ORIGINAL ARTICLE Received 27 April. 2018 Accepted 14 December. 2018

ISSN: 2423-6985

IRANIAN JOURNAL OF POSITIVE PSYCHOLOGY

Vol. 5, Issue 1, 27-36, 2019

Iranian Journal of Positive Psychology

ISSN: 2423-6985

ijpp.worldofresearches.com

Quality of Life Therapy on Negative Automatic Thoughts of Female with Multiple Sclerosis (M. S.)

Mojtaba Ansari Shahidi*[1], Fatemeh Bakhshandeh[2]

1. Assistant Professor, Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran.
2. Ph.D. Candidate, Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran.

A B S T R A C T

The purpose of this research was to determine the effectiveness of quality of life therapy on negative automatic thoughts of female with MS in Isfahan. The research has employed a semi-experimental method with pretest, posttest, and control group with one-month follow up. For this purpose, a clinic was selected from the specialized clinics of Isfahan in 2016. 30 female with MS were chosen through the convenience sampling method and divided into two groups of experimental and control (each group had 15 people). The subjects responded to the negative automatic thoughts Questionnaire (Hollon & Kendall, 1980) before and after the intervention and one month later in the follow up phase. The experimental group received the quality of life therapy by Frisch (2005) in 8 sessions of 90 minutes, but the control group did not receive any intervention. The results of multivariate covariance analysis showed that the quality of life therapy was effective in reducing the negative automatic thoughts in post-test and follow up stages in the female with MS ($P < 0.05$). The results of this study showed that the quality of life therapy could be used to improve the psychological well-being of female with MS.

Keywords: Quality Of Life Therapy, Negative Automatic Thoughts, MS.

INTRODUCTION

Multiple sclerosis is a chronic and progressive disease, which destroys the myelin in the central nervous system and affects the sensory and motor function. Chronic nature of the disease, lack of prognosis and definitive treatment, and engaging individuals in young ages cause many psychological disorders in patients with anxiety, stress, and depression(Fava & Tomba, 2009).

This disease usually occurs in the age of 20 to 40 years old, which occurs in female 1.5 to 3 times more than male. Unfortunately, the number of people infected with the disease in the world is high and it is increasing day by day, so that the disease has affected about 1.1 million people across the world. The disease rate in Iran, despite the lesser reported statistics among Asians, is about 15-30 people per 100,000 people (Cuker et al., 2019; Ontaneda et al., 2019). Studies have shown that patients with MS have much higher levels of psychological disorders than healthy people. These symptoms may be due to the direct effect of inflammation and demyelination of the nerves or the psychological effects of chronic and unpredictable multiple sclerosis. The psychological manifestations of this disease are anxiety, stress, depression, cognitive disorders, irritability, frustration, and anger, among which depression, anxiety, stress,

* . Corresponding Author: Dransarishahidi@gmail.com

DOI: In prossing

To cite this article: Ansari Shahidi, M., Bakhshandeh, F. (2019). Quality of Life Therapy on Negative Automatic Thoughts of Female with Multiple Sclerosis (M. S.). *Iranian Journal of Positive Psychology*, 5 (1), 27-36.

and anger, among which depression, anxiety, stress, and frustration are more common in MS patients(Csillik et al., 2016; Gromisch, Fiszdon, & Kurtz, 2018; McCabe, Ebacioni, Simmons, McDonald, & Melton, 2015).

Studies have also shown that patients with MS have significantly higher levels of psychological disorders than healthy people. These symptoms may be due to the direct effect of inflammation and demyelination of the nerves or the psychological effects of chronic and unpredictable multiple sclerosis. About 48% of patients experience anxiety, stress, and depression symptoms in the first year after diagnosis, which greatly affects the quality of life of these patients (Bahramkhani et al., 2013; Haupts & Seidel, 2018; Iodice et al., 2016).

The number of infected females is higher than male, but the disease develops more severely in males. This is attributed to the effects of hormones such as estrogen and progesterone. According to statistics in the world, the ratio of males and females is two to one, but in Iran, it is three to one(Marrie et al., 2015; Minagar, Jy, Jimenez, & Alexander, 2006).

The negative automatic thoughts may avoid medical situations and interfere with treatment and instructions. Studies have shown that psychological stress has a profound effect on the body function (Kiecolt-Glaser & Glaser, 1991; Lord, Phillips, & Arlt, 2018; Lovallo, 2015). Biological, psychological, and social factors all contribute to distress variability. The uncertainty, lack of control, and additional dependence affect many MS patients. Many of them are afraid of future suffering, including painful death, as well as loss of relationships and roles as the disease worsens. Moreover, the feelings of sadness, mourning, and anxiety arise in many patients, but they can be treated when the support of family, friends, and doctors are promising and soothing. Intolerable or prolonged distress that interferes with a person's performance requires evaluation and management. Negative thoughts are not a normal or expected response, and make the situation more complex requiring individual judgment and treatment, and its negative effects on quality of life and functional status should be considered. Distress occurs at different times during the course of the disease, including early diagnosis, early or during therapy; relapse of the disease, and during the transition to a palliative stage(Holland, 2018). Female with MS also face a lot of stress during their course of illness including the fear of possible death, the stress of informing family members about the disease, the stress caused by the awareness of the fact that life will undergo significant changes. In addition, the disintegration of life, social stigma, difficult and annoying treatments, sustained physical restrictions, disruption of social support networks also occur(Khatibian & Shakerian, 2014). Although negative thoughts are generally correlated with the increase in pain, the specific thoughts of pain can have a much larger contribution to pain experience, as these thoughts can affect self-efficacy and anticipation of coping ability (Stroud, Thorn, Jensen, & Boothby, 2000). The negative automatic thoughts constitute the most obvious and accessible level of knowledge(Beck, Davis, & Freeman, 2015). In other words, negative automatic thoughts are images or cognitions that are reported by a person as a result of a cognitive schema or a fundamental belief that is activated in a particular position. These images reflect the meaning that a person gives to a particular situation and is closely correlated to that emotional and behavioral response. Additionally, automatic thoughts play an important role in the therapeutic process and they are used as a preferred passageway for access to the cognitive system, helping

to understand the fundamental beliefs that are the basis of many psychological disorders(Ziaee & Mashhadi, 2014).

The use of psychosocial interventions for MS patients is increasing. The use of these services not only reflects the patient's need for supportive care, but shows the growing awareness that psychosocial issues can have good outcomes for improving patients(Page & Adler, 2008). The current general consensus is that psychosocial interventions do not increase the patient's longevity, but help females to live better(Andersen et al., 2008).

As mentioned, the nature of MS disease provides several problems for patients. These problems are tolerable in the physical field, but when combined with multiple psychological factors, they are painful, torturous, and a source of distress and sadness. Hence, the attention of many therapists and physicians to this area is focused on providing conditions for them to be able to commit and adapt to disease and enjoy life and increase survival with meaning and purpose(Kissane et al., 2004).

Today, the positive effects of psychological interventions on the improvement process of chronic diseases such as MS have been confirmed. With the increasing expansion of health psychology, psychologists have taken a more active role in the treatment of these diseases (Baudry, Lelorain, Mahieuxe, & Christophe, 2018; Watson et al., 1991). Researchers have concluded that group psychotherapy for the female with MS has been effective in improving the mental status of patients, and those who participate in therapeutic interventions have fewer symptoms of depression, anxiety, and mood disorders than other patients who did not have any psychiatric interventions. Torkaman, SedighiPashaki, Mohamadian, and Moghadas (2012) showed that group training of optimism caused a significant reduction in depression, anxiety, and stress in the female with MS compared to the control group.

Another effective intervention in psychological treatment is the quality of life therapy. Quality of life therapy has been created along with other new therapeutic approaches in the field of positive psychology, aiming to create well-being and increasing the satisfaction of life, combining cognitive approaches with positive psychology by Frisch (2005). Quality of life therapy is a model that seeks to create subjective well-being and life satisfaction, based on a 5-way model called CASIO, in the 16 main areas of life. These five strategies are living conditions (C), attitudes (A), -standards that we have defined for ourselves (S), values (I), and general satisfaction of life (O) (Frisch, 2005).

Quality of life therapy is the only cognitive-behavioral therapy that puts the increase in happiness and life satisfaction in different aspects (such as communication, enjoyable activities, self-esteem) in the center of its goals, and ultimately its main objective is to improve quality life is in particular(Gracely et al., 2004). Frisch (2005) has provided the training of relaxation and mediation based on the quality of life in 16 areas for clinical and non-clinical groups by combining a positive cognitive-behavioral and psychological approach with the use of metaphor.

According to the conducted types of research and the fact that MS patients require psychological intervention for effective adaptation and living conditions for their chronic disease (Desautels, Savard, Ivers, Savard, & Caplette-Gingras, 2018; Issazadegan, Shiekhi,

Hafeznia, & Khademi, 2013), the present research sought to answer this question whether the quality of life therapy affects the negative automatic thoughts of female with MS?

METHODOLOGY

The purpose of this research was to determine the effect of the quality of life therapy on the negative automatic thoughts of female with MS in Isfahan. This applied research has employed a semi-experimental method with pretest, posttest, and control group with one-month follow up. Thus, the independent variable was group therapy based on improving the quality of life that was provided for the experimental group and the dependent variables were the follow-up and post-test scores of the psychological symptoms of the negative automatic thoughts. The control variable was the pre-test scores of the two mentioned variables. The statistical population included all women with MS who referred to private clinics in Isfahan in the spring of 2016. A clinic was randomly selected from these clinics of which 30 available subjects with inclusion criteria (length of disease, age, and intelligence, or the ability to understand, and not receive psychological interventions during the previous year) were selected and randomly divided into two experimental and control groups.

Negative Automatic Thought Questionnaire (ATQ): The questionnaire was developed by Hollon and Kendall (1980) to assess the cognitive self-esteem in depression. The negative automatic thought questionnaire has 30 questions, in which examples of automatic thought of depressed patients are presented. Depending on their negative thoughts over the past week, subjects chose options including never, sometimes, usually, always, often marked with grades 1 to 5. The internal consistency of this questionnaire has been reported using the Cronbach alpha coefficient as much as 97% (Hollon & Kendall, 1980). In the current study, Cronbach's Alpha was as much as 98%.

Indicators such as mean and standard deviation, frequency, and frequency distribution were used as the level of descriptive statistics and the multivariate covariance analysis was used as the inferential statistics for the statistical analysis of the obtained data.

Research implementation: The subjects of both groups responded to the questionnaires as the pre-test. The experimental group was then treated with a quality of life therapy based on Frisch (2005) Thermic Package in the form of group therapy during 8 sessions of 90-minute t that was held weekly by the researcher (2 days a week). The control group did not receive any intervention during this period. After the end of the eighth session of intervention, in the posttest, the subjects again replied to the questionnaire of psychological symptoms scale (depression, anxiety, and stress with 21 questions). One month after the last intervention session, patients were contacted again at the follow-up stage and asked the clinic to ask the relevant questionnaires to be answered by inviting the subjects to the clinic. At the end of each therapy session, an overview of the session was given to patients in a pamphlet. The summary of therapy sessions is presented in Table 1.

Table 1. Summary of quality of life therapy sessions

First session	Communicating and introducing members, expressing group rules, goals, and introducing courses, taking commitments from attendees to attend sessions, introducing and discussing the quality of life, life satisfaction, happiness
Second session	A review of the discussion of the previous session, definition of the quality of life therapy, introduction of dimensions of quality of life, the introduction of 16 areas of life that constitute the overall quality of life of the individual, the discovery of problematic members, summary of the discussion, the provision of feedback
Third session	A review of the discussion of the previous session, the introduction of CASIO as a five root, starting with one of the dimensions, introducing C as the first strategy and its application in the 16 dimensions of the quality of life
Fourth Session	A review of the discussion of the previous session, the introduction of CASIO, introducing A as the second strategy in the 16 dimensions of the quality of life
Fifth meeting	A review of the discussion of the previous session, discussion on CASIO, introducing S as the third strategy to increase satisfaction in life, teaching the principles of quality of life
Sixth session	A review of the discussion of the previous session, discussion on the principles of quality of life, introducing I as the fourth strategy and the application of this principle to increase satisfaction
Seventh session	A review of the discussion of the previous session, continuation of the discussion on the principles of the introduction of O as the fifth strategy
Eighth session	Provide a summary of the contents of the preceding sessions, summarizing and training CASIO in different life situations and applying the principles in various aspects of life and the application of CASIO in the 16 areas of life

RESULTS

The research data were analyzed using SPSS 21 software and multivariate analysis of covariance (MANCOVA). The mean and standard deviation of pre-test and post-test scores of subjects in the negative automatic thoughts variable are in accordance with Table 2.

Table 2. Descriptive indicators of the variables of the research divided into two groups and three stages of research

Groups variable		Experimental			Control		
		pre-test	post-test	Follow up	pre-test	post-test	Follow up
Negative automatic thoughts	mean	73.73	40.60	46.59	46.73	40.74	40.84
	standard deviation	51.39	35.25	27.24	23.37	01.36	89.35

As shown in Table 2, the mean scores of negative automatic thoughts in the experimental group in the pre-test, post-test, and follow up phases were as much as 73.73, 60.40, and 59.46. This variable in the control group in the pre-test, post-test, and follow up phases were as much as 73.46, 74.40, and 84.40. In general, descriptive findings show that the mean scores in the post-test and follow-up stages in the experimental group for all the research variables were better than the control group.

Before using the covariance analysis model for the default, the Kolmogorov-Smirnov test was used for the normal distribution of samples. Levene test and the box test were used to investigate the equality of covariance to study the statistical assumptions necessary for using parametric tests. Therefore, the use of the covariance analysis test is valid. The results of the Kolmogorov-Smirnov test for the research hypotheses are presented in Table 3.

Table 3. Kolmogorov-Smirnov test to assess the normal distribution of the research variables in the pre-test stage

Variable	Groups	Statistics	Degrees of freedom	Significance
negative automatic thoughts	Experimental	0.168	15	0.200
	control	0.187	15	0.076

As can be observed in Table (3), the null hypothesis based on the normal distribution of scores in all the research variables is normal to the society, and the skewness is accidental (All significant levels are greater than 0.05). The results of the Levene test for assessing the homogeneity of variances in the psychological symptoms variable in the two groups are presented in Table 4.

Table 4. Levene's test results for assessing the equivalence of the variances of the negative automatic thoughts

Variable	F	Degree of freedom 1	Degree of freedom 2	Significance
negative automatic thoughts	0.247	1	28	0.623

As can be observed in Table 4, the Levene's assumption based on the equality of variance in the group is not rejected in negative automatic thoughts in the pre-test phase in society and it is confirmed. The obtained significance level is greater than 0.05.

Table 5. Results of comparison of two groups in negative automatic thoughts scores in two stages of post-test and follow-up

Variable	Wilks Lambda Coefficient	Pillai's trace Coefficient	F	Df1	Df2	p	Effect size	Statistical power
negative automatic thoughts pre-test	0.161	0.839	67.768	2	26	0.001	0.839	1.000
Group	0.949	0.506	13.306	2	26	0.001	0.506	0.995

The results of the single-variable analysis for comparing two groups in post-test and follow-up or studying the difference between the two groups in post-test and follow-up stages are presented separately in Table 6.

Table 6. Single-variable analysis results

Resource	Sum of squares	Degrees of freedom	Mean Square	F	p	Effect size	Statistical power
negative automatic thoughts pre-test	1511.833	1	1511.833	214.9	0.005	0.254	0.833
Follow up	4734.040	1	4734.040	24.586	0.001	0.477	0.998

According to the results of Table 4 and 6, the mean of negative automatic thoughts scores in the post-test and follow up stages was significantly different in the experimental and control groups (P = 0.001). The results show that about 50.6% of individual differences in the reduction of negative automatic thoughts in the two stages of the study are related to the difference between the two groups. The results also showed that the relationship between pre-test with post-test and follow-up was also significant (P = 0.001). In other words, the quality of life therapy has a significant effect on the negative automatic thoughts of the female with MS.

CONCLUSION

The purpose of this research was to investigate the effectiveness of quality of life therapy on negative automatic thoughts of the female with MS. The present research had one main hypothesis. Hypothesis 1: quality of life therapy affects the negative automatic thoughts of the female with MS. According to the results, the quality of life therapy affects the negative automatic thoughts of the female with MS. The present research is one of the first types of research in this field and consequently, there is no research finding in line with the effectiveness of quality of life therapy on negative automatic thoughts.

According to the contents in the explanation of this study, this approach (quality of life therapy) changes the attributes, beliefs, and thoughts by combining the cognitive and positive psychology and helps female with MS to achieve psychological well-being through changes in their attributes and cognition.

The cognitive style theory of quality of life therapy believes that people are in passive and repetitive thoughts of depression symptoms, which results in persistence of psychological distress and symptoms associated with depression, such as negative thoughts. Therefore, quality of life was restored to thinking based on positive and logical thoughts in the quality of life therapy to reduce these symptoms. It was attempted to fill the gap between the true ideas of individuals in life and the conditions that would lead them to respond positively and negatively with a cognitive model. On the other hand, one of the reasons for decreasing the symptoms of negative automatic thought in subjects is the emphasis on improving quality of life therapy to the role of emotion and management of stress and problem-solving methods to cope with emotional conflicts. During the sessions, people learned how to identify and eliminate negative emotions in their lives as much as possible.

The quality of life therapy is one of the most important and valuable areas in satisfying a better life with the role of values, goals, or spiritual life. As during the sessions, the subjects learned how to differentiate between their spiritual and non-spiritual goals and realize that. The subjects learned they had to devote parts of their time during the day to their values and reach a coherent worldview about themselves and the world by rebuilding the plan of life or new thought schemes and find the main function of spirituality, i.e. optimism.

Other evidence has shown that those who are in a challenging and stressful situation make a sense for the situation usually experience a lower negative emotion and report a higher quality of life. This indicates that making a sense can have a great effect on the quality of life than the mere existence of positive emotions alone (Hughes, 2006). This causes people to raise their quality of life through involving in activities that are always meaningful in terms of social integrity, social cohesion, and communication. In the quality of life therapy, the members of the group were taught to come up with a concept in life with a cognitive review that "what is the purpose and meaning or value of life". Then they learned how to manage the activities, goals, and meanings behind each of their behavioral habits and modify the areas of their life that are in turmoil and do not enjoy it. This led to increased rational thinking and optimism in subjects.

In addition, the research results showed that this therapy has reduced the negative automatic thoughts using the cognitive approach. The intervention topics during the sessions

are related to the daily events in the lifestyle of these patients, but the behavioral exercises provided in the quality of life therapy are designed so that requires a type of cognitive and intellectual challenges in those use it. Some of the challenges are the role of meaning and values in life, the plan of life, social communication, creativity, and problem solving, all of which require high cognitive attention.

In this therapy, it was tried to help people with their cognitive methods control their negative automatic thoughts and irrational thoughts. Therefore, according to the results of this research, t can be said that:

The quality of life therapy is a proper way to reduce the negative automatic thoughts in female with MS.

According to the results of this study based on the positive effect of quality of life therapy on reducing the negative automatic thoughts in the female with MS, the use of this therapeutic approach is recommended to all psychologists and psychiatrists as a selective therapeutic approach and complementary medical treatment for the treatment of psychological disorders in these patients. However, this research had faced some limitations. Since this research was merely conducted on the female with MS and patients were selected from the referral of the specialized clinic, the generalization of the results to other communities should be done with caution. Due to the limited time and place of research implementation, the treatment plan was performed in the experimental group during 8 sessions in 4 weeks. Considering the widespread problems of cancer patients, the treatment plan that includes more sessions is likely to be more beneficial. It is also recommended to conduct the research on a larger sample in other clinics, hospitals, and other areas. In the end, I would like to express my appreciation to all the people who kindly and honestly cooperated with the researcher.

REFERENCES

Andersen, Barbara L, Yang, Hae-Chung, Farrar, William B, Golden-Kreutz, Deanna M, Emery, Charles F, Thornton, Lisa M, . . . Carson III, William E. (2008). Psychologic intervention improves survival for breast cancer patients: a randomized clinical trial. *Cancer, 113*(12), 3450-3458.

Bahramkhani, Mahmood, Mohammadkhani, Parvaneh, Janbozorgi, Masoud, Keshavarz, Zahra, Darvishi, Nesa, & Azizi, Alireza. (2013). Multimodal psychotherapy in patients with multiple sclerosis (ms). *Practice in Clinical Psychology, 1*(3), 169-175.

Baudry, A-S, Lelorain, Sophie, Mahieuxe, M, & Christophe, Veronique. (2018). Impact of emotional competence on supportive care needs, anxiety and depression symptoms of cancer patients: a multiple mediation model. *Supportive Care in Cancer, 26*(1), 223-230.

Beck, Aaron T, Davis, Denise D, & Freeman, Arthur. (2015). *Cognitive therapy of personality disorders*: Guilford Publications.

Csillik, Antonia, Bruce, Jared, Catley, Delwyn, Gay, Marie-Claire, Goggin, Kathleen J, Swaggart, Keri R, . . . Thomas, Sarah. (2016). Psychological interventions for enhancing adherence to disease-modifying therapies (DMTs) in multiple sclerosis. *Cochrane Database of Systematic Reviews, 2016*(11).

Cuker, Adam, Bass, Ann D, Nadj, Congor, Agius, Mark A, Steingo, Brian, Selmaj, Krzysztof W, . . . Ziemssen, Tjalf. (2019). Immune thrombocytopenia in alemtuzumab-treated MS patients: Incidence, detection, and management. *Multiple Sclerosis Journal*, 1352458518816612.

Desautels, Caroline, Savard, Josée, Ivers, Hans, Savard, Marie-Hélène, & Caplette-Gingras, Aude. (2018). Treatment of depressive symptoms in patients with breast cancer: A randomized controlled trial comparing cognitive therapy and bright light therapy. *Health Psychology, 37*(1), 1.

Fava, Giovanni A, & Tomba, Elena. (2009). Increasing psychological well-being and resilience by psychotherapeutic methods. *Journal of personality, 77*(6), 1903-1934.

Frisch, Michael B. (2005). *Quality of life therapy: Applying a life satisfaction approach to positive psychology and cognitive therapy*: John Wiley & Sons.

Gracely, RH, Geisser, ME, Giesecke, Thorsten, Grant, MAB, Petzke, Frank, Williams, DA, & Clauw, DJ. (2004). Pain catastrophizing and neural responses to pain among persons with fibromyalgia. *Brain, 127*(4), 835-843.

Gromisch, Elizabeth S., Fiszdon, Joanna M., & Kurtz, Matthew M. (2018). The effects of cognitive-focused interventions on cognition and psychological well-being in persons with multiple sclerosis: A meta-analysis. *Neuropsychological Rehabilitation*, 1-20. doi: 10.1080/09602011.2018.1491408

Haupts, Michael, & Seidel, Dietmar. (2018). Rehabilitation in progressive multiple sclerosis. *Swiss Archives of Neurology, Psychiatry and Psychotherapy, 169*(06), 183-184.

Holland, Jimmie C. (2018). Psycho-oncology: Overview, obstacles and opportunities. *Psycho-oncology, 27*(5), 1364-1376.

Hollon, Steven D, & Kendall, Philip C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive therapy and research, 4*(4), 383-395.

Hughes, Michael. (2006). Affect, Meaning and Quality of Life. *Social Forces, 85*(2), 611-629. doi: 10.1353/sof.2007.0009

Iodice, R, Carotenuto, A, Dubbioso, R, Cerillo, I, Santoro, L, & Manganelli, F. (2016). Multimodal evoked potentials follow up in multiple sclerosis patients under fingolimod therapy. *Journal of the neurological sciences, 365*, 143-146.

Issazadegan, Ali, Shiekhi, Siamak, Hafeznia, Mohamad, & Khademi, Ali. (2013). The Effectiveness of Cognitive-Behavioral Group Therapy on Reduction of Depression Symptoms among Patients with Cancer. *Urmia Medical Journal, 24*(5), 339-346.

Khatibian, Marjan, & Shakerian, Ata. (2014). The effectiveness of cognitive behavioral group therapy on decreasing depression, anxiety and stress in breast cancer women admitted to Ahwaz Medical Sciences Hospitals. *Scientific Journal of Kurdistan University of Medical Sciences, 19*(4), 91-99.

Kiecolt-Glaser, Janice K, & Glaser, Ronald. (1991). Stress and immune function in humans *Psychoneuroimmunology* (pp. 849-867): Elsevier.

Kissane, David W, Grabsch, Brenda, Love, Anthony, Clarke, David M, Bloch, Sidney, & Smith, Graeme C. (2004). Psychiatric disorder in women with early stage and advanced breast cancer: a comparative analysis. *Australian and New Zealand Journal of Psychiatry, 38*(5), 320-326.

Lord, Janet M, Phillips, Anna C, & Arlt, Wiebke. (2018). Synergistic Effects of Aging and Stress on Neutrophil Function. *Handbook of Immunosenescence: Basic Understanding and Clinical Implications*, 1-20.

Lovallo, William R. (2015). *Stress and health: Biological and psychological interactions*: Sage publications.

Marrie, Ruth Ann, Reider, Nadia, Cohen, Jeffrey, Stuve, Olaf, Trojano, Maria, Cutter, Gary, . . . Sorensen, Per Soelberg. (2015). A systematic review of the incidence and prevalence of cardiac, cerebrovascular, and peripheral vascular disease in multiple sclerosis. *Multiple Sclerosis Journal, 21*(3), 318-331.

McCabe, Marita P, Ebacioni, Katherine J, Simmons, Rex, McDonald, Elizabeth, & Melton, Lisa. (2015). Unmet education, psychological and peer support needs of people with multiple sclerosis. *Journal of psychosomatic research, 78*(1), 82-87.

Minagar, Alireza, Jy, Wenche, Jimenez, Joaquin J, & Alexander, J Steven. (2006). Multiple sclerosis as a vascular disease. *Neurological research, 28*(3), 230-235.

Ontaneda, Daniel, Nicholas, Jacqueline, Carraro, Matthew, Zhou, Jia, Hou, Qiang, Babb, Jaanai, . . . Jhaveri, Mehul. (2019). Comparative effectiveness of dimethyl fumarate versus fingolimod and teriflunomide among MS patients switching from first-generation platform therapies in the US. *Multiple sclerosis and related disorders, 27*, 101-111.

Page, Ann EK, & Adler, Nancy E. (2008). *Cancer care for the whole patient: Meeting psychosocial*

health needs: National Academies Press.

Stroud, Michael W, Thorn, Beverly E, Jensen, Mark P, & Boothby, Jennifer L. (2000). The relation between pain beliefs, negative thoughts, and psychosocial functioning in chronic pain patients. *PAIN®, 84*(2-3), 347-352.

Torkaman, M., SedighiPashaki, A., Mohamadian, K., & Moghadas, A. R. . (2012). *The Effectiveness of Group Optimism Training on Depression Anxiety and Stress in Women with Breast Cancer*. Paper presented at the International Congress on Psychosmatic Isfahan, Iran.

Watson, Maggie, Greer, Steven, Rowden, Linda, Gorman, Christine, Robertson, Bernadette, Bliss, Judith M, & Tunmore, Robert. (1991). Relationships between emotional control, adjustment to cancer and depression and anxiety in breast cancer patients. *Psychological medicine, 21*(1), 51-57.

Ziaee, Parisa, & Mashhadi, Ali. (2014). The effectiveness of sexual education focused on cognitive schemas, on the improvement of sexual functioning among female married students. *Evidence Based Care, 4*(2), 73-82.