Lovera & Reza, 2013; Sundstrom, P., & Nystrom, 2008; Ascherio & Munger, 2007), psychological stress (Goodin, Ebers, Johnson, Rodriguez, Sibley, & Wolinsky, 1999), perceived health and functional status (Li, Rumrill, Bishop, & Leslie, 2020) have been recognized as interfering factors. Symptoms of MS consist of a range of physical and psychological disabilities (Bol, Duits, Hupperts, Vlaeyen, & Verhey, 2009), quality of life (QOL), integrating physical and psychological components of wellbeing (Poser et al., 1983; Mitchell, Benito-Leon, Gonzalez, & Rivera-Navarro, 2005), and depression (Gay, Vrignaud, Garitte, & Meunier, 2010).

MS decreases the QOL of the patients by influencing their physical and psychological health, and reducing their ability to conduct social interactions and perform daily routines (Lankhorst et al., 1996). MS often occurs within the age range of 20-40 years, which is the peak of social, occupational, and individual progress of people; thus, it is not surprising that these barriers would reduce the QOL of affected people. Moreover, an important factor in dealing with chronic diseases such as MS is the patient's perception of his/her abilities in facing the uncertainty and functional impairments caused by the disease. The reports indicate that there is a correlation between higher efficacy and adaptation with the disease, and less mental illness in patients with MS.

Dealing with the uncertainties and functional impairments resulting from the disease can be facilitated through using strategies that improve patients' perception of their abilities.

The body of literature on the effectiveness of psychological treatments for MS patients indicates that treatment sessions can have a positive effect on reducing depression and improving the QOL and self-efficacy of patients (Brenk, Laun, & Haase, 2008; Burschka, Keune, Oy, Oschmann, & Kuhn, 2014; Cuijpers, van Straten, Andersson, & van Oppen, 2008).

Pourhosein (2010) introduced a cognitive intervention to the psychology community of the country using a self-review technique. This method is based on Beck's cognitive theory (Aaron T. Beck, 1964), and Albert Elis's research. The self-review method can teach the patient the correct way of facing his/her thoughts and help him/her to replace the unrealistic, negative, and involuntary evaluation of him/herself and his/her abilities with correct and more accurate understandings. This method can positively change the patient's cognitive theme by decreasing thrill load and emotional investment in negative events or undesirable characteristics of the patient, adding positive meanings to his/her actual and potential abilities, and focusing on his/her positive definitions of him/herself. This method can also reduce the negative biases of the memory (Pourhosein, 2010; Pourhosein, 2021).

Previous studies have shown that using this technique had a significant positive effect on increasing the happiness of delinquent adolescents (Ezzati, 2014), reducing negative thoughts in depressed women (Salar, Pourhosein, Besharat, & Gholamali Lavasani, 2013), reducing negative idealism, and use of non-growth defense mechanisms among students in Tehran, Iran, (Bidast, 2014), the physical image of women (Khodabandehlo, Pourhosein, & Gholamali Lavasani, 2014), depression in cardiac patients (Safaei Firoozabadi, Pourhosein, & Gholamali Lavasani, 2013), and depression in patients with MS (Yaghoobi Rad, Pourhosein, & Gholamali Lavasani, 2016; Pourhosein, 2021).

Considering these results, if the self-review technique is effective in improving depression, QOL, and self-efficacy in MS patients, it can help these patients due to the short onset of the disease symptoms. In this research, we tried to find out whether using the self-review technique could improve self-efficacy and QOL in MS patients.

Methods

Statistical population, Case study: The present semi-experimental study was conducted with a pretest-posttest design, and a control group. During the study, the study subjects underwent the self-review intervention. The statistical population of this study included all MS patients who were members of the Iranian MS Society; 30 individuals who had the inclusion criteria were selected as the study participants. The participants were randomly assigned to 2 intervention groups (n = 15) and a control group (n = 15). The number of participants decreased to 26 patients during the study period, of which 13 were in the control group (5 women and 8 men) and 13 belonged to the intervention group (7 women and 6 men). The age of the participants in the intervention group and control groups was in the range of 22-54 years (mean ± SD = 38.3 ± 29.8), and 31-45 years (mean ± SD = 38.37 ± 59.4), respectively. The participants' level of education varied from high school graduate to master's degree. In the intervention group, 5 individuals were high school graduates, 4 had an associate degree, 2 had a bachelor's degree, and 2 had a master's degree. Moreover, 9 were high school graduates, 2 had a bachelor's degree, and 2 had a master's degree in the control group.

The inclusion criteria included membership in the Iranian MS Society, a minimum education of high school graduate, balance in motion and being able to speak, and willingness to enter the research. Moreover, the exclusion criteria included severe eyesight problems that prevented reading or writing, psychosocial-motion slowness, balance problems, and simultaneous participation in similar psychological meetings. After obtaining written consent from the participants, the Multiple Sclerosis Self-Efficacy Scale (MSSS) and Multiple Sclerosis Quality of Life (MSQOL-54) instrument were completed individually. The intervention group received a session of treatment per week for 3-4 weeks (based on the patient's need). The duration of each session was 60 to 90 minutes and included an intervention of the self-review technique. The control group did not receive this intervention.

The patients were asked to describe themselves in at least 20 sentences as if to themselves and as if they are in front of a mirror. These sentences, which were mostly evaluated as positive and negative sentences, were reviewed in the presence of the therapist. For the negative sentences, we tried to reduce the emotional and thrill load in these sentences using the content and feelings reflection technique, in addition to strengthening the relationship between references and psychologists. Positive sentences were reviewed again with emphasis and confirmation. The therapist

was a psychologist. She had successfully passed the self-review course under the guidance of a teacher; moreover, she has had much experience in using her own browsing technique.

On the second session, patients were asked to continue writing the sentences, and review and mark sentences in which they evaluated themselves positively, and begin the negative sentences with the phrase "instead...". During the next sessions, the completed sentences were reviewed and evaluated, and then, the new sentences were reviewed. On the final session, the participants completed the MSSS and MSQOL-54 again.

Tool of assessment: Multiple Sclerosis Self-Efficacy Scale: The MSSS is a multidimensional self-reporte tool developed for adults. In this tool, the dimensions of independence and activity (5 items), concerns and interests (4 items), personal control (3 items), and social efficiency (2 items) are assessed in 14 items. The validity of this scale was confirmed by calculating its internal consistency using Cronbach's alpha coefficient (0.81), and test-retest (0.81) with a 1-week interval in the main study. The validity of the scale was also confirmed by analyzing the core components, and through varimax rotation, and convergent and divergent validity (Schwartz, Coulthard-Morris, Zeng, & Retzlaff, 1996).

The obtained data on 120 MS patients in North Khorasan and Hamedan, Iran, was first examined in terms of diagnostic performance of items, and the correlation of the score of each item with the total score of the scale was assessed. The initial results indicated that the items have an optimal detection ability (r = 0.3-0.6); therefore, no item was removed in this step. In the next step, to investigate the validity of the scale structure, exploratory factor analysis with the pattern of principal components as well as Promax rotation with the consideration of a factor load of over 0.35 was used. After multiple rotations, items 12 and 13 were removed because of having a shared load in more than 1 factor, and therefore, the number of items in the Persian questionnaire was reduced to 11 items.

The final structure of the scale presented 3 variance factors of 71.12%. The divergent validity of the MSSS was assessed through the calculation of the correlation between the dimensions of this scale and the scores of depression and anxiety in MS patients. The results indicated a negative significant correlation between self-efficacy, and anxiety and depression, which indicates the suitable divergent validity of the self-efficacy scale in MS patients. Evaluation of gender differences in the dimensions of the MSSS confirmed that women had higher scores in independence, activity, and personal control dimensions. Furthermore, the scores of anxiety and interests were higher in men. Nevertheless, the only significant gender difference was in personal control ($t = 2.5$; $P < 0.01$). The reliability of the factors extracted from the self-efficacy scale in MS patients and the total score of the scale was assessed by calculating Cronbach's alpha and Guttman split-half coefficient. The Cronbach's alpha and Guttman split-half coefficient for independence and activity were 0.81 and 0.8, for personal control were 0.9 and 0.78, concerns and interests were 0.78 and 0.72, and the total score of the scale were 0.9 and 0.87, respectively (Tanhaye Reshvanloo and Soleimanian, 2014).

Multiple Sclerosis Quality of Life scale: The MSQOL-54 scale was created by Vickrey and Angeles (1995) by adding questions to the SF-36 (36-item Questionnaire of Health Assessment). This scale is used in the assessment of routine medical care in terms of the QOL of MS patients. In addition, the MSQOL-54 scale provides a tool to compare the QOL of MS patients with that of individuals with other diseases and the

general population, as well as to evaluate the effectiveness of treatment methods on these patients. This questionnaire was translated by Haghighi and Ghaem into the Persian language; they used the retranslate method and assessment of the questions to create linguistic validity (Borhani, Haghighi, & Ghaem, 2005).

This scale includes 14 areas that are evaluated using 54 questions. These areas include physical functioning, limitation of role-playing due to physical problems, limitation of role-playing due to emotional problems, pain, emotional health, energy, health perception, social function, cognitive function, health stress, sexual function, satisfaction from sexual function, and changes in public health and QOL. Finally, this scale provides 2 scores using a combination of weight percentage of these 14 areas. Using these 2 scores, the QOL of the person is estimated. The 2 final areas include the combined area of physical health and the combined area of mental health. The Cronbach's alpha of the Persian version of this questionnaire was estimated to be 0.926, and no significant difference was seen between each item and the average physical and mental score of the MSQOL-54 based on gender, marital status, and education. The scale had a successful (100%) convergent validity in each area. Finally, using factor analysis, the construct validity of the questionnaire was verified (Borhani, Haghighi, & Ghaem, 2005).

Results

To evaluate the difference between the obtained scores, the self-review method was considered as the independent variable, and self-efficacy and QOL (a combination of physical and mental health) were considered as dependent variables. The results from the slope of regression lines on the combination of physical health ($P < 0.001$; $F = 19.29$; $df = 24$) and mental health ($P < 0.001$; $F = 13.34$; $df = 2$) indicated that the slope of the regression lines was not homogeneous. Thus, to evaluate the results, the difference between the pretest and posttest scores were calculated for each variable, and then, the results were evaluated using t-test for the independent group.

The results presented in table 1 show a significant difference between the intervention and control groups in both physical and mental health dimensions ($P < 0.05$). Thus, it can be concluded that using the self-review method had a significant effect on improving the QOL of MS patients.

Regarding the effectiveness of the self-efficacy method, results from the slope of regression line homogeneity ($P = 0.18$; $F = 4.83$; $df = 2$) showed that there was a regression line slope homogeneity condition for applying covariance analysis.

The mean ± SD of pretest and posttest scores of the self-efficacy variable are presented in table 2. Based on the results of the analysis of covariance ($P < 0.01$; $F = 10.11$; $df = 1$), it can be stated that using the self-review method had a significant effect on the level of self-efficacy of patients in the intervention group.

Table 1. Average and standard deviation of pretest and posttest scores in the intervention and control groups and t-test results for the combination of physical and mental health variables

	Group	Pretest (mean ± SD)	Posttest (mean ± SD)	Mean ± SD difference	t	df	P-value
Combination of physical health	Control	69.84 ± 20.04	66.49 ± 18.87	3.34 ± 7.13	7.82	24	0.10
	Study	61.93 ± 15.14	70.19 ± 13.18	8.26 ± 13.23			
Combination of mental health	Control	72.23 ± 23.53	69.15 ± 25.62	3.07 ± 10.28	2.12	24	0.30
	Study	56.32 ± 20.06	62.74 ± 18.48	10.42 ± 19.38			

SD: Standard deviation; df: Degree of freedom

Table 2. The average and standard deviation of pretest and posttest scores of the self-efficacy variable in the intervention and control groups

Group	Pretest (mean ± SD)	Posttest (mean ± SD)
Control	51.93 ± 8.99	50.15 ± 9.21
Intervention	46.85 ± 6.10	51.85 ± 6.06

SD: Standard deviation

Discussion

The findings of this study indicated that using the self-review treatment method in individual counseling sessions improved self-efficacy and QOL of MS patients. This method positively changed the perception of patients of their physical health, as well as improving their mental health. These results are in line with the reports of Pagnini, Bosma, Phillips, and Langer (2014) on the beneficial effects of psychosocial interventions on the physical and psychological health of MS patients. These results illustrate the necessity of greater attention to the mental issues of patients and psychological treatments for them. Moreover, our results are consistent with the results of Grossman et al. (2010). They showed that the psychological intervention of reducing stress based on consciousness improves QOL in MS patients.

The effects of the self-efficacy factor in MS patients in this study are in line with the results of Barlow et al. (2009) They concluded that the psychological intervention with a self-review approach is effective in improving the level of self-efficacy in MS patients. Stuifbergen, Becker, Blozis, Timmerman, and Kullberg (2003) reported that a lifestyle changing intervention in MS patients improved the self-efficacy of these patients.

It can be stated that the self-review method consists of a psychological intervention, which positively affects the perception of patients by decreasing the psychological energy spent for negative events through the content and feelings reflection technique, and promotion of the level of self-awareness. Thus, the intervention can promote the QOL of patients, which in turn affects their perception of the disease. The effectiveness of the self-review method in reducing depression in MS patients has also been confirmed by Yaghoobi Rad et al. (2016).

Considering the mutual relationship between depression and QOL in MS patients (Darviri, Zavitsanou, Delikou, Giotaki, Artemiadis, Anagnostouli, 2016), it can be argued that the reduction of depression is an effective factor in improving the QOL of MS patients. Furthermore, these interventions lead to the correction of patients' perceptions toward themselves and environmental phenomena; thus, they affect the individuals' perception of the controllability of unexpected events and future prediction. Therefore, this can improve their confidence in showing appropriate behaviors in specific situations. Moreover, the negative theme of negative self-efficacy is recognized practically; therefore, using psychological interventions such as the self-review technique can correct the cognitive theme, so that it may lead to an alteration in self-efficacy. The MSSS evaluates a person's perception of his/her abilities and capabilities, which has improved as a result of using this intervention (Grossman et al., 2010; Pagnini et al., 2014; Stuifbergen et al., 2003).

It should be noted that due to limited sampling, small sample size, lack of sample members of the Iranian MS Association in Tehran and inability to follow patients, generalization of results will be limited.

Conclusion

According to the research results, we can conclude that the self-review method has been significantly effective on the self-efficacy and QOL of patients with MS. It can be stated that the self-review method, which is a psychological intervention, can have a positive effect on patients' perceptions by reducing the psychological energy used for negative events, reviewing the person's characteristics and techniques of reflecting his feelings, and improving his Self-knowledge These patients reported more life satisfaction after receiving the self-review technique. Therefore, this intervention can improve the QOL of patients, which in turn affects their perception of the disease. The self-review method can also be used as a method of adapting to chronic illness.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

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References

Ascherio, A., & Munger, K. L. (2007). Environmental risk factors for multiple sclerosis. Part II: Noninfectious factors. *Ann.Neurol*, *61*(6), 504-513. doi:10.1002/ana.21141 [doi]. Retrieved from PM:17492755

Barlow, J., Turner, A., Edwards, R., Gilchrist, M. (2009). A randomised controlled trial of lay-led self-management for people with multiple sclerosis. *Patient Educ Couns* , 77(1), 81-89.

Bidast, F. (2014). *The effect of "self-review" treatment method on reducing negative idealism and non-growth mechanisms in female students in Tehran [MSc Thesis]*. Tehran, Iran: University of Tehran.

Bol, Y., Duits, A. A., Hupperts, R. M., Vlaeyen, J. W., & Verhey, F. R. (2009). The psychology of fatigue in patients with multiple sclerosis: a review. *J Psychosom.Res*, *66*(1), 3-11. doi:S0022-3999(08)00220-1 [pii];10.1016/j.jpsychores.2008.05.003 [doi]. Retrieved from PM:19073287

Borhani, Haghighi, A., & Ghaem, H. (2005). Quality of life in multiple sclerosis: Translation and cultural adaptation in Persian version of the MSQoL-54. *Ir J neurol*, *10*, 40-56.

Brenk, A., Laun, K., & Haase, C. G. (2008). Short-term cognitive training improves mental efficiency and mood in patients with multiple sclerosis. *Eur.Neurol*, *60*(6), 304-309. doi:000157885 [pii];10.1159/000157885 [doi]. Retrieved from PM:18824859

Burschka, J. M., Keune, P. M., Oy, U. H., Oschmann, P., & Kuhn, P. (2014). Mindfulness-based interventions in multiple sclerosis: beneficial effects of Tai Chi on balance, coordination, fatigue and depression. *BMC Neurol*, *14*, 165. doi:s12883-014-0165-4 [pii];10.1186/s12883-014-0165-4 [doi]. Retrieved from PM:25145392

Cuijpers, P., van Straten, A., Andersson, G., & van Oppen, P. (2008). Psychotherapy for depression in adults: a meta-analysis of comparative outcome studies. *J Consult.Clin Psychol*, *76*(6), 909-922. doi:2008-16943-011 [pii];10.1037/a0013075 [doi]. Retrieved from PM:19045960

Darviri, C., Zavitsanou, C., Delikou, A., Giotaki, A., Artemiadis, A., & Anagnostouli, M. (2016). Pythagorean self-awareness serves successfully as a new cognitive behavioral-based technique in multiple sclerosis physical and psychosocial well-being and quality of

life. *Psychology, 7*(4), 572-583.
Ezzati, N. (2014). *Evaluation of the effectiveness of "self-review method" on denial of suicidal thoughts and anger in adolescent delinquent females [MSc Thesis]*. Tehran, Iran: University of Tehran.
Gay, M. C., Vrignaud, P., Garitte, C., & Meunier, C. (2010). Predictors of depression in multiple sclerosis patients. *Acta Neurologica Scandinavica, 121*(3), 161-170.
Goodin, D. S., Ebers, G. C., Johnson, K. P., Rodriguez, M., Sibley, W. A., & Wolinsky, J. S. (1999). The relationship of MS to physical trauma and psychological stress: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology, 52*(9), 1737-1745. doi:10.1212/wnl.52.9.1737 [doi]. Retrieved from PM:10371517
Grossman, P., Kappos, L., Gensicke, H., D'Souza, M., Mohr, D. C., Penner, I. K. et al. (2010). MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology, 75*(13), 1141-1149. doi:75/13/1141 [pii];10.1212/WNL.0b013e3181f4d80d [doi]. Retrieved from PM:20876468
Khodabandehlo, Y., Pourhosein, R., Gholamali Lavasani, M. (2014). Investigating the effectiveness of the self-review method on women's self-perception. Rooyesh-e-Ravanshenasi Journal, 3(6), 68-57.
Lankhorst, G. J., Jelles, F., Smits, R. C., Polman, C. H., Kuik, D. J., Pfennings, L. E. et al. (1996). Quality of life in multiple sclerosis: the disability and impact profile (DIP). *J Neurol, 243*(6), 469-474. doi:10.1007/BF00900502 [doi]. Retrieved from PM:8803821
Li, J., Rumrill, P., Bishop, M., & Leslie, M. (2020). Perceived health and functional status and work environmental factors as determinants of psychological stress among employed people with multiple sclerosis. *Rehabilitation Research, Policy, and Education, 34*(3), 145-158.
Lovera, J., & Reza, T. (2013). Stress in multiple sclerosis: review of new developments and future directions. *Curr Neurol Neurosci Rep., 13*(11), 398. doi:10.1007/s11910-013-0398-4 [doi]. Retrieved from PM:24104400
Mayer-Rienecker, H. J., Wegener, S., & Hitzschke, B. (1984). Family studies in multiple sclerosis: HLA haplotypes of affected sib-pairs. *European archives of psychiatry and neurological sciences, 234*(1), 5-7.
Mikula, P., Nagyova, I., Krokavcova, M., Vitkova, M., Rosenberger, J., Szilasiova, J. et al. (2017). Self-esteem, social participation, and quality of life in patients with multiple sclerosis. *J Health Psychol, 22*(8), 984-992. doi:1359105315621778 [pii];10.1177/1359105315621778 [doi]. Retrieved from PM:26764379
Mitchell, A. J., Benito-Leon, J., Gonzalez, J. M., & Rivera-Navarro, J. (2005). Quality of life and its assessment in multiple sclerosis: integrating physical and psychological components of wellbeing. *Lancet Neurol, 4*(9), 556-566. doi:S1474-4422(05)70166-6 [pii];10.1016/S1474-4422(05)70166-6 [doi]. Retrieved from PM:16109362
Pagnini, F., Bosma, C. M., Phillips, D., & Langer, E. (2014). Symptom changes in multiple sclerosis following psychological interventions: a systematic review. *BMC Neurol, 14*, 222. doi:10.1186/s12883-014-0222-z [doi];s12883-014-0222-z [pii]. Retrieved from PM:25433519
Poser, C. M., Paty, D. W., Scheinberg, L., McDonald, W. I., Davis, F. A., Ebers, G. C. et al. (1983). New diagnostic criteria for multiple sclerosis: guidelines for research protocols. *Ann.Neurol, 13*(3), 227-231. doi:10.1002/ana.410130302 [doi]. Retrieved from PM:6847134
Pottgen, J., Rose, A., van, de, V, Engelbrecht, J., Pirard, M., Lau, S. et al. (2018). Sexual dysfunctions in MS in relation to neuropsychiatric aspects and its psychological treatment: A scoping review. *PLoS.One., 13*(2), e0193381. doi:10.1371/journal.pone.0193381 [doi];PONE-D-17-19759 [pii]. Retrieved from PM:29486006
Pourhosein, R. (2021). The impact of self-review intervention method in reducing depression symptoms. *Iran J Psychiatry, 16*(1), 111-115. doi:10.18502/ijps.v16i1.5386 [doi];IJPS-16-111 [pii]. Retrieved from PM:34054990
Pourhosein, R. (2010). *Symptoms of reduced depression using the self-review method*. Tehran,

Iran: Laklak Publishing.

Safaei Firoozabadi, S., Pourhosein, R., Gholamali Lavasani, M. (2013). The effect of self-review method on symptoms of stress, anxiety, and depression in cardiac patients. *Journal of Psychological Sciences*, 48 (12).

Salar, T., Pourhosein, R., Besharat, M. A., Gholamali Lavasani, M. (2013). The effectiveness of the "self-review method" on auto-negative thoughts in depressed women. *Journal of Psychological Sciences*, 48.

Schwartz, C. E., Coulthard-Morris, L., Zeng, Q., & Retzlaff, P. (1996). Measuring self-efficacy in people with multiple sclerosis: A validation study. *Arch Phys Med Rehabil., 77*(4), 394-398. doi:S0003-9993(96)90091-X [pii];10.1016/s0003-9993(96)90091-x [doi]. Retrieved from PM:8607766

Stuifbergen, A. K., Becker, H., Blozis, S., Timmerman, G., & Kullberg, V. (2003). A randomized clinical trial of a wellness intervention for women with multiple sclerosis. *Arch Phys Med Rehabil., 84*(4), 467-476. doi:10.1053/apmr.2003.50028 [doi];S0003-9993(02)04846-3 [pii]. Retrieved from PM:12690582

Summerday, N. M., Brown, S. J., Allington, D. R., & Rivey, M. P. (2012). Vitamin D and multiple sclerosis: review of a possible association. *J Pharm Pract, 25*(1), 75-84. doi:0897190011421839 [pii];10.1177/0897190011421839 [doi]. Retrieved from PM:21987526

Sundstrom, P., & Nystrom, L. (2008). Smoking worsens the prognosis in multiple sclerosis. *Mult.Scler., 14*(8), 1031-1035. doi:1352458508093615 [pii];10.1177/1352458508093615 [doi]. Retrieved from PM:18632778

Tanhaye Reshvanlo, F., Soleimanian, A. A. Psychometric properties of Multiple Sclerosis Self-Efficacy Scale. J Res Behav Sci 2014; 12(1): 9-18.

Yaghoobi Rad, M., Pourhosein, R., Gholamali Lavasani, M. (2016). Evaluation of the effectiveness of the self-review method in reducing stress, anxiety, and depression in patients with Multiple Sclerosis (MS). *Journal of Psychological Sciences*, 15 (60), 433-444.

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Book Review on Two Helpful and Well-Written guidebooks on the Corona Pandemic

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Book Review

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Introduction

There are now several guidebooks in English that provide information on the various aspects of the Corona pandemic. As a rule, guidebooks are aimed at different target groups. The language and arguments of each guidebook are therefore adapted to the respective target group. Further distinctions between the guidebooks include the scope, differentiation, and depth of the information and education. The books are small guides for everyone, which briefly explain the essential aspects of the pandemic. They are aim at treatment personnel who are involved in therapy, education, or social work. In them you will find specialist information. Moreover, the books are guides that provide information according to the current state of research. The two books reviewed in the present text are guidebooks that reveal quite pragmatic, immediate tips and tricks that are intended to help readers regain their emotional and mental balance, to become aware of themselves and their respective emotional state, and to encourage positive thinking.

"Stay safe, stay strong - a guide for psychological self-adjustment in the epidemic period" (2020)
Shanghai Scientific and Technical Publishers, Shanghai
Available at:
In English:
https://books.google.de/books/about/Stay_Safe_Stay_Strong_a_Guide_for_Psycho.h tml?id=1ZAezgEACAAJ&redir_esc=y
In German:
https://www.amazon.de/Bleibt-achtsam-bleibt-stark-Psychosozialer/dp/3935043112
In Chinese:
https://www.amazon.cn/dp/B084JRRY3G

In the recently published book by Zhao Xudong and Liu Zhongmin et al., different perspectives are illuminated in a linguistically easy-to-read form and factually comprehensible manner. It was published in China and mirrors the deep experience of Chinese experts who were the first to face the corona pandemic in the world.

The book is particularly distinguished by two aspects:

- Not only is it written for a specific target group with a very special interest, but it also integrates differentiated factual, linguistically well presented, and understandable information. The handy format and manageable size, and the clear structure in easily digestible parts distinguish the book as a guidebook that is professionally serious and competent on the one hand, and descriptive and pragmatic on the other hand.
- Since the book is now available in Chinese and German worldwide and has now been read by more than 3 million people, these facts alone speak for themselves and for the importance and the acceptance of the book.
- The book has been written by proven experts in China. These experts embody decades of experience in dealing with various regional and global pandemics and severe disasters. The book therefor reflects the concrete experience of the Chinese experts. After all, they have now been dealing with the pandemic the longest, globally speaking.

"Stay mindful/safe, stay strong" touches the people's great need for information. It encourages people to be awake to their own emotional moods, without falling into hysteria and panic. The book also justifiably sees itself as an impetus to self-help, and thus, strengthens not only the need for information, but also the search for and reliance on people's own emotional resources.

Key terms in the book include "stress," "emergency response," and "the psychological treatment of increasing post-traumatic stress disorder (PTSD) after a disaster." The authors relate their statements to personal experience, especially at the beginning of the pandemic, to experience with those affected, and their own professional experience as helpers, medical staff, and therapists.

To sum up, the guidebook can be divided into the following main parts:

The pandemic affects everyone everywhere and at all times.

- It presents conclusions that can be drawn from the pandemic experience for treatment providers and medical and emergency personnel.
- Coping better with quarantine and isolation that may be imposed is best accomplished by experiencing connectedness with others, with friends, with family, and with the social community.
- Catastrophes, and the pandemic is such a catastrophe, end at the some point.

Keeping this in mind means to believe in your own resilience and inner resources.

Guidelines for emergency intervention

- Tips for infection prevention
- Tips for domestic quarantine

Practical help against fear - what you can do for yourself in times of crisis (2020)

Publisher Eigenverlag, Freiburg, Germany

ISBN: 0798635529256

Available at:

https://www.amazon.de/s?k=Ulsamer+fear&__mk_de_DE=%C3%85M%C3%85%C5%BD%C3%95%C3%91&ref=nb_sb_noss

This small book presents methods that the author has developed and passed on during 40 years of practical work as a psychotherapist. The exercises stem from

trauma therapy, behavioral therapy, systemic therapy, existential psychotherapy, NLP, and family constellations. The author also uses these exercises himself in his everyday life.

Conquer the fear and it is over - unfortunately, this is not possible in times of the corona virus and other crises. A single action is of no use. More comprehensive strategies for short-, medium-, and long-term solutions are needed. The more one understands about the background of fear, the easier it is to follow such new paths.

The book is divided into 5 topic sections. If you have never dealt with the topic of anxiety before and you are currently repeatedly experiencing anxiety attacks, the author advises you to start with the first two chapters. First, the book deals with anxiety as a physical feeling and how to deal with this biological fear. Then, we look into the thoughts that create anxiety.

If existential fears or fears about one's health or one's loved ones permanently torment one massively, one should start with chapter 3 about the roots of fear. The current intensity of one's fears is often the result of old personal experiences or experiences with parents and of ancestors. "The war is not over yet" is a subchapter. Even though one may not yet understand why one's fear is so overwhelming, this chapter is very important. However, when you look in these directions, the scales fall from your eyes and you regain your ability to act in the present.

Finally, there is a chapter on fears deriving from the future, where death awaits each of us. Under normal circumstances, one suppresses constant change and finiteness to the best of one's ability. At the present moment, these realizations are coming closer. Herewith, grief and pain influence life intensively. Finally, in the last chapter, the question remains, what attitudes to life can help one here and now to leave behind fears.

The convincing and encouraging appeal of the author therefore is: “Become active!” Sometimes, in the book the author directly asks questions that help one to reflect on oneself and one's life situation. In addition, the author suggests exercises to deal with fears and thoughts in a practical way. If you follow the author's recommendations, new forces for action will arise from your own fears in order for you to cope with the crisis in the best possible way.

All in all, the book is a day`s little helper. It is practical, based on a yearlong experience, and written in a language which everybody understands and which motivates and encourages people to become active again in their life.

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Conflict of Interests

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Stressors among Undergraduate First-Year Medical Students at a Nigerian Private University: A Descriptive Cross-Sectional Study

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Quantitative Study

Abstract

Background: Stressors among medical students have been observed as a pervasive problem in recent times. This has continued to be a devastating challenge affecting students' academic performance as well as their general well-being. The main objective of this study is to examine the factors that cause stress among first-year undergraduate medical students at a Nigerian private university.

Methods: A descriptive cross-sectional study design was used. An adaptation of the Burge University Student Stress Scale was used to develop the questionnaire. 224 first-year medical students enrolled in the College of Medicine and Health Sciences of Afe Babalola University, Ado-Ekiti, Nigeria, were sampled. Data were collected and analysed using SPSS software.

Results: The mean age of the students was 17.30 ± 1.05 years. The majority were girls (72.2%), Christians (85.8%), less than 18 years old (69.8%), and received a monthly allowance of less than 60000 (85.4%) Nigerian Naira (₦). Getting good enough grades for the next level (65.1%), fear of failure (67.0%), fear of disappointing the family (62.8%), getting access to the internet (57.5%), food served at the university cafeteria (67.0%), electricity supply (61.3%), and water supply (71.7%) were some of the stressors identified.

Conclusion: This study found the number of materials to study, getting good enough grades for the next level, fear of failing, and disappointing family amongst others as sources of stress among first-year medical students.

Keywords: Stress; Medical students; Cross-sectional study; University; Nigeria

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Introduction

Medical training is exceptionally distressing when compared with other professional curricula (Salgar, 2014). Moreover, stress plays an inevitable role in medical students' life which may be as a result of different high inward and outward assumptions geared towards them. According to Fasoro, et al. (2019), stress is an imminent experience that emanates as a result of the composite interplay between humans and their environment (Fasoro, Oluwadare, Ojo, & Oni, 2019). This happens when resources available are inadequate to manage situational requirements and pressing factors. Medical students are notably susceptible to the difficulties and challenges accompanied by stress. Salam, et al. (2013) also describe stress as a situation whereby an individual is disturbed both physically and psychologically due to interaction with his/her domain which is observed as a peril to the health and comfort of such person (Salam, Yousuf, Bakar, & Haque, 2013). Stress among medical students can develop into a worrisome situation that may be viewed as a "profession failure" (Kadapatti & Vijayalaxmi, 2012). The rising rates of stress are observed to influence the health along with the educational achievements of students (Hamaideh, 2011). Acquiring medical knowledge has for a long time been universally perceived as including various stressors that can influence students' wellbeing (Oku, Owoaje, Oku, & Ikpeme, 2015).

Soliman (2014) opined that the degree of pressure among clinical undergraduate students relies upon the clinical educational program, assessment framework, and the organization of the clinical school. Some of the common stressors indicated in the academic context include heavy workload, inadequate time allocation, interpersonal relationships, and rivalry among equals (Fairbrother & Warn, 2003). Other determining elements comprise financial difficulties, changes in the living atmosphere, and regulating individual and educational life (Biron, et al, 2008; Chernomas & Shapiro, 2013; Jimenez, et al, 2010; Moscaritolo, 2009).

The academic institution plays a significant role in determining the stress undergone by medical undergraduates. Some of the challenges entail congested classrooms, institution marking strategy, lack of amenities (Awino & Agolla, 2008), boundlessness of schedule (Agrawal & Chahar, 2007; Sreeramareddy, et al, 2007), extended periods of study time, and assumptions for repetitive learning (Deb, et al, 2015). Parents and institutions constantly infuse the fear of non-success/failure which influences medical students' self-worth and composure. Ang and Huan (2006) indicated that raised expectations remained one of the causes of high stress levels (Ang & Huan, 2006).

Several studies have illustrated that stress is significantly high among medical students in their first year, as they are newly exposed to a more challenging phase of life and experience. Melaku, et al. (2015) observed in their study that a high level of stress was common among the newly-admitted medical students who were in their first year of experience, while it decreased as they progressed in their year of study (Melaku, Mossie, & Negash, 2015). The possible reason for this could be as a result of gradual adjustment to the learning system and environment. The high stress level has been observed to be a leading cause of anxiety, depression, irregular diet, alcohol or illicit drug use, and other physical and health complications. This high level of pervasiveness among medical students shows that stress as an enormous medical condition cannot be overemphasized. A less stressful academic life could be determined by the early identification of modifiable stressors which thus, enhances their academic performance as medical graduates (Abouammah, Irfan, Marwa, Zakria, & Al Faris, 2020). This study aimed to identify stressors among first-year

undergraduate medical students at a private Nigerian university.

Methods

A descriptive cross-sectional study design was used. The study was conducted at Afe Babalola University, Ado-Ekiti, Nigeria, which is a privately owned university with over 6850 students. The university has two annexes and six colleges which are Postgraduate Studies, Law, Sciences, Social and Management Sciences, Engineering, and Medicine and Health Sciences. First-year medical students enrolled in the College of Medicine and Health Sciences were included in the study. Data were collected using a semi-structured validated questionnaire. An adaptation of Burge (2009) University Student Stress Scale was used to develop the questionnaire. The face and content validity were ascertained by experts in the departments of Public Health and Community Medicine, Afe Babalola University. The questionnaire comprises sections A and B. The socio-demographic characteristics such as age, ethnicity, gender, monthly income, and religion make up section A. The stress items in section B include 40 items on what students consider as stressors which are measured by a 4-point Likert scale ranging from "strongly disagree" to "strongly agree" with a score ranging from 1 to 4 for each item. "Strongly agree" and "agree" were recoded to "Yes" (1), while "strongly disagree" and "disagree" were recoded to "No" (0). To assess the internal consistency of the scale, the Cronbach's alpha test was run. The stress scale consisting of 40 items was found to be highly reliable (α = 0.887).

The sample size was estimated using a single population proportion formula for a cross-sectional study design:

$$n = \frac{Z^2{}_{1-\alpha/2} P(1-P)}{d^2}$$

$Z^2{}_{1-\alpha/2}$ = Standard normal value at 95% confidence interval (CI) = 1.96; P = Prevalence of excessive academic workload as a stressor among undergraduate medical students = 82.3% (Oku, et al, 2015); d = Marginal error = 5%; the estimated sample size was 224 respondents.

Ethical approval was sought and obtained from Afe Babalola University Ethical Committee before the respondents were approached. All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional and/or National Research Committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The purpose and benefits of the research were clearly explained to the respondents before the questionnaires were self-administered. Rights to refuse participation were spelt out to the students. The confidentiality of their responses and their anonymity was fully guaranteed. Data were collected and analysed using SPSS software (version 25.0, IBM Corporation, Armonk, NY, USA). Descriptive statistics were presented as frequencies with their percentages, and means with their standard deviation (SD).

Results

224 questionnaires were administered to the respondents. However, only 212 questionnaires were retrieved which gave a response rate of 94.6%.

Table 1 shows that the mean age was 17.30 ± 1.05 years. The majority were Christians (85.8%), less than 18 years old (69.8%), girls (72.2%), and received a monthly allowance of less than ₦60000 (85.4%).

Table 1. Socio-demographic characteristics (n = 212)

Variable	Value
Age (year)	
< 18	148 (69.8)
18 and above	64 (30.2)
Mean age	17.30 ± 1.05
Gender	
Boys	59 (27.8)
Girls	153 (72.2)
Religion	
Christianity	182 (85.8)
Islam	28 (13.2)
Others	2 (1.0)
Ethnicity	
Yoruba	53 (25.0)
Hausa	12 (5.7)
Igbo	56 (26.4)
Others	91 (42.9)
Monthly allowance*	
Less than ₦60000	181 (85.5)
₦60000–₦99999	24 (11.3)
₦100000 and above	7 (3.3)

Data are presented as number and percentage or mean ± standard deviation (SD)
*₦410 Nigerian Naira (NGN) = $1 United States Dollar (USD)

Table 2 shows that the number of materials to study (69.3%), studying for tests and exams (61.3%), handling the academic workload (59.9%), getting good enough grades for the next level (65.1%), high-pressure periods, when lots of assessment is due (69.3%), getting everything done (68.9%), trying to live a balanced lifestyle (61.8%), fear of failing (67.0%), fear of disappointing the family (62.8%), getting access to the internet (57.5%), food served at the university cafeteria (67.0%), electricity supply (61.3%), and water supply (71.7%) were the stressors reported by the respondents.

Discussion

The aim of this study was to identify factors that cause stress among first-year undergraduate medical students at a Nigerian university. The academic domain brings into play unintended stress, especially among medical students because of the rigour and volume of work. Many medical undergraduate students experience stress at some point in their medical training. However, the sources and intensity of the stress might differ across levels. According to our findings, many of the students found the number of materials to study (69.3%) as a stressor, although this is a little higher than what was reported by a study conducted in Tamil Nadu, India, which found vastness of academic curriculum (61.5%) as a determinant of stress (Anuradha, Dutta, Raja, Sivaprakasam, & Patil, 2017). The slight difference in the result could be because of the fact that the latter study was done among undergraduate medical students and not just first-year students alone. This may reflect the difficulty that is associated with the transition from secondary to tertiary institution, where they are expected to shift from the traditional teacher-centred teaching methods to self-directed and student-centred teaching methods, and also take responsibility for their learning.

Handling the academic workload (59.9%) was identified as one of the stressors among first-year medical students; this is in congruence with a study conducted in Florida, USA, which reported that academic workload emerged as the top stressor across all years among medical students but found it to be the highest among first-year medical students (Hill, Goicochea, & Merlo, 2018).

Table 2. Stressors among undergraduate first-year medical students (n = 212)

Items	Yes [n (%)]	No [n (%)]	Missing [n (%)]
Handling the academic workload	127 (59.9)	79 (37.3)	6 (2.8)
Studying for tests and exams	130 (61.3)	82 (38.7)	0 (0)
Sitting tests and exams	96 (45.3)	112 (52.8)	4 (1.9)
Attending classes	84 (39.6)	126 (59.4)	2 (1.0)
Amount of materials to study	147 (69.3)	62 (29.3)	3 (1.4)
Getting good enough grades for the next level	138 (65.1)	70 (33.0)	4 (1.9)
High-pressure periods, when lots of assessment is due	147 (69.3)	58 (27.4)	7 (3.3)
Group-work assignments	81 (38.2)	124 (58.5)	7 (3.3)
Not being able to manage my time effectively	113 (53.3)	97 (45.8)	2 (0.9)
Finding time for both university and leisure activities	117 (55.2)	93 (43.9)	2 (0.9)
Inconvenient timetabling	113 (53.3)	94 (44.3)	5 (2.4)
Getting everything done	146 (68.9)	61 (36.8)	3 (1.4)
Trying to live a balanced lifestyle	131 (61.8)	78 (36.8)	3 (1.4)
Trying to feel OK about myself	87 (41.1)	122 (57.5)	3 (1.4)
Fear of failing	142 (67.0)	69 (32.5)	1 (0.5)
Dealing with my personal issues	108 (50.9)	104 (49.1)	0 (0)
Not being able to think clearly	81 (38.2)	130 (61.3)	1 (0.5)
Feeling like I'm not intelligent enough to be in medical school	75 (35.4)	134 (63.2)	3 (1.4)
Not being sure whether I'm studying the right degree	75 (35.4)	129 (60.8)	8 (3.8)
Loneliness	37 (17.4)	170 (80.2)	5 (2.4)
My physical health	67 (31.6)	143 (67.5)	2 (0.9)
Fear of disappointing my family	133 (62.8)	77 (36.3)	2 (0.9)
Competing with other students	99 (46.7)	111 (52.4)	2 (0.9)
Not having enough support from others	63 (29.7)	146 (68.9)	3 (1.4)
Attitude of teaching staff towards students	95 (44.8)	115 (54.3)	2 (0.9)
Approaching teaching staff for help	108 (50.9)	103 (48.6)	1 (0.5)
Delays in marking and feedback	94 (44.4)	112 (52.8)	6 (2.8)
Lack of relevance of learning tasks to my career	92 (43.4)	113 (53.3)	7 (3.3)
Paying university fees	64 (30.2)	145 (68.4)	3 (1.4)
Family finances	55 (25.9)	151 (71.2)	6 (2.8)
Financial burden of studying “Medicine”	80 (37.8)	130 (61.3)	2 (0.9)
Lack of flexibility in the study options	98 (46.2)	104 (49.1)	10 (4.7)
Quality of university buildings and equipment	80 (37.7)	127 (59.9)	5 (2.4)
Lack of recreational activities on campus	86 (40.6)	122 (57.5)	4 (1.9)
Having to hang around in-between classes	69 (32.5)	136 (64.2)	7 (3.3)
Getting access to the internet	122 (57.5)	89 (42.0)	1 (0.5)
Food served at the university cafeteria	142 (67.0)	65 (30.6)	5 (2.4)
Electricity	130 (61.3)	81 (38.2)	1 (0.5)
Water supply	152 (71.7)	58 (27.4)	2 (0.9)
Accommodation	116 (54.7)	95 (44.8)	1 (0.5)

However, the comparability of both studies is limited because of the instrument used. It is understandable that because of the vastness of the academic curriculum, handling it might pose a measure of stress, especially for first-year medical students who are just transiting from secondary to tertiary institutions. Our study found that getting good enough grades for the next level (65.1%) was a factor that caused stress. A study also reported performance in formative and summative examination (66.0%) as a source of stressor among the first-year medical students (Salgar, 2014). Some other studies also found performance in college and university level examination as the major stressor and found academic performance as one of the stressors which had a median severity of 5, as such it was rated severe (Gazzaz, et al, 2018; Sarkar & Saha, 2015). However, these two latter studies might not be completely comparable because of the different instrument that was employed. Notwithstanding, identifying getting

a good enough grade as a stressor can be attributed to the fact that the number of students who apply to study medicine most times far outweighs the quota and as such, a weeding system is put in place, especially from 1st year to 2nd year to drop those who do not attain good enough grade.

In our findings, we report that trying to live a balanced lifestyle (61.8%) is a stressor. Hill, et al. (2018) reported that conflict with work-life balance emerged as the top stressor across all years among medical students, but it was found to be the highest in first-year medical students. With the unexpected burden of the new environment and new dimension of responsibilities, indeed trying to get their rhythm might constitute stress. Fear of failing (67.0%) was identified as a significant stressor, which is similar to performance anxiety for upcoming examinations felt by 59% of the medical students in India (Bala, et al, 2018). Gade, et al. (2014) also identified fear of failing as a stressor among first-year medical students at NKP Salve Institute of Medical Sciences and Research Center, Nagpur, India (Gade, Chari, & Gupta, 2014).

This study reported fear of disappointing the family (62.8%) as a stressor among first-year undergraduate students; this is in agreement with a study conducted by Salgar (2014) who reported that the most common stress factor reported by participants was high parental expectations (80.9%). The difference in the result might be due to the different environments in which the study was conducted. Many other studies, although done among non-medical undergraduate students, also reported high parental expectation 71.3% (Srivastava, et al, 2020) and 84.2% (Suleyiman & Zewdu, 2018) as a source of stress. This shows that parental expectation has the capability of inducing stress either consciously or subconsciously. Food served at the university cafeteria (67.0%) was identified as a prominent source of stress. The study conducted by Gade, et al. (2014) also identified food in the canteen and hostel as a stressor among medical students. Food served can be a stressor among first-year medical students because of the paradigm shift from homemade food to non-homemade food that could be considered to taste differently and be monotonous. This is compounded by the fact that most private universities like where this study was conducted do not allow students to prepare their meals.

Electricity supply (61.3%) was reported as a stressor among the first-year medical students in this study; this is in contrast with a qualitative study conducted by Khadija Qamar among medical students which found that 73.0% of students were satisfied with the hostel facilities (Qamar, Khan, & Kiani, 2015). The study environment and the method of data collection might be responsible for this. Electricity supply is erratic and a major challenge in most developing countries like Nigeria. Although the private university where the study was conducted has a self-generating electricity supply, the supply to student hostels is often regulated to conserve energy.

Conclusion

This study observed the number of materials to study, getting good enough grades for the next level, fear of failing, and disappointing family amongst others as sources of stress among first-year medical students. Time is changing and so are the increased responsibilities bestowed on medical undergraduates; as such, it is pertinent that educators rise to the occasion and ensure a supportive and conducive learning environment that will foster better student adjustment.

Conflict of Interests

Authors have no conflict of interests.

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References

Abouammah, N., Irfan, F., Marwa, I., Zakria, N., & Al Faris, E. (2020). Stress among medical students and its consequences on health: A qualitative study. *Biomedical Research, 31*(1), 1-8.

Agrawal, R. K., & Chahar, S. S. (2007). Examining role stress among technical students in India. *Soc.Psychol.Educ., 10*(1), 77-91. Retrieved from https://doi.org/10.1007/s11218-006-9010-y

Ang, R. P., & Huan, V. S. (2006). Relationship between academic stress and suicidal ideation: testing for depression as a mediator using multiple regression. *Child Psychiatry Hum.Dev, 37*(2), 133-143. doi:10.1007/s10578-006-0023-8 [doi]. Retrieved from PM:16858641

Anuradha, R., Dutta, R., Raja, J. D., Sivaprakasam, P., & Patil, A. B. (2017). Stress and Stressors among Medical Undergraduate Students: A Cross-sectional Study in a Private Medical College in Tamil Nadu. *Indian J Community Med, 42*(4), 222-225. doi:10.4103/ijcm.IJCM_287_16 [doi];IJCM-42-222 [pii]. Retrieved from PM:29184323

Awino, J. O., & Agolla, J. (2008). A quest for sustainable quality assurance measurement for universities: Case of study of the University of Botswana. *Edu.Res.Rev, 3*(6), 213-218.

Bala, S., Das, S., Jatana, R., Pundeer, R., Kundu, P., & Kaur, R. (2018). The study for sources of stress and management among medical students. *International Journal of Basic & Clinical Pharmacology*, 7(5), 961-965.

Biron, C., Brun, J. P., & Ivers, H. (2008). Extent and sources of occupational stress in university staff. *Work, 30*(4), 511-522. Retrieved from PM:18725713

Burge, J. (2009). *Coping frequency, coping effectiveness, and personality factors in university students*. [Honours Thesis]. Canberra, Australia: University of Canberra, Australia. [Unpublished].

Chernomas, W. M., & Shapiro, C. (2013). Stress, depression, and anxiety among undergraduate nursing students. *Int J Nurs Educ Scholarsh., 10*. doi:10.1515/ijnes-2012-0032 [doi];/j/ijnes.2013.10.issue-1/ijnes-2012-0032/ijnes-2012-0032.xml [pii]. Retrieved from PM:24200536

Deb, S., Strodl, E., & Sun, J. (2015). Academic Stress, Parental Pressure, Anxiety and Mental Health among Indian High School Students. *International Journal of Psychology and Behavioural Sciences, 5*(1), 26-34.

Fairbrother, K., & Warn, J. (2003). Workplace dimensions, stress and job satisfaction. *J.Manag.Psychol., 18*(1), 8-21. doi:doi:10.1108/02683940310459565. Retrieved from Emerald Group Publishing Limited.

Fasoro, A. A., Oluwadare, T., Ojo, T. F., & Oni, I. O. (2019). Perceived stress and stressors among first-year undergraduate students at a private medical school in Nigeria. *J.Taibah Univ.Medical Sci., 14*(5), 425-430.

Gade, S., Chari, S., & Gupta, M. (2014). Perceived stress among medical students: To identify its sources and coping strategies. *Archives of Medicine and Health Sciences, 2*, 80.

Gazzaz, Z. J., Baig, M., Al Alhendi, B. S. M., Al Suliman, M. M. O., Al Alhendi, A. S., Al-Grad, M. S. H. et al. (2018). Perceived stress, reasons for and sources of stress among medical students at Rabigh Medical College, King Abdulaziz University, Jeddah, Saudi Arabia. *BMC Med Educ, 18*(1), 29. doi:10.1186/s12909-018-1133-2 [doi];10.1186/s12909-018-1133-2 [pii]. Retrieved from PM:29471824

Hamaideh, S. H. (2011). Stressors and reactions to stressors among university students. *Int J Soc Psychiatry, 57*(1), 69-80. doi:57/1/69 [pii];10.1177/0020764009348442 [doi]. Retrieved from PM:21252357

Hill, M. R., Goicochea, S., & Merlo, L. J. (2018). In their own words: stressors facing medical students in the millennial generation. *Med Educ Online, 23*(1), 1530558. doi:10.1080/10872981.2018.1530558 [doi]. Retrieved from PM:30286698

Jimenez, C., Navia-Osorio, P. M., & Diaz, C. V. (2010). Stress and health in novice and experienced nursing students. *J Adv Nurs, 66*(2), 442-455. doi:JAN5183 [pii];10.1111/j.1365-2648.2009.05183.x [doi]. Retrieved from PM:20423427

Kadapatti, M. G., & Vijayalaxmi, A. (2012). Stressors of academic stress--a study on pre-university students. *Indian Journal of Scientific Research*, 171-176.

Melaku, L., Mossie, A., & Negash, A. (2015). Stress among Medical Students and Its Association with Substance Use and Academic Performance. *J.Biomed.Educ., 2015*, 149509.

Moscaritolo, L. M. (2009). Interventional strategies to decrease nursing student anxiety in the clinical learning environment. *J Nurs Educ, 48*(1), 17-23. doi:10.3928/01484834-20090101-08 [doi]. Retrieved from PM:19227751

Oku, A., Owoaje, E., Oku, O., & Ikpeme, B. (2015). Prevalence of stress, stressors and coping strategies among medical students in a Nigerian medical school. *Afr.J.Med.Health Sci., 14*(1), 29-34.

Qamar, K., Khan, N. S., Kiani, M. R. B. (2015). Factors associated with stress among medical students. *J Pak Med Assoc*, 65(7), 753-5.

Salam, A., Yousuf, R., Bakar, S. M., & Haque, M. (2013). Stress among Medical Students in Malaysia: A Systematic Review of Literatures. *International Medical Journal (1994), 20*(6), 649-655.

Salgar, S. (2014). Stress in first year medical students. *International Journal of Biomedical and Advance Research, 5*(1), 1-6.

Sarkar, D., & Saha, J. (2015). Assessment of stress among first year medical students of Chhattisgarh. *IOSR J Dental Med Sci, 14*(8), 37-40,

Soliman, M. (2014). Perception of stress and coping strategies by medical students at King Saud University, Riyadh, Saudi Arabia. *J.Taibah Univ.Medical Sci., 9*(1), 30-35.

Sreeramareddy, C. T., Shankar, P. R., Binu, V. S., Mukhopadhyay, C., Ray, B., & Menezes, R. G. (2007). Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Medical Education, 7*(1), 26.

Sreeramareddy, C. T., Shankar, P. R., Binu, V. S., Mukhopadhyay, C., Ray, B., & Menezes, R. G. (2007). Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Medical Education, 7*(1), 26.

Srivastava, R., Jyoti, B., Pradhan, D., Kumar, M., & Priyadarshi, P. (2020). Evaluating the stress and its association with stressors among the dental undergraduate students of Kanpur city, India: A cross-sectional study. *J Educ Health Promot, 9*, 56. doi:10.4103/jehp.jehp_405_19 [doi];JEHP-9-56 [pii]. Retrieved from PM:32489991

Srivastava, R., Jyoti, B., Pradhan, D., Kumar, M., & Priyadarshi, P. (2020). Evaluating the stress and its association with stressors among the dental undergraduate students of Kanpur city, India: A cross-sectional study. *J Educ Health Promot, 9*, 56. doi:10.4103/jehp.jehp_405_19 [doi];JEHP-9-56 [pii]. Retrieved from PM:32489991

Suleyiman, M., & Zewdu, A. (2018). Prevalence and associated factors of stress among undergraduate students in Ambo University: Implication for Intervention. *International Journal of Psychology and Counselling, 10*(4), 29-39.

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A Structural Model for the Prediction of Perceived Social Support Based on Mindfulness and Perceived Stress Mediated by Cognitive Emotion Regulation in Patients with Ulcerative Colitis

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Quantitative Study

Abstract

Background: Ulcerative colitis (UC) is one of the major chronic types of inflammatory bowel diseases (IBD) which can be affected by psychological factors. This study aimed to develop a structural model to predict perceived social support based on mindfulness and perceived stress mediated by cognitive emotion regulation in patients with UC.

Methods: The research method was cross-sectional, correlational. The statistical population of this study consisted of all patients with UC referring to gastrointestinal clinics in districts 4 and 7 of Tehran, Iran, in 2019. Through purposive sampling, 261 people were selected as the study participants. The research instruments included the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1998), Freiburg Mindfulness Inventory (FMI-SF; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006), Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), and Cognitive Emotion Regulation Questionnaire (CERQ; Garnfsky & Craig, 2006). The collected data were analyzed using SPSS software and LISREL software. In addition, data were analyzed using structural equation analysis.

Results: The results demonstrated that mindfulness had a positive relationship with perceived social support and cognitive emotion regulation ($P < 0.001$). Perceived stress had a negative relationship with perceived social support and cognitive emotion regulation ($P < 0.001$). There was also a positive relationship between cognitive emotion regulation and perceived social support in patients with UC ($P < 0.001$). The findings also suggested that there was an indirect relationship between mindfulness and social support mediated by cognitive emotion regulation ($\beta = 0.22$; $P < 0.05$), but there was no indirect relationship between perceived stress and perceived social support mediated by cognitive emotion regulation ($\beta = 0.09$; $P > 0.05$).

Conclusion: It can be concluded that cognitive emotion regulation has a mediating role between mindfulness and perceived social support in patients with UC. Although there were direct relationships between perceived stress, perceived social support, and cognitive emotion regulation, there was no indirect relationship between perceived stress and perceived social support mediated by cognitive emotion regulation in patients with UC.

Keywords: Cognitive emotion regulation; Mindfulness; Perceived social support; Perceived stress; Ulcerative colitis

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Introduction

Inflammatory bowel disease (IBD) is a group of idiopathic and chronic intestinal diseases including Crohn's diseases (CD) and ulcerative colitis (UC) that is limited to the large intestine (Chiba, Sugawara, Komatsu, & Tozawa, 2018). In 2012, the annual incidence of UC in Iran was reported at 3.11 per 100,000 people (Mohajerani, Haghayegh, & Adibi, 2017). The etiology of IBD is largely unknown; however, the confirmed hypothesis behind this is that the disease is caused by interactive genetic and environmental factors. Substantial progress has been made in identifying the genes responsible for the development of the disease, but the environmental factors causing early onset and recurrence are less known (Kemp et al., 2018). Perceived stress is thought to be one of the most important environmental factors in relation to the of IBDs, on which many types of research have been conducted. The term stress was first introduced by Hans Selye, who stated that the gastrointestinal tract and immune system in individuals are particularly responsive to life stresses (Parian & Limketkai, 2016). People's cognitive evaluations of stress and the enjoyment of supportive resources that enable them to cope with environmental stresses are referred to as social support. This term refers to the mechanisms by which interpersonal communication protects people from the harmful effects of stress (Ghorbani Taghlidabad & Tasbihsazan Mashhadi, 2017).

Support and good social relations contribute significantly to increasing health, especially the health of patients with UC. This is because social support has been very promising and helpful in creating and materializing the real and emotional needs of people and that is why belonging to social networks within the community and consideration of mutual needs make people feel respect, value, love, and friendship (Xie et al., 2018). It also improves the survival and psychological well-being of people (Wong, Wu, Gregorich, & Perez-Stable, 2014); however, perceiving support is more important than receiving it. In other words, the perception and attitude of patients with UC towards the support they receive is far more important than the amount of support provided (Mohamad, Alavi, Mohamad, & Aun, 2016).

In the area of mental health, mindfulness is another variable that has received much attention in recent decades. Because of its underlying mechanisms such as acceptance, increased awareness, desensitization, presence the moment, and observation without judgment, mindfulness can reduce the symptoms and consequences of the disease, increase the effectiveness of treatment, and prevent the recurrence of suicidal ideation in people (Hsu, Grow, & Marlatt, 2008). Using mindfulness-based exercises, the individual learns to provide alternative responses to emotional inconveniences and reduce conditioned responses. Mindful individuals learn to accept experiences as distinct experiences and as a transient and thematic state of change (Witkiewitz & Bowen, 2010). According to previous research, balanced meditation, mindfulness meditation, Vipassanā meditation, yoga, and other meditation techniques have had impressive effects on improving the rehabilitation of the clients. Studies have suggested that mindfulness therapy is associated with a variety of health outcomes such as reducing pains, anxiety, depression (Hoffman & Gómez, 2017), and stress (Carpenter, Sanford, & Hofmann, 2019). Another research demonstrated that mindfulness improves mood, and its short-term training reduces depression and increases clients' mental health (Bohlmeijer, Prenger, Taal, & Cuijpers, 2010). Moreover, mindfulness was found to improve symptoms of stress and anxiety, and increase self-esteem and quality of life (QOL) (Goldin & Gross, 2010).

One of the most prominent strategies for examining the problems related to emotion processing and regulation is cognitive emotion regulation. Cognitive emotion regulation refers to some strategies to reduce, increase, or maintain emotional experiences (Moghaddam Poor & Sepahvand, 2018). Cognitive emotion regulation is the intrinsic aspect of tendencies towards emotional responses. Cognitive emotion regulation is the activities used to change or modify an emotional state. According to the study by Ghorbani Taghlidabad and Tasbihsazan Mashhadi (2017), people with UC suppress many of their emotional experiences and express more negative emotions and social inhibition. Emotional inhibition and negative emotions increase cortisol secretion, increase the activity of the hypothalamic-pituitary-adrenal axis, and impair the regulation of physiological responses to stress, all of which cause gastrointestinal symptoms (Trindade, Ferreira, & Pinto-Gouveia, 2015). A mature personality with high cognitive-emotional regulation power avoids emotion suppression and inhibition, identifies the source of his/her problems and conflicts, seeks to resolve them, and incurs no costs on healthcare (Hood et al., 2018).

Unofficial reports suggest a significant rise in the prevalence of IBDs such as UC in Iranian society (Mohajerani et al., 2017). The disease incurs high costs and the drug treatment alone has not had much effect on reducing symptoms and increasing the life function of gastrointestinal patients. In addition, IBD is a chronic disease and persists for a long time, which is an indication of psychological factors in the etiology of the disease. Hence, it is critical that research of this kind be performed to reduce its psychological and physical symptoms. Concerning the applications of this research, one would argue that, at present, inter-disciplinary relationship has been one of the factors for the success and progress of this body of knowledge. The cooperation of experts of internal medicine, i.e., gastroenterologists, with psychologists and psychiatrists can have more effects on patients with UC, and since UC is closely related to psychological components, this seems necessary. Moreover, most researches have demonstrated that psychological therapies along with medical therapies can have great positive effects on the symptoms of UC, and thus, reduce the cost of treatment for these patients. Since UC is on the rise in developing countries and psychological variables play an undeniable role in the development and persistence of this disease, all mental aspects should be taken into account in the treatment of these patients. This will certainly help these patients improve their QOL and reduce the psychological, physical, economic, and social pressures caused by this disease. Considering the importance of relationships between psychological factors affecting patients with UC and given that there has so far been no research to examine the above-mentioned variables in a structural model, this study was conducted to examine the mediating role of cognitive emotion regulation in the relationship of mindfulness and perceived stress with perceived social support.

Methods

The present study was conducted with the aim to provide a structural model to predict perceived social support based on mindfulness and perceived stress mediated by cognitive emotion regulation in patients with UC. The data were collected through a descriptive-correlative method via structural equation modeling. The statistical population consisted of all patients with UC referring to gastrointestinal clinics in districts 4 and 7 of Tehran, Iran, in February and March 2020. This research was conducted via a purposive sampling method. In structural equation modeling, the sample size can be determined between 5 and 15 observations for each measured variable: $5q < n < 15q$, where q represents the number of variables observed or the

questionnaire items (questions) and n is the sample size (Hooman, 2005). In this study, 5 subjects were considered for the sample size of each item, thus totaling 241 subjects. However, since many of the questionnaires were likely to be incompletely answered, it was decided to include 270 participants in the study, and finally, 261 completed questionnaires were returned. The questionnaires completed by people with UC were examined. The study inclusion criteria were having a minimum literacy to understand the questionnaire items diagnosis of UC based on the views of gastroenterologists and the results of endoscopic, histological, and radiological examinations in the studied group. The exclusion criteria included leaving 10% of the items unanswered and patients' unwillingness to continue participating in the study. Participating in this research was optional and all participants were free to quit at any time. The identities of the participants in this research were kept confidential.

Multidimensional Scale of Perceived Social Support: The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet, & Farley, 1988) measures an individual's perceived social support from friends and family. This scale was developed by Zimet et al. (1988) to measure the level of perceived social support from friends, family members, and important individuals in one's life. The scale consists of 12 items that are scored based on a 7-point Likert scale ranging from strongly disagree to strongly agree. The total questionnaire score is obtained by summing up the item scores. In this scale, the minimum score is 12 and the maximum is 84. The Cronbach's alpha coefficient has been reported between 0.71 and 0.89. Salimi et al. (2009) reported the Cronbach's alpha coefficient of the 3 dimensions of social support from family, friends, and important people in one's life to be 0.89, 0.86, and 0.82, respectively.

Freiburg Mindfulness Inventory: The short form of the Freiburg Mindfulness Inventory (FMI-SF; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006) has been extensively examined in many cultures for its psychometric properties (Ghasemi Jobaneh, Arab Zadeh, Jalili Nikoo, Mohammad Alipoor, & Mohsenzadeh, 2015). Buchheld et al. (2001) designed the initial form of the FMI with 30 items (Walach et al., 2006). In this inventory, subjects are asked to answer the items on a 4-point Likert scale (rarely = 1 to almost always = 4). The minimum score in this questionnaire is 14 and the maximum is 56. A higher score indicates higher mindfulness. Ghasemi Jobaneh et al. (2015) investigated the validity and reliability of the Persian version of the FMI-SF. Their findings suggested that the FMI-SF has acceptable and sufficient reliability. In addition, its Cronbach's alpha coefficient was reported to be 0.92, and its test-retest reliability coefficient in a 4-week interval was 0.83.

Perceived Stress Scale: The 4, 10, and 14-item versions of the Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983) are used to measure general perceived stress over the previous month. This form examines responses to assess thoughts and feelings about stressful events, controlling, overcoming, and coping with mental stressors and experienced stress. Each item is scored on a Likert scale ranging from 0 to 4, i.e., never (0), almost never (1), sometimes (2), often (3), and most of the time (4). Items 4, 5, 6, 7, 9, 10, and 13 are scored in reverse (never = 4 to most of the time = 0). It has a cut-off point of 21.8, and higher scores indicate more perceived stress. Cronbach's alpha for this scale in 3 studies was found to be 0.84, 0.85, and 0.86 (Sanaei et al., 2017).

Cognitive Emotion Regulation Questionnaire: The Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, & Kraaij, 2006) is an 18-item scale that evaluates self-regulatory strategies in response to life-threatening and stressful events. The

items are scored on a 5-point Likert scale ranging from 1 (never) to 5 (always). The CERQ includes the 9 subscales of self-blame, other-blame, rumination, catastrophizing, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, and acceptance. A higher score in each subscale indicates more use of that cognitive strategy. The alpha coefficients for the subscales of this questionnaire ranged from 0.71 to 0.81 and the validity coefficients of its subscales were reported to range from 0.48 to 0.61 via test-retest. In Iran, the alpha coefficients of the subscales were reported to range from 0.62 to 0.91 and the validity coefficients of these subscales ranged between 0.75 and 0.88 in a 1-week interval test-retest (Abdullahi et al., 2013).

Having obtained permission from the Research Council, the researcher presented a letter of introduction to the gastrointestinal clinics in Tehran, introduced himself, obtained informed consent, and provided the necessary explanations. Then, participants were selected considering the inclusion and exclusion criteria. Subsequently, the questionnaires were distributed among the selected subjects and were collected after being completed. It is worth noting that the necessary explanations about the objectives of the study, voluntary participation, privacy, confidentiality, non-registration of identification details, the right to withdraw from all stages of data collection in the study, and subjects' consent to participate were provided to the participants. In order to comply with the ethical principles of research, a consent form was provided in which the objectives of the research were explained in full. Participants were asked to read it, and express their consent and indicate if they wished to participate in the research. In order to analyze the data, descriptive and inferential statistical methods were used according to the research questions.

In the descriptive part, descriptive statistics such as mean and standard deviation were used to describe the research variables, and tables, shapes, and graphs were used to present the demographic data. In the inferential section, to answer the research hypotheses, first, the Kolmogorov-Smirnov test was used to determine the normality of the data, and since the data were found to be normal, the structural equation modeling test was performed using LISREL software (version 8.80).

Results

The sample consisted of 147 women (56.32%) and 114 men (43.68%) of 35-65 years of age with the majority being 46-55 years of age (39.08%).

The results presented in table 2 show that among the dimensions of cognitive emotion regulation, the highest mean belonged to mindfulness. The results of implementation of the model in the standardized mode and non-standardized mode along with some of the most important initial model path analysis fit indices are presented in the following table 1 and figure1.

The correlation matrix between the predictive variables shows that all variables are significantly correlated.

The results presented in table 3 suggest that the correlation of all 3 predictive and mediating variables with perceived social support is significant.

Table 1. Frequency distribution of the study sample by age

Statistical indicator	n (%)
Age (years)	
35-45	76 (29.12)
46-55	102 (39.08)
56-65	83 (31.80)
Total	261 (v)

Table 2. Descriptive findings of research subscales

Statistical indicators	Mean ± SD	Kurtosis	Skewness
Scales			
Mindfulness	28.89 ± 5.77	1.20	2.28
Perceived Stress	20.36 ± 4.11	0.67	6.41
Self-blame	5.67 ± 1.48	0.50	-0.79
Other-blame	6.02 ± 1.33	-1.27	0.59
Catastrophizing	6.78 ± 1.64	-0.28	-1.80
Rumination	6.34 ± 1.08	-2.54	7.36
Acceptance	6.06 ± 1.33	-0.74	0.58
Positive refocus	6.19 ± 1.48	-0.37	-0.99
Planning	6.74 ± 1.52	-0.94	-0.43
Positive reappraisal	5.54 ± 1.07	2.90	8.58
Putting into perspective	6.10 ± 1.30	-1.86	2.10
Family support	12.70 ± 3.69	-1.14	0.09
Friends support	14.68 ± 1.19	-2.75	2.95
Support by important individuals in one's life	13.44 ± 2.77	-1.63	1.89
Perceived Social Support	40.82 ± 5.66	-1.24	1.69

In general, when working with the Amos software, each of the obtained indicators alone does not represent the fitness or unfitness of the model, as they should be interpreted together. The values of indicators show that the model is generally in a good position to be explained.

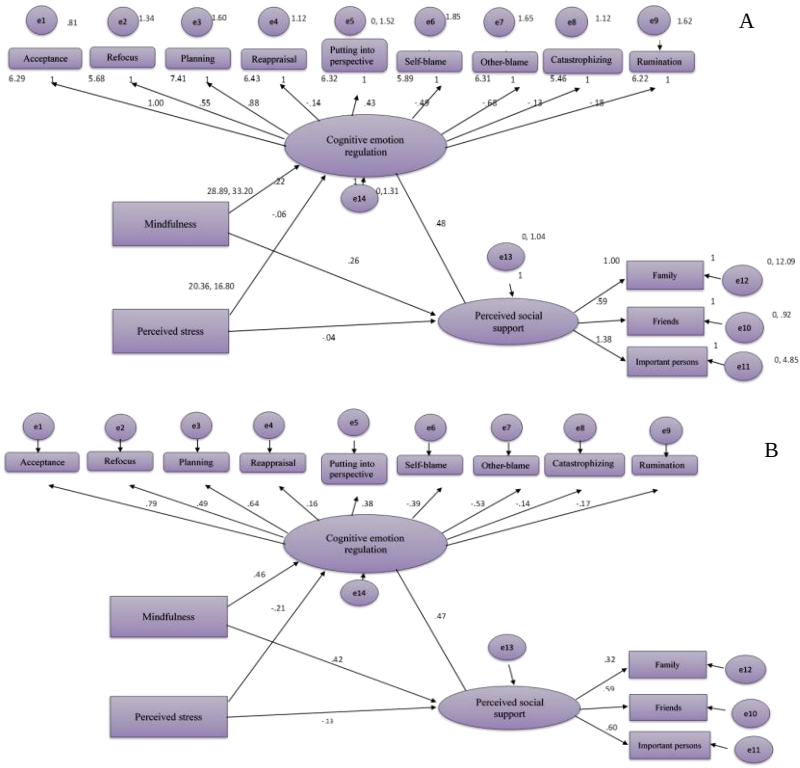

Figure 1. Model in a non-standardized coefficients state (A), Model in a standardized coefficients state (B)

Table 3. Pearson correlation matrix between the research variables

Variables	Mindfulness	Perceived stress	Cognitive emotion regulation	Social support
Mindfulness	1			
Perceived stress	-0.18*	1		
Cognitive emotion regulation	0.37**	-0.16*	1	
Social support	0.49**	-0.24**	0.52**	1

**P < 0.01, *P < 0.05

As table 5 shows, the factors of both factorial load scales are significant at 95%. Considering that in the above tested models the paths between the variables are the same as the research hypotheses, other research hypotheses are tested along with the tables on direct effects.

Table 6 shows that mindfulness has a direct effect on perceived social support, where the relationship between mindfulness and perceived social support is directly equal to t = 5.83 and β = 0.42.

The relationship between perceived stress and perceived social support is directly equal to t = 2.04 and β = -0.13. The relationship between mindfulness and cognitive regulation of emotion is directly equal to t = 6.71 and β = 0.46. The relationship between perceived stress and cognitive emotion regulation is directly equal to t = 2.96 and β = -0.21. The relationship between cognitive emotion regulation and perceived social support is directly equal to t = 7.18 and β = 0.47. Regarding the indirect effect of perceived stress on perceived social support in patients with UC, cognitive emotion regulation is rejected with 95% confidence (P > 0.05).

Discussion

The aim of the present study was to develop a structural model for predicting perceived social support based on mindfulness and perceived stress with a mediating role of cognitive emotion regulation in patients with UC. The results showed that mindfulness and perceived stress had a relationship with perceived social support mediated by cognitive emotion regulation in patients with UC and the model was confirmed to have a good fit.

Table 4. Goodness of fit indices for a fitted conceptual model

Fitness Indices	χ^2/df	RMSEA	AGFI	GFI	CFI
Structural model	1.25	0.05	0.94	0.95	0.96

RMSEA: Root mean Square error of approximation; AGFI: Adjusted goodness of fit index; GFI: Goodness of fit index; CFI: Comparative fit index; RMSEA: Root mean Square error of approximation

Table 5. Coefficients and significance of factor loads of measurement models

Scales	Component	β	T-value	P-value
Cognitive emotion regulation	Acceptance	0.79	10.84	0.001
	Positive refocus	0.49	17.36	0.001
	Planning	0.64	14.31	0.001
	Positive reappraisal	0.16	56.92	0.001
	Putting into perspective	0.38	24.11	0.001
	Self-blame	-0.39	19.70	0.001
	Other-blame	-0.53	15.63	0.001
	Catastrophizing	-0.14	51.20	0.001
	Rumination	-0.17	44.24	0.001
Perceived social support	Support by family	0.33	12.45	0.001
	Support by friends	0.59	31.23	0.001
	Support by important people	0.60	10.52	0.001

Table 6. Coefficients and significance of the direct effect of mindfulness on perceived social support

Criterion variable	Predictive variavble	Effect type	Non-standardized coefficient	β Standardized	Significance value	P-value
Perceieved social suport	Mindfulness	Direct	0.26	0.42	5.83	0.001
Perceieved social suport	Perceived stress	Direct	-0.04	-0.13	2.04	0.030
Cognitive emotion regulation	Mindfulness	Direct	0.22	0.46	6.71	0.001
Cognitive emotion regulation	Perceived stress	Direct	-0.06	-0.21	2.96	0.002
Perceieved social suport	Cognitive emotion regulation	Direct	0.48	0.47	7.18	0.001
Perceieved social suport	Mindfulness	Mediated by cognitive emotion regulation	0.11	0.22	2.58	0.008
Perceieved social suport	Perceived stress	Mediated by cognitive emotion regulation	-0.03	-0.09	1.72	0.090

In line with previous researches, the results showed that mindfulness has a negative relationship with perceived stress, which means by increasing mindfulness, perceived stress decreases. This implies that using methods to increase mindfulness can reduce perceived stress in individuals with UC and ultimately improving their QOL. Furthermore, mindfulness had a positive relationship with emotion regulation in patients with UC. Consistent with prior researches, it was found that when people are in a state of mindfulness, increasing their capacity to accept thoughts and emotions will leave them no opportunity for absorbing negative and dysfunctional thoughts and attitudes, thereby reducing their emotional processing and dysfunctional attitudes and increasing their ability to regulate their emotions more efficiently.

The results also showed that perceived stress has a direct effect on perceived social support in patients with UC. In this regard, it is generally believed that having supportive systems, such as families, work groups, and communities, facilitates stress coping strategies. It has been assumed that social support acts as a mediator between life pressures and physical conditions. The results of the present study revealed that social support is effective in reducing stress in patients with UC, and that increasing social support decreases the level of stress in these people. The results also demonstrated a positive relationship between perceived stress and emotion regulation. It has been argued that affects and emotional disturbances have a biological relationship with stress symptoms. These results can be explained by the fact that patients with UC experience increased intensity of emotion when faced with daily stressful situations, which increases the intensity of stress. The strategies used by patients with UC to reduce their negative emotions can exacerbate the emotions and lead to a kind of emotional dysregulation. When patients with UC try to reduce their emotions, especially their negative emotions, through suppressing and preventing the expression of emotions, especially negative emotions, they intensify them.

A positive relationship has been observed between emotion regulation and perceived social support. It has been shown that social support helps to reduce the perception of stress by influencing the choice of effective or ineffective coping with negative emotions. As researches have shown that cognitive functioning and adaptive strategies can be improved by social supports (Amin Abadi, 2011), it can be argued that receiving social supports from families and friends can help patients with UC to use more adaptive strategies to regulate their emotions.

The results also showed that there is an indirect relationship between mindfulness and perceived social supports via emotion regulation among these patients, which did not apply to the relationship between perceived stress and perceived social support. The results of some studies have also shown that lack of support makes a person vulnerable to psychological consequences such as stress. Perceived support, as an important variable of the social system in critical situations, reduces stress and causes emotional regulation. Thus, the lack of support in these stressful situations and during a disease experience imposes much pressure on the person, causes psychological consequences such as stress, reduced emotional regulation, and renders an individual highly vulnerable to stress. As different mindfulness technics can help patients to pay more attention to the changes in their body sensations and make them more aware of their physical problems, they can help them to find better ways to manage their emotions, and therefore, have more positive insight into their perceptions such as perceived social supports.

This study faced some limitations including limited sample of patients with UC; therefore, it is rational to only generalize the results to the target community, and caution should be taken in generalizing of the results to other communities. Data were collected using self-report questionnaires that may produce response biases. The data collection and analysis in the present study were cross-sectional, and therefore, a causal conclusion cannot be made about the data; thus, it is better to conduct a longitudinal research in this area. The results showed that mindfulness and perceived stress had a relationship with perceived social support mediated by cognitive emotion regulation in patients with UC. Therefore, it is suggested that training courses be held with health psychologists on the application of emotions in the lives of people with UC. According to this study and the confirmation of the relationship between stress and UC and the undeniable role and impact of psychological factors and psychiatric disorders in functional intestinal diseases, a series of experiments should be performed to yield good results.

It is recommended that these patients consult psychologists and counselors. Moreover, the use of stress reduction techniques such as relaxation, social support, breathing exercises, regular exercise, meditation, hypnosis, and biofeedback can be suggested. It is recommended that patients with UC use mindfulness-related methods and techniques to improve emotional regulation. The findings of the present study demonstrate the need for emotion and stress management programs along with common treatment programs in patients with UC. Accordingly, studies on perceived stress with respect to the underlying variables of prediction with a transformational approach, etiology, and phenomenal understanding, make it possible to provide comprehensive programs and appropriate interventions.

Conclusion

It can be concluded that training patients mindfulness technics, stress management, and emotion regulation can help them to establish stronger and healthier relationships and benefit more from social supports.

Conflict of Interests

Authors have no conflict of interests.

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None.

References

Bohlmeijer, E., Prenger, R., Taal, E., & Cuijpers, P. (2010). The effects of mindfulness-based stress reduction therapy on mental health of adults with a chronic medical disease: A meta-analysis. *J Psychosom.Res, 68*(6), 539-544. doi:S0022-3999(09)00415-2 [pii];10.1016/j.jpsychores.2009.10.005 [doi]. Retrieved from PM:20488270

Carpenter, J. K., Sanford, J., & Hofmann, S. G. (2019). The effect of a brief mindfulness training on distress tolerance and stress reactivity. *Behav Ther, 50*(3), 630-645. doi:S0005-7894(18)30135-7 [pii];10.1016/j.beth.2018.10.003 [doi]. Retrieved from PM:31030879

Chai, M. S., & Low, C. S. Low, personality, coping and stress among university students. (2015. *Am. J. Appl. Psycho,* 4(3-1), 33-38.

Chiba, M., Sugawara, T., Komatsu, M., & Tozawa, H. (2018). Onset of ulcerative colitis in the second trimester after emesis gravidarum: Treatment with plant-based diet. *Inflamm.Bowel.Dis, 24*(5), e8-e9. doi:4982893 [pii];10.1093/ibd/izy121 [doi]. Retrieved from PM:29688477

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *J Health Soc Behav, 24*(4), 385-396. Retrieved from PM:6668417

Garnefski, N., & Kraaij, V. (2006). Cognitive emotion regulation questionnaire development of a short 18-item version (CERQ-short). *Pers. Individ. Differ, 41*(6), 1045-1053.

Ghasemi Jobaneh, R., Arab Zadeh, M., Jalili Nikoo, S., Mohammad Alipoor, Z., & Mohsenzadeh, F. (2015). Survey the validity and reliability of the persian version of short form of freiburg mindfulness inventory. *J Rafsansajan Univ Med Sci, 14*(2), 137-150.

Ghorbani Taghlidabad, B., & Tasbihsazan Mashhadi, S. R. (2017). The relationship between cognitive emotion regulation and lifestyle with depression among patients with irritable bowel syndrome. *Neyshabur Univ Med Sci, 4*, 11-21. Doi:Article.

Goldin, P. R., & Gross, J. J. (2010). Effects of mindfulness-based stress reduction (MBSR) on emotion regulation in social anxiety disorder. *Emotion., 10*(1), 83-91. doi:2010-01983-016 [pii];10.1037/a0018441 [doi]. Retrieved from PM:20141305

Hood, M. M., Wilson, R., Gorenz, A., Jedel, S., Raeisi, S., Hobfoll, S. et al. (2018). Sleep quality in ulcerative colitis: associations with inflammation, psychological distress, and quality of life. *Int.J Behav Med, 25*(5), 517-525. doi:10.1007/s12529-018-9745-9 [doi];10.1007/s12529-018-9745-9 [pii]. Retrieved from PM:30159665

Hsu, S. H., Grow, J., & Marlatt, A. (2008). Mindfulness and addiction. In *Research on Alcoholics Anonymous and spirituality in addiction recovery* (pp. 229-250). Recent developments in alcoholism. New York, NY, US: Springer Science + Business Media.

Kemp, K., Dibley, L., Chauhan, U., Greveson, K., Jaghult, S., Ashton, K. et al. (2018). Second N-ECCO consensus statements on the european nursing roles in caring for patients with Crohn's Disease or Ulcerative Colitis. *J Crohns Colitis, 12*(7), 760-776.

Moghaddam Poor, N., & Sepahvand, T. (2018). The explanation of social anxiety in primary school children based on difficulties in emotional regulation and cognitive flexibility of mothers. *Child Ment Healh, 5*(2), 14-24.

Mohajerani, S., Haghayegh, S. A., & Adibi, P. (2017). Relationship between alexithymia, illness perception and resilience with quality of life of patients with ulcerative colitis. *Govaresh, 22*(1), 28-38.

Mohamad, N., Alavi, K., Mohamad, M. S., & Aun, N. S. M. (2016). Intergenerational support and intergenerational social support among elderly a short review in malaysian context.

Procedia Soc Behav Sci, 219, 513-519.
Movahed, S., Seilanian Toussi, M., Pahlavani, N., Motlagh, A. G., Eslami, S., Nematy, M. et al. (2020). Effects of medical nutrition therapy compared with general nutritional advice on nutritional status and nutrition-related complications in esophageal cancer patients receiving concurrent chemoradiation: A randomized controlled trial. *13*, 265-276.
Parian, A., & Limketkai, B. N. (2016). Dietary supplement therapies for inflammatory bowel disease: crohn's disease and ulcerative colitis. *Curr Pharm Des., 22*(2), 180-188. doi:CPD-EPUB-71780 [pii];10.2174/1381612822666151112145033 [doi]. Retrieved from PM:26561079
Trindade, I. A., Ferreira, C., & Pinto-Gouveia, J. (2015). Ulcerative colitis symptomatology and depression: The exacerbator role of maladaptive psychological processes. *Dig.Dis Sci, 60*(12), 3756-3763. doi:10.1007/s10620-015-3786-6 [doi];10.1007/s10620-015-3786-6 [pii]. Retrieved from PM:26141631
Walach, H., Buchheld, N., Buttenmuller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness the Freiburg Mindfulness Inventory (FMI). *Pers Individ Differ, 40*(8), 1543-1555.
Witkiewitz, K., & Bowen, S. (2010). Depression, craving, and substance use following a randomized trial of mindfulness-based relapse prevention. *J Consult.Clin.Psychol., 78*(3), 362-374. doi:2010-10440-007 [pii];10.1037/a0019172 [doi]. Retrieved from PM:20515211
Wong, S. T., Wu, A., Gregorich, S., & Perez-Stable, E. J. (2014). What type of social support influences self-reported physical and mental health among older women? *J Aging Health, 26*(4), 663-678. doi:0898264314527478 [pii];10.1177/0898264314527478 [doi]. Retrieved from PM:24733751
Wongpakaran, T., Wongpakaran, N., & Ruktrakul, R. (2011). Reliability and validity of the Multidimensional Scale of Perceived Social Support (MSPSS): Thai version. *Clin.Pract.Epidemiol Ment Health, 7*, 161-166. doi:10.2174/1745017901107010161 [doi];CPEMH-7-161 [pii]. Retrieved from PM:22114620
Xie, H., Peng, W., Yang, Y., Zhang, D., Sun, Y., Wu, M. et al. (2018). Social support as a mediator of physical disability and depressive symptoms in chinese elderly. *Arch Psychiatr.Nurs, 32*(2), 256-262. doi:S0883-9417(17)30288-1 [pii];10.1016/j.apnu.2017.11.012 [doi]. Retrieved from PM:29579521
Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *J Pers Assess, 52*(1), 30-41.

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The Effects of a Basic Psychosomatic Course on Knowledge and Practice of Family Medicine Residents

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Quantitative Study

Abstract

Background: Psychosomatic medicine is a systemic model of care based on the biopsychosocial model in which the physical, emotional, and social aspects of clinical conditions are considered. Family Medicine (FM) and psychosomatic medicine have many similarities in their community-based and family-based approaches. Studies have shown the necessity and effectiveness of psychosomatic medicine training for general practitioners (GPs) and family physicians.

Methods: We designed a psychosomatic course for FM residents. This semi-experimental study was performed at Isfahan University of Medical Sciences, Iran, in 2018. The target population included 11 FM residents. A compact 20-hour module (4 days, 5 hours each) was designed for the training. The Knowledge and Practice of Psychosomatic Medicine Questionnaire (self-administered) for the concepts and skills of psychosomatic medicine was filled out by each of the FM residents before and after the intervention. For each resident, caring for patients was monitored and a Performance Appraisal Checklist was completed by the supervisor. Finally, the questionnaire scores before and after the intervention were compared using paired t-test.

Results: The total knowledge and practice score increased significantly after the intervention (258.5 ± 40.3 vs. 174.6 ± 62.9; P = 0.002). There was also a significant increase in the mean psychosomatic care performance scores after the intervention (28.65 ± 3.52) compared with baseline (21.18 ± 5.94) (P = 0.001).

Conclusion: This study showed that basic psychosomatic care training for family physician residents, even in short courses, can have a positive effect on their clinical knowledge and performance.

Keywords: Psychosomatic Medicine; Family Practice; Residency; Curriculum

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Introduction

Psychosomatic medicine is a systemic model of care based on the biopsychosocial model. In this model, the physical, emotional, and social aspects of each clinical condition are considered and managed in an integrative approach. The doctor's task is to recognize not only the organic components, but also the psychosocial processes involved in the disease and to take these into account. Only in the framework of a psychosocial anamnesis can psychosocial stressors be identified by the doctor (Fritzsche et al., 2019). Comprehensive psychosomatic medicine has presented this idea that the interaction between mind, body, and environment can lead to better knowledge on physical symptoms and patient's illness (Zipfel, Herzog, Kruse, & Henningsen, 2016).

The combination of paying attention to physical and mental problems with the purpose of better diagnosis and treatment, and using psychosomatic approaches in educating nurses, health workers, and physicians (from general practitioners to different groups of specialists) is one of the great developments in the field of psychosomatic medicine in recent decades (Deter, Orth-Gomér, Wasilewski, & Verissimo 2017).

Family medicine (FM) and psychosomatic medicine have many similarities in their approaches and methods; both treat patients through biological, psychological, social, cultural, and spiritual aspects. Moreover, both fields have community-based and family-based approaches. Furthermore, when we look at their history, they both have their roots in system theory. Therefore, it seems that psychosomatic approaches to FM only emphasize some of its fundamental principles (Goli, Afshari, Zamani, Ebrahimi, & Ferdosi, 2017).

Many studies all over the world have shown the necessity and effectiveness of psychosomatic medicine training for general practitioners (GPs) and family physicians. The biopsychosocial approach is one of the key values for most physicians. Previous researches show that this approach has its own benefits like more doctor-patient satisfaction and less complaint due to medical malpractice (Zipfel et al., 2016; Wortman et al., 2019 ;Rothermund et al., 2012, Andersen, Kiecolt-Glaser, & Glaser, 1994).

Psychosomatic researches have also been able to determine the predictors of non-compliances, a problem that could deprive the patient from maximum care (Roter & Hall, 1992).

Many universities and medical educators in the world are exploring psychosomatic teachings as well as trying to increase the knowledge, attitude, and practice of their graduates about psychosomatics.

For instance, Fritzsche et al. (2019) conducted a study about performing a training program in China, Vietnam, and Laos. This program was implemented in 3 courses for 3 years, and during this time, 200 physicians with different specialties participated in the training. At the end of the training, 30 physicians were chosen as future teachers. Doctors were convinced that the course had a positive impression on their profession (Fritzsche et al., 2019).

US universities' curriculum also covers psychosomatic concepts at some level, but Waldstein, Neumann, Drossman, and Novack (2001) believe that improving medical curriculum for more comprehensive patient management and is a necessity.

The approach to psychosomatic medicine varies in different countries. For example, it has entered the medical and nursing curriculum in some countries like Germany. It is defined as a specialty in some European countries, but at the same time is not considered noteworthy in many other parts of the world (Scheidt, 2017).

A brief history of the Family Physician Program (FPP) in Iran shows dramatic changes over 13 years. The subjects to be considered in this program are the implementation of FPP in megacities after providing the required infrastructures such as electronic health records, the appropriate training of skillful family medicine physicians, and private sector participation in implementing the FPP (Ferdosi, Goli, Aghili, & Daneshvar, 2018). It seemed that psychosomatic medicine is the absent factor in this program and could cover at least the family physicians' knowledge and practice deficits, especially in biopsychosocial assessment and psychotherapeutic methods. Previously, an educational program named "Mental Health in Family Medicine in Iran" (2015-2018) was designed by Isfahan University of Medical Sciences and Danesh-e Tandorosti Institute under the supervision of the Department of Psychosomatic Medicine and Psychotherapy of Albert-Ludwig's University, Freiburg, and support of the German Academic Exchange Service. The main goal of this program was to facilitate the integration of psychosomatic medicine into the FM curriculum.

With regards to the increasing importance of attention to psychosomatic aspects in the approach to patients in primary and secondary health care, starting and generalizing the education on this matter seems necessary. To reach this goal, it seems that considering psychosomatic medicine in medical training is a necessity. The importance of collaboration between clinical medicine and psychosomatic medicine has been in the spotlight for many years in Isfahan, Iran. Therefore, the aim of this study was to evaluate the effect of training a patient approach with a psychosomatic perspective on knowledge and practice of FM residents in routine visits of outpatients and to compare their score of knowledge and practice regarding the concept of psychosomatics before and after the training course.

Methods

This semi-experimental study was conducted in Isfahan University of Medical Sciences in 2018. Our target population consisted of FM residents studying at this university. Due to the small number of residents studying in this field, all 11 subjects were included in the study after obtaining informed consent. After holding an expert panel consisting of 5 individuals including specialists, trainers, and researchers in FM and psychosomatic medicine and performing some pilot educational programs for community medicine and FM residents, and also considering the limitations in the FM residency schedule, we designed a compact 20-hour module (4 days, 5 hours each day) for the training. Since the present study is the result of training in the form of a residency curriculum, there were no ethical considerations. The topics of the sessions' are presented in table 1.

The Knowledge and Practice of Psychosomatic Medicine Questionnaire was filled out (self-administered) by each of the FM residents before and after the intervention. This questionnaire included residents' demographic profile such as age, gender, work experience (as a GP) and an executive history as a family physician. After that, 40 questions were asked in 7 fields and each question was scored in a range of 1-9. Therefore, a score between 40 and 360 can be obtained from the whole questionnaire. The 7 fields include understanding, cognition and attention (2 Qs), prevention (4 Qs), diagnosis and treatment (9 Qs), consultation (4 Qs), relationship and empowerment (9 Qs), disorder management (6 Qs), and patient referral (6 Qs). The scores of all the questions were added together and the final score of knowledge and performance as well as the score of each domain was obtained. The performance appraisal questionnaire was previously validated in another study using the Delphi technique (Ferdosi Massoud, Goli Farzad, Scheidt, 2021).

Table 1. Training module

Topic	Sub Topics	Axises	Lectures and Activities	Duration (minutes)
I. What is psychosomatic medicine?	Psychosomatic medicine: Bases, Scope, Method	Bases; Mind-Body Connections	Psychoneuroimmunology/ Epigenetics Biosemiotics	45
		Scope	Placebo response/Coping with stress and illness/healing relationship and communication	45
		Method	Integrative/Interpersonal/ Narrative/Contextual/Functional	45
	Balint group	Principles and rationales	Fostering Doctor-Patient relationship	45
	Balint group	Groupwork	Balint group	60
Feedbacks of the assignments				20
II. Emotions, Behaviors and Relations	The origins of emotion and behaviour; An overview	Genes	- Polyvagal theory - Mind modules	40
		Memes	- Attachment styles - Conditioning (classic, operant, abstract) - Cognitions & web of belifes	40
	Doctor-patient Communication	Basic Skills	Active listening/ Paraphrasing/ reflection/ summarizing	35
		Content	Anamnesis/ Genogram/ Timeline	
	Role Play		D-P communication	45
	Balint group	Groupwork	Balint group	60
Feedbacks of the assignments				20
III. Coping and Problem Formulation	Coping with Stress		- Homeostasis and Allostasis - General adaptation syndrome - Illness and stressor - Relaxation response and training	35
	Progressive Relaxation Training	- Training - Feedbacks	Progressive Relaxation training	45
	Problem Formulation		- Lifeworld Vs biomedical discourse - Patient attributions and expectations - Co- Constracting a problem: intro	35
	Role play		Giving Voice to the patients lifeworld	45
	Balint group	Groupwork	Balint group	60
Feedbacks of the assignments				
IV. Positive way to change	Resistance to change		- Change rehearsal - Compassion vs. Shame - Self-acceptance and immature defence mechanism	45
	Questioning and resource-based approach	solution-focused brief psychotherapy	- Scaling/Exception/Miracle Questions - Positive contextualization of the problem	45
	Role play		Questioning; more descriptive, more positive explanation	60
	Balint group	Groupwork	Balint group	60

Moreover, for each resident, 2 cases of patient care were observed and a Performance Appraisal Checklist was completed by the supervisor. The checklist contains 6, 14, 9, and 2 items regarding doctor-patient relationship, doctor-patient communication, adjustment-related disorders, and psychological factors affecting medical conditions, respectively (fulfilling the item = 1, not fulfilling the item = 0). The residents knew that they were being observed, but did not know the items being examined.

Finally, each questionnaire's scores were calculated in different fields and in general before and after the intervention, and were compared using paired t-test and Mann-Whitney U test (if they did not have a normal distribution) in SPSS software (version 16; SPSS Inc., Chicago, IL, USA).

Results

In total, 11 residents with an average history of 14 ± 1.36 years of working as a GP participated in the training course. They consisted of 4 men and 7 women with an average age of 48 ± 4.41 and 43 ± 2.16 years, respectively. Before the intervention, 9 of them filled out the Knowledge and Practice Questionnaire and the Performance Appraisal Checklist was completed for 16 cases. After the intervention, 11 questionnaires and 23 cases were completed. Pre-intervention and post-intervention knowledge and practice scores are presented in table 2 and the Performance Appraisal Checklist scores (before and after the intervention) are presented in table 3.

Discussion

This study was conducted to investigate the effect of holding psychosomatic courses on the knowledge and skills of FM residents at Isfahan University of Medical Sciences.

The results of the Knowledge and Practice Questionnaire showed that the 20-hour basic psychosomatic care program was positively effective in all domains. The participants' sensitivity in sign recognition and cognitive abilities was higher after the course. Their applied and interactive training can explain these cognitive changes. Their prevention, and diagnosis and treatment competencies had also evidently increased. The curriculum was focused more on the methodological points and systemic view that demonstrates their promotion in the above-mentioned items. The consultation and empowerment knowledge and practice of the family physician residents had also improved after the course, which can be explained by their training on communication skills and resource-based and solution-focused approach. Their improvement in the management of stress-related disorders and patient referral can be attributed to the integrative care instructions of the program. The course was significantly effective on the overall promotion of the assessed psychosocial competencies.

The performance observations showed findings consistent with the data collected using the questionnaire. The significant promotion of their doctor-patient relationship and communication, management of the adjustment-related disorders and psychological factors affecting medical conditions, and their overall promotion in psychosomatic basic care can be explained by the related topics, role-playing, case discussions, and balint groups in the course they took part in.

Table 2. Residents' mean scores on essential psychosomatic knowledge and practice for family physicians (mean ± SD) (Part I)

Field	Understanding, Cognition, and Attention	Prevention	Diagnosis and Treatment	Consultation
Before the Intervention	9.2 ± 2.8	15.5 ± 5.3	37.6 ± 12.5	17.1 ± 6.3
After the Intervention	11.8 ± 2.2	24 ± 4.5	57 ± 8.9	25.9 ± 4.9
P-value*	0.035*	0.001*	0.001*	0.003*

Table 2. Residents' mean scores on essential psychosomatic knowledge and practice for family physicians (mean ± SD) (Part II)

Field	Empowerment	Disorder Management	Patient Referral	Total Score
Before the Intervention	41.6 ± 18.4	25.4 ± 7.7	28 ± 10.7	174.6 ± 62.9
After the Intervention	59.2 ± 11.8	39.7 ± 6.8	40.8 ± 8.5	258.5 ± 40.3
P-value*	0.019*	0.001*	0.008*	0.002*

*significant at 0.05, using paired t-test

Table 3. Residents' mean performance scores in psychosomatic care before and after the intervention (mean ± SD)

Field	Doctor-Patient Relationship	Doctor-Patient Communication	Adjustment -related Disorders	Psychological Factors Affecting Medical Condition	Total Score
Before Intervention	4.43 ± 1.36	9.50 ± 3.11	6.25 ± 1.69	1.00 ± 0.81	21.18 ± 5.94
After Intervention	5.65 ± 0.71	13.00 ± 1.83	8.17 ± 1.99	1.82 ± 0.49	28.65 ± 3.52
P-value*	0.001*	0.001*	0.001*	0.001*	0.001*

*significant at 0.05, using Mann-Whitney U test

These findings are in line with previous studies on the effectiveness of psychosocial training for physicians, though the duration of the training course was longer in some of these studies (Zipfel et al., 2016). Applying diagnostic tests and mental health issues are some of the aspects evaluated in other similar researches, which showed improvements in knowledge and practice of participants (Waldstein et al., 2001; Stewart et al., 2000).

The results of this study showed that basic psychosomatic care training for family physician assistants, even in short courses, can have a positive effect on their clinical knowledge and performance. Scores in all areas of prevention, diagnosis, counseling, communication skills, patient management, and patient referrals increased after a short course of psychosomatic medicine training.

However, in some similar researches it was expressed that psychosomatic courses should be integrated into the general medicine curriculum to further improve the knowledge, attitude, and practice of graduating physicians (Fritzsche et al., 2012). In addition, other studies suggest the use of psychosomatic medicine training not only in primary care, but also in hospitals, which can be mentioned as one of our study's limitations (Fava, Sonino, & Wise, 2012). Another limitation of the study was the small sample size due to the limited number of residents. Moreover, the lack of a control group can be considered as another limitation.

Conclusion

It is suggested that the present study be conducted at a larger scale in FM residents in primary care as well as hospital care in order to obtain more reliable results. Furthermore, our proposed brief program on psychosomatic basic care is applicable in general medicine students and even residents. Of course, the main psychosomatic skills can be embedded in different clinical courses.

Conflict of Interests

Authors have no conflict of interests.

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References

Fritzsche, K., Monsalve, S. D., Zanjani, H. A., Goli, F., Chen, F. K.-Y., & Dobos, C. M. (2020). Psycho-cardiology. In K. Fritzsche, S. H. McDaniel, & M. Wirsching (Eds.),

Psychosomatic Medicine: An International Guide for the Primary Care Setting (pp. 191-202). Cham, Switzerland: Springer International Publishing.

Zipfel, S., Herzog, W., Kruse, J., & Henningsen, P. (2016). Psychosomatic Medicine in Germany: More Timely than Ever. *Psychother.Psychosom.*, *85*(5), 262-269. doi:000447701 [pii];10.1159/000447701 [doi]. Retrieved from PM:27509065

Deter, H. C., Orth-Gomer, K., Wasilewski, B., & Verissimo, R. (2017). The European Network on Psychosomatic Medicine (ENPM) history and future directions. *BioPsychoSocial Medicine*, *11*(1). https://doi.org/10.1186/s13030-016-0086-0

Goli, F., Afshari, H., Zamani, A., Ebrahimi, A., & Ferdosi, M. (2017). The Relationship between the Family Physician and Psychosomatic Medicine. *Int J Body Mind Culture*, *4*(2), 102-107. https://doi.org/10.22122/ijbmc.v4i2.99

Wortman, M. S. H., van der Wouden, J. C., Grutters, J. P. C., Visser, B., Assendelft, W. J. J., van der Horst, H. E. et al. (2019). Psychosomatic therapy for patients frequently attending primary care with medically unexplained symptoms, the CORPUS trial: study protocol for a randomised controlled trial. *Trials.*, *20*(1), 697. doi:10.1186/s13063-019-3913-3 [doi];10.1186/s13063-019-3913-3 [pii]. Retrieved from PM:31818310

Rothermund, E., Kilian, R., Hoelzer, M., Mayer, D., Mauss, D., Krueger, M. et al. (2012). "Psychosomatic consultation in the workplace": a new model of care at the interface of company-supported mental health care and consultation-liaison psychosomatics: design of a mixed methods implementation study. *BMC Public Health*, *12*(1), 780. doi:1471-2458-12-780 [pii];10.1186/1471-2458-12-780 [doi]. Retrieved from PM:22974257

Andersen, B. L., Kiecolt-Glaser, J. K., & Glaser, R. (1994). A biobehavioral model of cancer stress and disease course. *Am.Psychol*, *49*(5), 389-404. doi:10.1037//0003-066x.49.5.389 [doi]. Retrieved from PM:8024167

Roter, D. L., & Hall, J. A. (1992). *Doctors talking with patients/patients talking with doctors: Improving communication in medical visits*. Westport, CT, US: Auburn House/Greenwood Publishing Group.

Fritzsche, K., Scheib, P., Ko, N., Wirsching, M., Kuhnert, A., Hick, J. et al. (2012). Results of a psychosomatic training program in China, Vietnam and Laos: successful cross-cultural transfer of a postgraduate training program for medical doctors. *Biopsychosoc.Med*, *6*(1), 17. doi:1751-0759-6-17 [pii];10.1186/1751-0759-6-17 [doi]. Retrieved from PM:22929520

Waldstein, S. R., Neumann, S. A., Drossman, D. A., & Novack, D. H. (2001). Teaching psychosomatic (biopsychosocial) medicine in United States medical schools: survey findings. *Psychosom.Med*, *63*(3), 335-343. doi:10.1097/00006842-200105000-00001 [doi]. Retrieved from PM:11382261

Scheidt, C. E. (2017). Psychosomatic Medicine in Germany. *International J Body Mind Culture*, *4*(2), 78-86.

Ferdosi, M., Goli, F., Aghili, G., & Daneshvar, S. M. A. (2018). A Brief History of Family Medicine Development and Training in Iran (2005-2018). *Int J Body Mind Culture*, *5*(2), 89-93.

Ferdosi, M., Goli, F., Scheidt, C. E. Psychosomatic medical services for family physicians in Iran (2021). [Manuscript Submitted to Publish].

Stewart, M., Brown, J. B., Donner, A., McWhinney, I. R., Oates, J., Weston, W. W. et al. (2000). The impact of patient-centered care on outcomes. *J Fam.Pract*, *49*(9), 796-804. Retrieved from PM:11032203

Fava, G. A., Sonino, N., & Wise, T. N. (2012). Principles of psychosomatic assessment. *Adv Psychosom.Med*, *32*, 1-18. doi:000329997 [pii];10.1159/000329997 [doi]. Retrieved from PM:22056895

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

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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, & Esmaeilzadeh, 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, Mehrabizadeh 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, Pishgooie, & 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 & Sajjadian, 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, Zahrakar, & 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 ± SD	14.33 ± 2.35	10.23 ± 2.29	11.00 1.65
Stress inoculation	Depression	Mean ± SD	14.53 ± 2.17	11.47 ± 2.53	11.80 2.46
Control	Depression	Mean ± SD	14.60 ± 1.88	14.33 ± 1.95	14.47 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

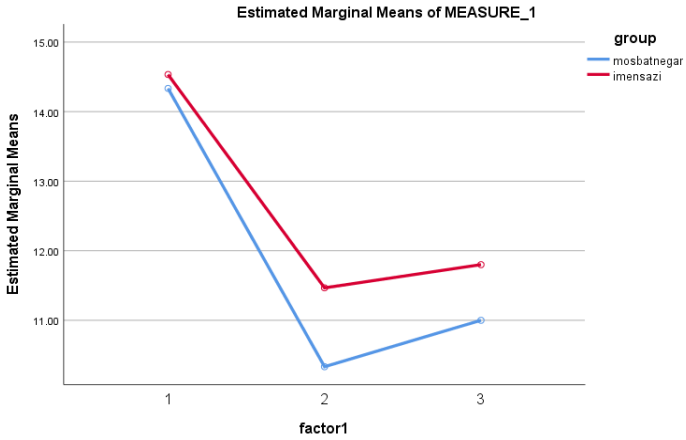

Figure 1. Modified means of depression scores in the positive psychology therapy and stress inoculation groups in the pretest, posttest, and follow-up stages

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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References

Abedi Amiri, M., Avandi, S. M., & Esmaeilzadeh, S. (2018). Effect of six-week pranayama training on the serum levels of cortisol and blood pressure in pregnant women in the third trimester. *Iran J Obstet Gynecol Infertil, 21*(6), 55-63.

Alipour, M., Ghahremani, L., Amooee, S., & Keshavarzi, S. (2017). The effectiveness of relaxation techniques on depression, anxiety and stress in pregnant women: based on self-efficacy theory. *Sci J Kurdistan Univ Med Sci, 22*(3), 20-30.

Azhari, S., Sarani, A., Mazlom, S. R., & Aghamohammadian Sherbaf, H. M. (2015). The relationship between optimism with prenatal coping strategies. *Iranian Journal of Psychiatrics Nursing, 3*(1), 70-83.

Clark, S. W. (2015). *Predicting depression symptoms among college students: The influence of parenting style influence of parenting style [Thesis]*. Richmond, VA: Virginia Commonwealth University.

Delavar, A. (2019). *Research Methods in Psychology and Educational Sciences*. 4th ed. Tehran, Iran: Virayesh Publications.

Esmaeili, Z., Esmaeili, L., & Dabbashi, F. (2016). Effectiveness of stress inoculation training on psychological well-being in women with diabetes mellitus type 2. *International Journal of Educational and Psychological Researches, 2*(2), 88-100.

GhamkharFard, Z., Bakhtiari, M., Hajiheidari, Z., Pouravari, M., & Tahmasian, K. (2019). The effectiveness of group cognitive-behavioral therapy in anxiety and boredom proneness in generalized anxiety disorder girls. *Knowledge & Research in Applied Psychology, 20*(3), 122-132.

Ghazaei, M., Davodi, I., Neysi, A., Mehrabizadeh Honarmand, M., & Basak, N. (2018). Effectiveness of Cognitive Behavioral Therapy and psychoeducation on fear of natural childbirth and its related variables. *Journal of Applied Psychology, 12*(1), 103-125.

Honarmandzadeh, R., & Sajjadian, I. (2016). Effectiveness of positive group intervention on psychological wellbeing, resiliency and happiness of foster care adolescent girls. *Positive Psychology Research, 2*(2), 35-49.

Jabbari, M., Shahidi, S., & Mootabi, F. (2014). Effectiveness of group intervention based on positive therapy on dysfunctional attitudes and happiness in adolescent girls. *Journal of Clinical Psychology, 6*(2), 65-74.

Khatoni, S., Teymouri., F., Pishgooie, S. A. H., & Khodabakhsh, M. R. (2020). Determining the effectiveness of stress inoculation training on nurses' job stress at selected military hospitals. *Military Caring Sciences, 7*(1), 26-34.

Kordmirza Nikoozadeh, E. (2011). Comparison the effectiveness of positive psychotherapy and adlerian group therapy intervention program for promotion of resiliency in drug dependents. *Counseling Culture and Psychotherapy, 2*(5), 1-27.

Lee, A. P., Hsiung, M. C., Salgo, I. S., Fang, F., Xie, J. M., Zhang, Y. C. et al. (2013). Quantitative analysis of mitral valve morphology in mitral valve prolapse with real-time 3-dimensional echocardiography: importance of annular saddle shape in the pathogenesis of mitral regurgitation. *Circulation, 127*(7), 832-841. doi:CIRCULATIONAHA.112.118083 [pii];10.1161/CIRCULATIONAHA.112.118083 [doi]. Retrieved from PM:23266859

Lee, S. H., Chang, B. C., Youn, Y. N., Joo, H. C., Yoo, K. J., & Lee, S. (2017). Impact of

prosthesis-patient mismatch after mitral valve replacement in rheumatic population: Does mitral position prosthesis-patient mismatch really exist? *J Cardiothorac.Surg, 12*(1), 88. doi:10.1186/s13019-017-0653-x [doi];10.1186/s13019-017-0653-x [pii]. Retrieved from PM:29017586

Moshgani Farahani, A. (2017). Effectiveness of Immunization Against Stress Group Training on Social Anxiety Symptoms and Mental Health of High School Students. *Social Work, 6*(1), 13-20.

Rabiee, F., Zahrakar, K., & Farzad, V. (2019). Effectiveness of stress inoculation training on reducing couple burnout in married women. *J-Gorgan-Univ-Med-Sci, 21*(2), 70-76.

Sadati Bala Dehi, M., Taghi Pour Javan, A., & Hassan Nattaj, F. (2019). comparison of the effect of cognitive-behavioral therapy and relaxation therapy (Relaxation) on reducing signs of chronic fatigue syndrome in nurses. *Yafteh, 21*(1), 1-11.

Salehi, M., Asghari Ebrahimabad, M. J., Ghaderi, F., & AbdeKhodaei, M. S. (2021). Evaluation of the effectiveness of dialectical behavior therapy in reducing psychological symptoms in patients Mitral valve prolapse syndrome. *Yafteh, 22*(4), 46-57.

Sayadi, M., Eftekhar Saadi, Z., Makvandi, B., & Hafezi, f. (2019). Effect of cognitive rehabilitation training on anxiety, depression and emotion regulation in women with postpartum depression. *Iranian Journal of Rehabilitation Research in Nursing, 5*(2), 25-32.

Seligman, M., & Rozhanan, D. (2016). *Abnormal psychology: Psychological pathology based on DSM-IV*. Trans. Y. Seyed Mohammadi. Tehran, Iran: Arasbaran Publications.

Seligman, M. E. P. (2002). Positive psychology, positive prevention, and positive therapy. In *Handbook of positive psychology* (pp. 3-9). New York, NY, US: Oxford University Press.

Shareh, H. (2019). The relationship between psychological hardiness and religious attitude with hope in cardiovascular patients. *Ravanshenasi Va Din, 11*(4), 109-122.

Stefan-Dabson, K., Mohammadkhani, P., & Massah-Choulabi, O. (2007). Psychometrics characteristic of beck depression inventory-ii in patients with magor depressive disorder. *J Rehab, 8*, 80-86.

Tragea, C., Chrousos, G. P., Alexopoulos, E. C., & Darviri, C. (2014). A randomized controlled trial of the effects of a stress management programme during pregnancy. *Complement.Ther Med, 22*(2), 203-211. doi:S0965-2299(14)00009-0 [pii];10.1016/j.ctim.2014.01.006 [doi]. Retrieved from PM:24731890

Yuksel, F., Akin, S., & Durna, Z. (2014). Prenatal distress in Turkish pregnant women and factors associated with maternal prenatal distress. *J Clin Nurs, 23*(1-2), 54-64. doi:10.1111/j.1365-2702.2012.04283.x [doi]. Retrieved from PM:23305376

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Designing a Community-Based Model of Adjustment Methods for Positive Prevention Based on Perceived Deterioration and Adherence Treatment Mediated by Coping Strategies in HIV-Positive Patients

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Quantitative Study

Abstract

Background: HIV is one of humanity's greatest challenges and major health risk factors. Therefore, this study aimed to design a community-based model of adjustment methods for positive prevention based on perceived deterioration and treatment adherence mediated by coping strategies in HIV-positive patients.

Methods: The present study was a correlation study with a structural equation modeling design. The statistical population included all HIV-infected patients in Tehran, Iran, of which 250 people were selected as a sample from the patients referred to positive clubs under the supervision of the Welfare Organization. The Ways of Coping Questionnaire (WCQ), Psychosocial Adjustment to Illness Scale (PAIS), and Brief Illness Perception Questionnaire (IPQ) were used to collect data. The proposed model was evaluated using structural equation modeling method, and bootstrap method (AMOS software) was used to test indirect relationships.

Results: The proposed model after the correction has an acceptable fit with the data. All direct paths are statistically significant. Moreover, all indirect pathways (relationship of adjustment methods for positive prevention, perceived deterioration, and treatment adherence through coping strategies) were significant ($P < 0.001$).

Conclusion: Perceived deterioration and adherence treatment have a direct effect on psychosocial adjustment in HIV-positive patients. Coping strategies also have a direct effect on psychosocial adjustment in HIV-positive patients.

Keywords: HIV; Adaptation; Treatment Adherence; Compliance

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Introduction

HIV is considered one of humanity's greatest challenges and major health risk factors (Rodger, Cambiano, Bruun, Vernazza, Collins, 2016). Although not long has passed since the first patient was infected with HIV, the world faces an epidemic for which there is still no definitive cure. According to figures released by the World Health Organization (WHO) and the Joint United Nations Program on HIV/AIDS, of the 35.3 million HIV-infected patients worldwide, about 6 million live in Asia (Muller, Barday, Mendelson & Kahn, 2015). According to official statistics released by the Ministry of Health in 2017, the average total number of infected people in 2017 was estimated at 59,531 (HIV Control Monitoring Report, 2017). The average estimated number of infected men and women was, respectively, 43964 and 15568. Estimates indicate an increasing number of people living with HIV in the total population by 2018, and then, a slowdown in its growth rate. The estimated number of new HIV-infected cases in Iran in 2017 was 4661 people per year (3450 men and 1211 women). This estimate indicates that if the level of service coverage remains at the current level, the number of new cases will decrease every year until 2022 in men and stabilize in women.

The most important factors in the deterioration of HIV-infected patients and their transmission are unprotected sex with the opposite sex or multiple sexual partners, and injecting drug use with shared syringes. HIV is a social phenomenon that affects all aspects of a person's life. The first people to become infected with HIV in the United States were young gay men. Therefore, most countries believe that HIV is mainly transmitted through sexual intercourse, mostly related to groups that engage in unusual sexual activity. HIV infection is socially unacceptable in most countries, and HIV-infected women are often referred to as prostitutes. This makes HIV-infected people socially different and threatening to the general public. Affected patients are often excluded from society and presented as worthless and branded individuals (Viera, Geo, Gypsy, Boaso, Gritid, et al., 2016). Therefore, individuals who test positive for HIV, after the diagnosis and awareness of their disease, they experience anxiety, fear, and ambiguity.

Furthermore, they suffer psychological shock due to fear of notoriety. Patients may initially deny their illness. They may also try to ignore it or experience reactions such as anger, aggression, and grief over coping with reality, and feelings of hopelessness, depression, and anxiety. What is certain is that this condition leads to a hesitation in timely referral and follow-up of the patient's treatment programs and sometimes leads to deprivation of access to treatment. Lack of physician visitations is associated with adverse and dangerous consequences for oneself, others, and the community (Patterson, Cisco, Samji, Zhang, Roboud, et al., 2015). In this regard, Smeltzer et al. (2008) believe that dealing with the disease is an important factor in the prevention of the spread of the disease, the success of treatment plans and provision of welfare, and improvement of patients' quality of life (QOL).

Acquired immunodeficiency syndrome (AIDS) changes the course of a person's life and leads to decreased self-esteem, hopelessness, depression, increased feelings of vulnerability, physical symptoms, and disturbing thoughts in patients. These problems and frequent visits to the doctor, the high cost of treatment, and side effects of drugs affect patients' QOL. HIV-infected patients are at high risk of depression, hopelessness, and anxiety. Therefore, these disorders are considered a risk factor for HIV transmission (Cieslak, 2008). Moreover, HIV-positive patients with psychiatric problems have poor treatment outcomes. They are less likely to use antiretroviral drugs (Heppner & Lee, 2002). It seems that high spirits, hope, and positivity is one of the most important issues in

dealing with this disease (Atai, Atai, and Babapour, 2014). Otherwise, sufferers gradually become depressed and lose their mental well-being over time (Magiorkinis et al., 2016).

Adjustment to illness is the process of maintaining a positive attitude towards oneself and the world despite having physical problems. Poor adjustment to illness reduces the rate of recovery (Halford & Brun, 2009). Psychosocial adjustment is one of the most important chronic disease variables because it is directly related to self-care behaviors (Michael, 1996). Adjustment can be defined as the response to a change in a stimulus that allows the organism to adapt appropriately to that change (Sharp and Koran, 2006). Findings of previous studies show that patients who show good adjustment to their disease become less anxious or depressed and require less medical attention, and thus, have lower treatment costs. Today, with the increasing development of health psychology, psychologists can play a more active role in preventing and treating this disorder.

The HIV-infected patient is in a difficult and painful condition. The heavy burden of the disease has caused him/her many problems. Therefore, his/her perception and acceptance of the disease can be one of the most important components affecting how he/she copes with the disease, accepts the disease, and seeks health services. It is necessary to conduct qualitative research to explain the factors that prevent the acceptance of the disease in patients for the following reasons. These reasons include the increase in the number of HIV-infected people in Iran and the need for the patient to accept the disease, as a key factor to facilitate his participation in treatment decisions and prevent the disease from worsening, and the need for timely patient entry into the treatment, as an immediate priority of the health system. Streubert et al. (2011) believe that examining the dimensions of a concept, making social changes in a particular field, examining life experiences, and fully understanding these experiences are some of the issues that qualitative research methods can address. Considering the importance of recognizing the barriers to accepting the disease as influential factors on entering the field of treatment, on the one hand, and the lack of clear barriers in the Iranian health system and culture, on the other hand, this study was conducted with the aim to develop an intervention model of community-based adjustment methods based on perceived deterioration and treatment adherence mediated by coping strategies in HIV-positive patients.

Methods

The present study was a correlational study with a structural equation modeling design. The statistical population of the study included all HIV-infected people referred to positive clubs under the supervision of the Iranian Welfare Organization in 2019. In modeling research, 10 to 15 people are needed for each obvious variable. Based on the available variables, 250 people were selected through stratified random sampling method. The inclusion criteria include HIV-positive test result, referral to positive clubs to receive services in 2019, age of 18-50 years, the passage of 1 year since the diagnosis, lack of diagnosis of any other chronic physical illnesses, lack of diagnosis of serious mental disorders in the patient before the HIV diagnosis. The exclusion criteria included discontinuation of treatment and non-referral to positive clubs.

Ways of Coping Questionnaire: The Ways of Coping Questionnaire (WCQ) was prepared by Lazarus and Folkman in 1988. Its revised form consists of 66 items and 8 scales. Each scale consists of several items. The reliability of these scales was calculated using Cronbach's alpha; the reliability of the confronting, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem-solving, and positive re-appraisal scales were 0.70, 0.66, 0.74, 0.76,

0.66, 0.72, 0.68, and (0.79), respectively. The WCQ has been translated, implemented, and validated in Iran by Aghajani (1995) and Abdi (2001).

Psychosocial Adjustment to Illness Scale: The Psychosocial Adjustment to Illness Scale (PAIS) was developed by Derogatis and Derogatis (1990) and has 46 items. The items are scored on a 4-point Likert scale. The PAIS consists of the 7 subscales of health care orientation, home environment, sex, family relationships, social environment, and psychological distress. The validity and reliability of this scale have been reported as optimal. In the main study, the reliability (calculated using Cronbach's alpha) of each of the subscales mentioned was reported to be 0.47, 0.76, 0.77, 0.83, 0.62, 0.80, and 0.85, respectively. This scale's construct validity (calculated using CFA and Varimax rotation) indicated that these 7 components together explain 0.63. Each of the subscales 18%, 10%, 9%, 8%, 7%, 7%, 5% of the total variance of the scale, respectively. Overall, the study of the psychometric properties of the PAIS concerning the disease has indicated that this scale has satisfactory reliability and validity indicators. Furthermore, Bzargani (2009) reported good validity and reliability for this scale in Iran.

Brief Illness Perception Questionnaire: The Brief Illness Perception Questionnaire (Brief IPQ) is a 9-item questionnaire designed to assess the emotional and cognitive visualization of the disease. It measures outcomes, duration, self-control, nature control, treatment, anxiety, cognition, and emotional responses. The scores of the first 8 questions range from 1 to 10. Question 9 is an open-ended question and asks the 3 main causes of HIV. The Cronbach's alpha of this questionnaire was 0.80, and the test-retest correlation coefficient with a 6-week interval for the different items of the Brief IPQ was 0.43-0.75.

The present study's ethical considerations were as follows: 1) All individuals received information about the research in writing and participated in the research if they wished; 2) The participants were reassured that all information would remain confidential and would be used for research purposes only; 3) For privacy reasons, the names and surnames of the participants were not registered; 4) To ensure the work process, all questionnaires were administered by the researcher himself.

Descriptive statistics: Frequency tables and graphs, central indices, and scatter indices such as mean and SD were used. Inferential statistics in SPSS software (version 25; IBM Corp., Armonk, NY, USA), structural equations in AMOS (version 22; IBM Corp., Armonk, NY, USA), and Pearson correlation were used to analyze the data.

Results

The mean age of the respondents was 37.9 ± 5.48 years, with a minimum age of 28 years, and a maximum age of 54 years. The participants' highest and lowest education level was high school degree with 77 students (30.8%), and academic education with 16 students (6.4%). The marital status with the highest and lowest prevalence among the participants was divorced with 89 people (35.6%), and single with 28 people (11.2%).

The results of the Kolmogorov-Smirnov test indicate that the data are at a normal level. The Kolmogorov-Smirnov test showed that the data have a normal distribution, and parametric methods can be used for the inferential analysis of data. To examine the conceptual model presented in the research, the initial model was analyzed according to the prediction of psychosocial adjustment in direct and indirect paths by the variables of perceived deterioration, treatment adherence, and coping strategies. Table 1 shows Descriptive statistics of research variables.

Table 1. Descriptive statistics of research variables

Variable		Mean ± SD	Min	Max
Coping strategies	Confronting coping	12.51 ± 1.84	3	18
	Distancing	10.22 ± 1.53	3	16
	Self-controlling	14.98 ± 4.01	5	21
	Seeking social support	11.82 ± 3.49	4	18
	Accepting responsibility	7.56 ± 1.01	2	12
	Escape-avoidance	16.44 ± 3.18	6	22
	Planful problem-solving	11.21 ± 2.71	3	17
	Positive re-appraisal	12.44 ± 3.52	3	21
Perceptions of the illness	Perceptions of the consequences	5.10 ± 2.60	0	10
	Duration of the illness	5.90 ± 2.30	0	10
	Personal control	6.50 ± 1.40	0	10
	Therapeutic control	7.30 ± 1.20	0	10
	Identification of symptoms	6.10 ± 1.20	0	10
	Concerns over the illness	4.90 ± 2.30	0	10
	Understanding the illness	6.80 ± 1.30	0	10
Psychosocial Adjustment to Illness	Healthcare orientation	15.14 ± 3.81	0	21
	Home atmosphere	13.56 ± 4.10	0	18
	Sexual relationships	14.80 ± 3.71	0	19
	Breadth of the family relationships	16.80 ± 2.67	0	20
	Social environment	13.56 ± 2.42	0	21
	Psychological helplessness	17.88 ± 4.42	0	24
Adherence to therapeutic regimen		2.94 ± 1.87	0	8

SD: Standard deviation

According to the results presented in table 2, the statistics obtained from the comparative, absolute, and parsimonious indices show that the model obtained after the correction has an acceptable fit. The model is correct in the path of errors and variances obtained. Table 3 shows the values obtained from weighted regression statistics to determine the effect values (B) according to the level of significance obtained from the critical ratio, which indicates the significant effect values of the subscales on the overall variable and the exogenous variables (perceived deterioration, treatment adherence, and coping strategies) are the final endogenous variable (psychosocial adjustment).

Table 3 shows the normed and non-normed values of the exogenous research variables' prediction paths on the endogenous variable with each other concerning the value of t obtained in the model. All values obtained were significant, indicating a meaningful prediction.

Table 2. Fitting indices obtained from data analysis and variables after three correction steps

Index	The goodness of fit indices	Optimum values	Value
Absolute	Chi-square goodness of fit test	Nil	978.922
	The goodness of fit index	≥ 0.90	0.992
	Adjusted goodness of fit index (AGFI)	≥ 0.90	0.988
Comparative	Normed Fit Index (NFI)	≥ 0.90	0.959
	Comparative Fit Index (CFI)	≥ 0.90	0.957
	Tucker-Lewis Index (TLI)	≥ 0.90	0.961
	Relative Fit Index (RFI)	≥ 0.90	0.947
Parsimonious	Parsimony Normed Fit Index (PNFI)	≤ 0.5	0.521
	Root Mean Square Error of Approximation (RMSEA)	≥ 0.08	0.042
	$\chi 2/df$	≥ 0.3	2.854
	Degrees of Freedom (df)	≤ 0.0	343
	P-value	≥ 0.05	0.000

Table 3. Weighted regression statistics and critical ratios of research variables

Exogenous variable	Direction	Endogenous variable	B	β	t-statistic	P-value
Perceived deterioration	←	psychosocial adjustment	0.449	0.346	4.108	0.000
Treatment adherence	←	psychosocial adjustment	0.622	0.513	6.557	0.001
Coping strategies	←	psychosocial adjustment	0.379	0.287	4.124	0.002

Discussion

This study aimed to design a community-based model of adjustment methods for positive prevention based on perceived deterioration and treatment adherence mediated by HIV-positive patients' coping strategies. Based on the findings, it can be seen that perceived deterioration has a direct effect on psychosocial adjustment in HIV-positive patients. Coping strategies also have a direct effect on psychosocial adjustment in HIV-positive patients. The results of this study were consistent with the findings of the studies by Mahmoudi et al. (2012), Daryazadeh et al. (2013), Rasouli et al. (2017), and Karimi et al. (2018).

The evidence shows that in a wide range of diseases, a person's opinion about the nature of the disease effectively determines healthy behaviors and QOL. People with chronic diseases form schemas or cognitions of the disease in their cognitive system. Endogenous and exogenous variables such as personality factors, social environment, and demographic factors play a role in their formation. These factors, along with the disease's threat, affect the patient's perception of the nature, causes, curability/controllability, and consequences of the disease (Kishin et al., 2017). Therefore, a person who has a positive schema of his disease can realistically and correctly understand the signs and symptoms of the disease and its other dimensions. Studies have shown that people with perceived deterioration use more coping strategies than people with perceived deterioration. In other words, a sense of efficiency and adequacy in controlling stressful situations causes the individual to consider the disease as controllable, and not overestimate its negative emotional effects. Moreover, personal control leads to the belief in the adequacy of internal and external resources to meet the disease's requirements. Adequacy of resources, in turn, creates a strong sense of self-worth and self-direction. Therefore, these people use effective coping strategies such as self-disclosure and information retrieval, and consequently, show less emotional disturbance symptoms.

Furthermore, if the disease consequences are not overestimated, the person will not show much attention to its consequences. Attention management, along with a sense of personal worth and competence, leads to coping strategies that aim to change position or increase personal possibilities. In general, positive perception of the disease, which is accompanied by the perception of control over the disease and the accompanying symptoms and emotions, leads to appropriate therapeutic measures. The resulting improvement leads to a more positive perception (Walter, Van't Spijker, Pasma, Hazes, & Luime, 2017). A person who has a positive perception of the disease is expected to have the necessary background to use coping strategies and have higher psychosocial adjustment.

In addition, since this study shows that perceived deterioration has a positive effect on psychosocial adjustment in HIV-infected people, it can be said that people who have perceived deterioration of their disease have less adjustment to their disease. People with chronic illness form schemas or cognitions of the disease in their cognitive system. Internal and external variables such as personality factors, social

environment, and demographic factors play a role in the formation of these cognitions. These factors, along with the threat of disease, affect the patient's perception of the nature, causes, curability/controllability, and consequences of the disease. Therefore, a person who has a positive schema of his disease can realistically and correctly understand and analyze the signs and symptoms of the disease and other disease dimensions. Studies have shown that people who have less perceived deterioration of their disease are more likely to use task-oriented coping strategies. In other words, the sense of efficiency and high adequacy in these people leads them to appropriate control (Komatsu & Kuribayashi, 2014).

Perceived deterioration of the disease is associated with poor perceived control. Support is based on Leventhal and Nerenz's Self-Regulatory Model of illness perceptions, which states that worry about the disease causes the patient to perceive the symptoms more severely, thus leading to a more skeptical assessment of their health. A significant number of patients have misconceptions about their HIV control, and this misconception harms their mental health. Moreover, belief in the nature and severe symptoms of the disease and a common sense of self-control also lead to emotional responses to the disease. Under the influence of these conditions, the threat (disease) is considered bold and negative emotional responses to threatening events intensify. The rumination related to the increased threat keeps them active in working memory. This interferes with disease management and effective disease management (Assari, Moazen, Caldwell & Zimmerman, 2017).

It can also be said that a problem-focused coping strategy describes the reactions in which the person accepts his role in creating and solving the problem through continuous effort to correct the existing situation. Therefore, it can be said that patients who use problem-focused coping strategies in dealing with the problem re-evaluate the problem. Because they believe they can manage the problem effectively and efficiently, they usually experience fewer psychological and interpersonal problems. Moreover, patients who use problem-focused coping strategies do not accept a negative attitude towards their bodies and diseases. This will prevent the disease from inadequate because they do not associate rejection by their family and others to their illness (Livneh & Martz, 2014). Therefore, they show a lower rate of depression and interpersonal problems and evaluate their psychosocial adjustment positively. This reduces the deterioration of the disease. This probably reinforces the feeling that they can support others, enjoy acceptance by others, and receive love, intimacy, and respect despite their illness. These characteristics can help them cope with their illness with less stress or to adjust to them constructively (Livneh & Martz, 2014).

It can also be said that emotion-focused coping can involve a new assessment of a situation that changes or corrects the meaning of tension. It may either be used in the form of escaping or getting away from the problem, which is tantamount to designing a sustainable life, which is tantamount to distancing oneself from all the realities of life if confronted directly. Based on this, it can be stated that patients who use emotion-focused coping strategy never deal with the stress caused by the problem logically and efficiently. Instead of solving the problem, they focus on the problem's negative emotions and experience high levels of stress, anxiety, and mental health problems. The use of an emotion-focused coping strategy is also a maladaptive application that increases their stress because they disregard the problem. Therefore, these patients experience major problems in their relationships and experience distress in life. This is because these people often engage their emotions and use the mechanism of crying. Because of their inability to control life events and difficulty

making decisions, they experience low self-esteem, diminished social support, and increased stress. These emotions can have many negative psychological effects on their relationships with others, leading to increased disease deterioration and reduced psychosocial adjustment (Assari, Moazen, Caldwell & Zimmerman, 2017).

This study's limitations included the elimination of several sample groups due to illiteracy, and heterogeneity of the sample group in terms of education level and socioeconomic status. Therefore, it is suggested that similar studies be performed on other patients to compare the results. Moreover, it is possible to homogenize the sample group in terms of education level and socioeconomic status to prevent disturbing factors. Furthermore, the relationship between the duration of the disease and patients' QOL will be significant.

Conclusion

According to the results, perceived deterioration has a direct effect on psychosocial adjustment in HIV-infected individuals. Coping strategies and treatment adherence also have a direct effect on psychosocial adjustment in HIV-positive individuals. Therefore, the conceptual model is approved.

Conflict of Interests

Authors have no conflict of interests.

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References

HIV Monitoring Report in the Islamic Republic of Iran on the Monitoring of the Declaration of Commitment adopted by the Special Session of the UN General Assembly on AIDS and HIV (December 21, 2017), Secretariat of the National HIV Working Group of the Ministry of Health and Medical Education March 2018

Inquiry from the implementers of the project "Estimation of HIV cases in Iran, 2017, Center for Communicable Diseases Management and the HIV Yuan Office in Iran. March 2017 (unpublished).

Haghdoost, A. A., Danesh, A., et al., 2014. Behavioral and serological care of HIV in injecting drug users in HIV, Kerman University of Medical Sciences, Kerman, Iran. Project report.

Anderson, M. A., Burda, J. E., Ren, Y., Ao, Y., O'Shea, T. M., Kawaguchi, R. et al. (2016). Astrocyte scar formation aids central nervous system axon regeneration. *Nature*, *532*(7598), 195-200. doi:nature17623 [pii];10.1038/nature17623 [doi]. Retrieved from PM:27027288

Bekker, L. G., Alleyne, G., Baral, S., Cepeda, J., Daskalakis, D., Dowdy, D. et al. (2018). Advancing global health and strengthening the HIV response in the era of the Sustainable Development Goals: the International AIDS Society-Lancet Commission. *Lancet*, *392*(10144), 312-358. doi:S0140-6736(18)31070-5 [pii];10.1016/S0140-6736(18)31070-5 [doi]. Retrieved from PM:30032975

Bowen, J. R., Zimmerman, M. G., & Suthar, M. S. (2018). Taking the defensive: Immune control of Zika virus infection. *Virus.Res*, *254*, 21-26. doi:S0168-1702(17)30658-5 [pii];10.1016/j.virusres.2017.08.018 [doi]. Retrieved from PM:28867493

Brunello, G., Fort, M., Schneeweis, N., & Winter-Ebmer, R. (2016). The Causal Effect of Education on Health: What is the Role of Health Behaviors? *Health Econ., 25*(3), 314-336. doi:10.1002/hec.3141 [doi]. Retrieved from PM:25581162

Bufacchi, R. J., & Iannetti, G. D. (2016). Gravitational cues modulate the shape of defensive peripersonal space. *Curr Biol., 26*(21), R1133-R1134. doi:S0960-9822(16)31074-0 [pii];10.1016/j.cub.2016.09.025 [doi]. Retrieved from PM:27825445

Calvetti, P. +. c., Marques Giovelli, G. R., Chitt+¦ Gauer, G. J., & de Moraes, J. F. D. (2014). Psychosocial factors associated with adherence to treatment and quality of life in people living with HIV/AIDS in Brazil. *Jornal Brasileiro de Psiquiatria, 63*(1), 8-15.

Castanheira, M. F., Conceicao, L. S. E. C., Millot, S., Rey, S., Bégout, M. L., Damsgard, B, et al. (2017). Coping styles in farmed fish: consequences for aquaculture. *Rev Aquac, 9*(1), 23-41. doi:https://doi.org/10.1111/raq.12100.

Chen, Y. L., Chen, S. H., & Gau, S. S. (2015). ADHD and autistic traits, family function, parenting style, and social adjustment for Internet addiction among children and adolescents in Taiwan: a longitudinal study. *Res Dev Disabil, 39*, 20-31. doi:S0891-4222(14)00530-7 [pii];10.1016/j.ridd.2014.12.025 [doi]. Retrieved from PM:25617844

Cooley, E., Brown-Iannuzzi, J. L., Lei, R. F., Philbrook, L. E., Cipolli III, W., & McKee, S. E. (2021). Investigating the health consequences for White Americans who believe White Americans are wealthy. *Soc Psychol Personal Sci, 12*(3), 371-382.

Deng, H., Xiao, X., & Wang, Z. (2016). Periaqueductal Gray Neuronal Activities Underlie Different Aspects of Defensive Behaviors. *J Neurosci, 36*(29), 7580-7588. doi:36/29/7580 [pii];10.1523/JNEUROSCI.4425-15.2016 [doi]. Retrieved from PM:27445137

Ernsting, C., Dombrowski, S. U., Oedekoven, M., JL, O. S., Kanzler, M., Kuhlmey, A. et al. (2017). Using Smartphones and Health Apps to Change and Manage Health Behaviors: A Population-Based Survey. *J Med Internet.Res, 19*(4), e101. doi:v19i4e101 [pii];10.2196/jmir.6838 [doi]. Retrieved from PM:28381394

Estes, J. D., Kityo, C., Ssali, F., Swainson, L., Makamdop, K. N., Del Prete, G. Q. et al. (2017). Defining total-body AIDS-virus burden with implications for curative strategies. *Nat.Med, 23*(11), 1271-1276. doi:nm.4411 [pii];10.1038/nm.4411 [doi]. Retrieved from PM:28967921

Foley, J. E., & Weinraub, M. (2017). Sleep, Affect, and Social Competence from Preschool to Preadolescence: Distinct Pathways to Emotional and Social Adjustment for Boys and for Girls. *Front.Psychol, 8* , 711. doi:10.3389/fpsyg.2017.00711 [doi]. Retrieved from PM:28588517

Frank, R. G., & Pollack, H. A. (2017). Addressing the Fentanyl Threat to Public Health. *N Engl.J Med, 376*(7), 605-607. doi:10.1056/NEJMp1615145 [doi]. Retrieved from PM:28199808

Goel, R., & Tyagi, N. (2016). Potential Contribution of Antioxidant Mechanism in the Defensive Effect of Lycopene Against Partial Sciatic Nerve Ligation Induced Behavioral, Biochemical and Histopathological Modification in Wistar Rats. *Drug Res (Stuttg.), 66*(12), 633-638. doi:10.1055/s-0042-112364 [doi]. Retrieved from PM:27504866

Ramirez, M. T., & Hernandez, R. L. (2007). Factor structure of the Perceived Stress Scale (PSS) in a sample from Mexico. *Span.J Psychol, 10*(1), 199-206. doi:10.1017/s1138741600006466 [doi]. Retrieved from PM:17549893

Gordon, N., & Lin, T. (2016). The Kaiser Permanente Northern California Adult Member Health Survey. *Perm.J, 20*(4), 15-225. doi:15-225 [pii];10.7812/TPP/15-225 [doi]. Retrieved from PM:27548806

Graham, S. (2018). Race/Ethnicity and Social Adjustment of Adolescents: How (Not if) School Diversity Matters. *Educ Psychol, 53*(2), 64-77.

Gupta, B. B., & Badve, O. P. (2017). Taxonomy of DoS and DDoS attacks and desirable defense mechanism in a Cloud computing environment. *Neural.Comput.Appl, 28*(12), 3655-3682.

Gupta, S., & Gupta, B. B. (2016). XSS-immune: A Google chrome extension-based XSS defensive framework for contemporary platforms of web applications. *Security and Communication Networks, 9*(17), 3966-3986.

Happell, B., & Ewart, S. B. (2016). 'Please believe me, my life depends on it': physical health concerns of people diagnosed with mental illness. *Aust Nurs Midwifery J, 23*(11), 47. Retrieved from PM:27530033

Huang, L., Yuan, T., Tan, M., Xi, Y., Hu, Y., Tao, Q. et al. (2017). A retinoraphe projection regulates serotonergic activity and looming-evoked defensive behaviour. *Nat.Commun, 8*, 14908. doi:ncomms14908 [pii];10.1038/ncomms14908 [doi]. Retrieved from PM:28361990

Joshi, R. (2018). A Review on Colletotrichum spp. Virulence mechanism against host plant defensive factors. *Journal of Medicinal Plants Studies, 6*, 64-67.

Keskin, G. S., Guler, S., Gokce, C. B., Gunes, N., Yon, M. I., & Yoldas, T. K. (2017). Validation of the Revised Illness Perception Questionnaire in Turkish epilepsy patients and the effects of earthquake experience on perception of disease. *Neuropsychiatr.Dis Treat., 13*, 551-556. doi:10.2147/NDT.S126706 [doi];ndt-13-551 [pii]. Retrieved from PM:28260901

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Res.Policy, 46*(4), 868-879.

Li, L., Feng, X., Zhou, Z., Zhang, H., Shi, Q., Lei, Z. et al. (2018). Stress Accelerates Defensive Responses to Looming in Mice and Involves a Locus Coeruleus-Superior Colliculus Projection. *Curr Biol., 28*(6), 859-871. doi:S0960-9822(18)30159-3 [pii];10.1016/j.cub.2018.02.005 [doi]. Retrieved from PM:29502952

Li, L., Huang, T., Tian, C., Xiao, Y., Kou, S., Zhou, X. et al. (2016). The defensive effect of phellodendrine against AAPH-induced oxidative stress through regulating the AKT/NF-kappaB pathway in zebrafish embryos. *Life.Sci, 157*, 97-106. doi:S0024-3205(16)30313-7 [pii];10.1016/j.lfs.2016.05.032 [doi]. Retrieved from PM:27234894

Mahmoud, S. K., Alfonse, M., Roushdy, M. I., & Salem, A. M. (2017 Dec 5-7). A comparative analysis of Cross Site Scripting (XSS) detecting and defensive techniques. Proceedings of the *2017 8th International Conference on Intelligent Computing and Information Systems (ICICIS);* Cairo, Egypt.

Makanjuola, T., Taddese, H. B., & Booth, A. (2014). Factors associated with adherence to treatment with isoniazid for the prevention of tuberculosis amongst people living with HIV/AIDS: a systematic review of qualitative data. *PLoS.One., 9*(2), e87166. doi:10.1371/journal.pone.0087166 [doi];PONE-D-13-37256 [pii]. Retrieved from PM:24498298

Mohr, D. C., Weingardt, K. R., Reddy, M., & Schueller, S. M. (2017). Three Problems With Current Digital Mental Health Research and Three Things We Can Do About Them. *Psychiatr.Serv., 68*(5), 427-429. doi:10.1176/appi.ps.201600541 [doi]. Retrieved from PM:28412890

Nouvian, M., Reinhard, J., & Giurfa, M. (2016). The defensive response of the honeybee Apis mellifera. *J Exp Biol., 219*(Pt 22), 3505-3517. doi:219/22/3505 [pii];10.1242/jeb.143016 [doi]. Retrieved from PM:27852760

Pakenham, K. I., Dadds, M. R., & Terry, D. J. (1996). Adaptive demands along the HIV disease continuum. *Soc Sci Med, 42*(2), 245-256. doi:0277953695000992 [pii];10.1016/0277-9536(95)00099-2 [doi]. Retrieved from PM:8928033

Pakenham, K. I., Dadds, M. R., & Terry, D. J. (1994). Relationships between adjustment to HIV and both social support and coping. *J Consult.Clin Psychol, 62*(6), 1194-1203. doi:10.1037//0022-006x.62.6.1194 [doi]. Retrieved from PM:7860817

Paolinelli-Alfonso, M., Villalobos-Escobedo, J. M., Rolshausen, P., Herrera-Estrella, A., Galindo-Sanchez, C., Lopez-Hernandez, J. F. et al. (2016). Global transcriptional analysis suggests Lasiodiplodia theobromae pathogenicity factors involved in modulation of grapevine defensive response. *BMC Genomics., 17*(1), 615. doi:10.1186/s12864-016-2952-3 [doi];10.1186/s12864-016-2952-3 [pii]. Retrieved from PM:27514986

Rahat, E., & Ilhan, T. (2016). Coping Styles, Social Support, Relational SelfConstrual, and Resilience in Predicting students' Adjustment to University Life. *Educ.Sci.Theory Pract.*, *16*(1), 187-208.

Sacktor, N., Skolasky, R. L., Seaberg, E., Munro, C., Becker, J. T., Martin, E. et al. (2016). Prevalence of HIV-associated neurocognitive disorders in the Multicenter AIDS Cohort Study. *Neurology*, *86*(4), 334-340. doi:WNL.0000000000002277 [pii];10.1212/WNL.0000000000002277 [doi]. Retrieved from PM:26718568

Sarabia-Cobo, C. M., Suarez, S. G., Menendez Crispin, E. J., Sarabia Cobo, A. B., Perez, V., de, L. P. et al. (2017). Emotional intelligence and coping styles: An intervention in geriatric nurses. *Appl Nurs Res*, *35*, 94-98. doi:S0897-1897(16)30101-X [pii];10.1016/j.apnr.2017.03.001 [doi]. Retrieved from PM:28532736

Shaeib, F., Khan, S. N., Ali, I., Thakur, M., Saed, M. G., Dai, J. et al. (2016). The Defensive Role of Cumulus Cells Against Reactive Oxygen Species Insult in Metaphase II Mouse Oocytes. *Reprod.Sci*, *23*(4), 498-507. doi:1933719115607993 [pii];10.1177/1933719115607993 [doi]. Retrieved from PM:26468254

Stacey, D., Legare, F., Lewis, K., Barry, M. J., Bennett, C. L., Eden, K. B. et al. (2017). Decision aids for people facing health treatment or screening decisions. *Cochrane.Database.Syst Rev*, *4*, CD001431. doi:10.1002/14651858.CD001431.pub5 [doi]. Retrieved from PM:28402085

Tran, B. X., Hwang, J., Nguyen, L. H., Nguyen, A. T., Latkin, N. R., Tran, N. K. et al. (2016). Impact of Socioeconomic Inequality on Access, Adherence, and Outcomes of Antiretroviral Treatment Services for People Living with HIV/AIDS in Vietnam. *PLoS.One.*, *11*(12), e0168687. doi:10.1371/journal.pone.0168687 [doi];PONE-D-16-34513 [pii]. Retrieved from PM:28005937

Tran, B. X., Nguyen, L. T., Do, C. D., Nguyen, Q. L., & Maher, R. M. (2014). Associations between alcohol use disorders and adherence to antiretroviral treatment and quality of life amongst people living with HIV/AIDS. *BMC Public Health*, *14*, 27. doi:1471-2458-14-27 [pii];10.1186/1471-2458-14-27 [doi]. Retrieved from PM:24411007

Tuf, I., -îmielov+í, L., & +áipo+í, J. (2016). Conglobation as a defensive behaviour of pill millipedes (Diplopoda: Glomerida). *Acta Soc.Zool.Bohem.*, *80*, 39-44.

Turan, B., Hatcher, A. M., Weiser, S. D., Johnson, M. O., Rice, W. S., & Turan, J. M. (2017). Framing Mechanisms Linking HIV-Related Stigma, Adherence to Treatment, and Health Outcomes. *Am.J Public Health*, *107*(6), 863-869. doi:10.2105/AJPH.2017.303744 [doi]. Retrieved from PM:28426316

Vorburger, C., & Perlman, S. J. (2018). The role of defensive symbionts in host-parasite coevolution. *Biol.Rev Camb.Philos.Soc*, *93*(4), 1747-1764. doi:10.1111/brv.12417 [doi]. Retrieved from PM:29663622

Walter, M. J., Van't Spijker, A., Pasma, A., Hazes, J. M., & Luime, J. J. (2017). Focus group interviews reveal reasons for differences in the perception of disease activity in rheumatoid arthritis. *Qual.Life.Res*, *26*(2), 291-298. doi:10.1007/s11136-016-1369-4 [doi];10.1007/s11136-016-1369-4 [pii]. Retrieved from PM:27444780

Zamani, S., Kihara, M., Gouya, M. M., Vazirian, M., Ono-Kihara, M., Razzaghi, E. M. et al. (2005). Prevalence of and factors associated with HIV-1 infection among drug users visiting treatment centers in Tehran, Iran. *AIDS.*, *19*(7), 709-716. doi:00002030-200504290-00008 [pii];10.1097/01.aids.0000166094.24069.72 [doi]. Retrieved from PM:15821397