Original Article

Effectiveness of Group Logo-Therapy Program on Existential Anxiety among Patients with Metabolic Syndrome

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ABSTRACT

Metabolic syndrome is one of the most common diseases both in Iran and in the world, which has been widely reported to be associated with anxiety and distress in the metabolic syndrome group. The purpose of the present study was to determine the effectiveness of an educational group logotherapy on existential anxiety in patients with metabolic syndrome. This study was a quasi-experimental pretest-posttest with a control group. The study population consisted of adult women aged between 25 to 60 years old with Metabolic Syndrome that referred to the health center of Semnan County in 2018. The sample included 30 (15 for each group) patients with Metabolic Syndrome who were selected as an available and randomly recruits to each of the groups. Then, the participants in the experimental group participated in 10 sessions of 90 min of Group Logo-Therapy Program, while the control group did not receive any intervention. The instrument for gathering data was the Existential Anxiety Questionnaire. To analyze the data, SPSS.v21 software and statistical tests such as MANCOVA and paired t-test were applied. The results indicated that the group logo-therapy program had a statistically significant impact on components of meaning anxiety and death anxiety, but no difference between control and experimental group in term of loneliness anxiety and responsive anxiety was observed. Also, the results indicated that there was stability at the follow-up stage for death anxiety and loneliness anxiety. According to the results, the group logic training program has been effective in changing some of the variable dimensions of existential anxiety and has increased the ability of individuals to face logic and consequently responsibility for life. And, considering the transient existence of the world in place of insecurity and isolation, it calls for human effort and activity, so it is recommended to use this intervention for people with existential anxiety.

Key words: Logo-therapy, Existential anxiety, Metabolic syndrome

Introduction

Recently due to changes in lifestyle and consequently changes in eating and behavioral habits, there has been a significant increase in the prevalence of non-communicable diseases such as cardiovascular diseases, diabetes and metabolic syndrome in Iran and across the world. However, metabolic syndrome needs more attention as it can be a major risk factor for other diseases, including diabetes, fatty liver, cholesterol, *etc.* (Wen and Schwabe, 2019). Metabolic syndrome encompasses high blood pressure, glucose intolerance, high triglyceride and high-density lipoprotein, and is considered as a risk factor for cardiovascular diseases and type 2 diabetes. Metabolic syndrome is not only a risk factor for cardiovascular diseases and diabetes, it also increases the risk of other diseases such as polycystic ovary syndrome, fatty liver, gallstones, cholesterol, asthma, sleep disorders, *etc.* (Farmanfarma *et al.,* 2018).

The prevalence of metabolic syndrome, which includes high blood pressure, high glucose intolerance, high triglycerides, and low-density lipoprotein, accounts for one quarter of the adult population. Metabolic syndrome prevalence is reported to be 24% in the United States and less than 2% in some countries such as South Korea. The prevalence of the disease in two neighboring countries of Iran, including Saudi Arabia and Turkey, is 39.3% and 33%, respectively, which is high compared to other countries. In Iran, 30% of adults have been diagnosed with this syndrome (Berenjy *et al.,* 2010). The prevalence of metabolic syndrome is high worldwide, especially in the Western and Asian countries. According to the third National Health and Nutrition Examination Survey in the US, the prevalence of metabolic syndrome is estimated at about 25% (Feng *et al.,* 2012).

The relatively high prevalence of metabolic syndrome and its role in the development of other non-communicable diseases, as well as its impact on worsening the people's health have prompted researchers to investigate its causative factors. Accordingly, some found that personality traits and behavioral-emotional factors, such as hostility, anger, stress, depression, chronic stress, were associated with the disease researchers (Elovainio *et al.,* 2011; Costigan *et al.,* 2013; Owen *et al.,* 2010; Baheshmat *et al.,* 2019).

Some researchers have examined the association between this disorder and other psychological disorders, for example, (Michael, 2017) in a study showed that anxiety behaviors could affect the metabolic syndrome. (Carroll *et al.,* 2009) found a significant relationship between metabolic syndrome and general anxiety. In the study of psychological status and quality of life in patients with metabolic syndrome, (Roohafza *et al.,* 2012) suggested that the mean anxiety, distress, depression, and quality of life in the group with metabolic syndrome were significantly higher. (Kahl *et al.,* 2015) also observed the prevalence of metabolic syndrome in patients with mood disorders.

Nowadays, due to the consequences of industrialization, the social, cultural, religious and psychological aspects of lifestyle have changed, having caused many diseases with psychological backgrounds especially anxiety (Mokyr *et al.,* 2015). Today's anxiety is a response to rapid growth of technology, pressures of urbanization, communication disruptions, disintegration of societies, social changes, and individual conflicts that are increasingly threatening human fertile life. Therefore, in the present world, depending on experiences and personality, one can more or less experience existential anxiety (Hooman *et al.,* 2011). Existential anxiety is known as frivolity and irresponsibility in life and is associated with the impression that results from it (Fox and Leung, 2009). Now, against this idleness and the pressures of routine life and its anxieties and lifestyle changes and their direct and indirect impact on diseases such as cardiovascular disease, diabetes and metabolic syndrome, the

interventions are needed to reduce some of the unpleasant physical and psychological factors that can be taken to treat or reduce the effects of the disease (Yousefi *et al.*, 2009).

Other researchers in separate studies have evaluated the efficacy of logo-therapy as one of the therapeutic approaches to curb many diseases and promote health (Ebrahimi *et al.*, 2014; Abolghasami *et al.*, 2010). Achieving the meaning of life and doing energizing activities are strong supports to overcome people's emotional instability, and this ensures their mental health and well-being. In addition, the meaning of life has been a strong and stable predictor for mental well-being (Rathiand Rastogi, 2007).

The objective of logo-therapy is to help the patient discover the unique meaning of his/her life and empower him/her. Logo-therapy delineates the limits of patient's authorities and freedoms. The therapist in logo-therapy aims to help the patient search for the purpose and reason in his/her life; the purpose and reason that are only dedicated to him/her. Thus, therapist makes the patient do something that he/she has accepted. This type of psychotherapy is a philosophical approach that deals with human and his/her world. In this approach, each person must deal with the fundamental issues of ultimate concern, including death, freedom, solitude, and frivolity (absurdity). Existential psychotherapy is a kind of attitude towards human suffering. This treatment raises profound questions about the nature of human beings and the nature of anxiety, despair, grief, solitude, and isolation. It also severely challenges questions about meaning, creativity and love (Widera and Block, 2012).

The researches have already conducted several studies on efficacy of group logo-therapy on some physical diseases and its effect has been proved, but there has been no specific study on the efficacy of this treatment on metabolic syndrome patients. In fact, in spite of wide range of factors involved in the formation of this syndrome and its association with issues such as anxiety, stress, sedentary behaviors, *etc.*, which are some of the underlying factors of this disease, there is no program in the existing logo-therapy curriculum that can consider some of the factors involved in this disease as a specific variable and apply logo-therapy concepts to modify these variables, and ultimately affect the metabolic syndrome disease. Therefore, based on the aforementioned issues and considering the severity of metabolic syndrome, the present study is trying to examine the effect of this method on the existential anxiety variable by developing and training the logo-therapy. So, the main question in this study is whether the training program of group logo-therapy has sufficient content validity? And does the program affect existential anxiety in people with metabolic syndrome?

Experimental

Materials and methods

This study was an applied research attempt with a quasi-experimental design, with pretest-posttest and control group. The study population included adult women aged 25-60 years with metabolic syndrome who referred to health centers in Semnan, Iran, during 2018. Sampling was done in availability sampling method for selection of experimental and control groups. To select the sample after applying inclusion and exclusion criteria and based on existential anxiety scale, a group of 30 subjects who had problems was selected as the sample size and then it was randomly divided into experimental and control groups. Inclusion criteria were informed consent, ability to participate in group therapy sessions, having minimum education level of high school diploma and the maximum level of master degree, ages 25 to 60, history of metabolic syndrome based on the tests and physician

diagnosis in the patient summary sheet, full vigilance and being able to speak Farsi, physical and mental ability to answer questions and not attending other training and therapy classes simultaneously. In addition, subjects' unwillingness to continue to participate in research, having other diseases, and history of psychiatric diseases or mental retardation were considered as exclusion criteria. Finally, the participants' questionnaires, which were randomly divided into experimental (n = 15) and control (n = 15) groups, were analyzed. The questionnaire which was used in this study was as follows:

Existential Anxiety Questionnaire (QFEA): Existential Anxiety Questionnaire is a paper-pencil, objective questionnaire designed to measure existential anxiety and has 29 propositions and 4 subscales including: 1- Anxiety of death and non-existence (questions 20-4-24-16-28-11-8), 2- Anxiety of responsibility (questions 21-26-27-13-17-1-5-9), 3- Anxiety of solitude (Questions 14-18-10-22-6-2), and 4- Anxiety of meaning (questions 19-12-7-25-29-15-23-3). Through this scale, the subject is asked to indicate the level of concern that is generated by reading each proposition on a 4-point scale. Scores are based on a Likert scale rating for each item ranging from 1 (not at all) to 4 (very much). Then the sum scores and the total score are obtained. The score of each subscale is also calculated in the same way. Each subject's score can be from 19 to 116. Low score indicates ignorance of anxiety and high score indicates experiencing high anxiety. The questionnaire was developed by (Masoudi, 2016), which was used in her master's thesis and was validated by her. To evaluate the validity and reliability of this tool, 505 staff members and students of 5 universities based in Tehran were selected by multistage cluster sampling method. They answered the questionnaires of mood disorder and death anxiety scale as concurrent and convergent validity tools and the questionnaire of existence anxiety as the main tool. The findings suggested that the tool's content validity was 0.95 based on the views of 10 experts by ICC method, while concurrent and convergent validity were 0.82 and 0.55, respectively. Exploratory factor analysis and factors rotation *via* Varimax rotation demonstrated theoretical structure of questionnaire consisted of 4 factors, so naming of the factors was done based on theoretical principles. Confirmatory factor analysis showed factors' goodness of fit. Cronbach's alpha and re-test demonstrated the tool's reliability of 0.82 and 0.86, respectively. In order to run group logo-therapy intervention, a program tailored to patients with metabolic syndrome was developed. In the first step, after reviewing the literature and therapeutic theories and concepts of logo-therapy, an intervention program was developed. Then, to validate the program, comments of experts in family counseling and psychology were used to determine the content validity and reliability of the therapeutic program. Qualitative content analysis was used first, so an analysis was made of the theoretical principles of logo-therapy training. Therefore, different books, articles and databases were analyzed. Then, based on the findings, the preliminary model of behavioral logo-therapy training was developed. The program was developed based on Taba's model (1962), which had seven steps of detecting needs, formulating objectives, selecting content, organizing content, and evaluating. In the first step, the necessity of developing the logo-therapy training package was studied. The second step was to determine the needs and explain the status quo by reviewing existing literature and background. At this stage, also the components of the curriculum were identified and elements and dimensions of logo-therapy training model (*i.e.* program's content) were discussed. In this study, ten 90-minute sessions were planned based on logo-therapy protocol of (Frankl, 1959), as well as other pertinent studies, including (Hutzell, 2002; Kang *et al.*, 2009). In the next step, the expert

panel questionnaire was designed. This questionnaire was developed to determine the appearance and content validation of the logo-therapy training package to give some counseling and psychology experts the ability to identify the most important components and dimensions based on their experiences and observations, and then to modify the content of training package. The fourth step was to set educational objectives based on the stated needs and review of the existing background. In the fifth step, the timing of the training program and its rules and venue were determined. In step six, the target audience of the training program was selected. The research sample was selected based on the screening and questionnaires' score and the determined criteria. The last step was evaluation in which, after formulation of the program and before its main implementation, the training program was piloted on a group of patients with metabolic syndrome in 6 sessions. The content validity of the logo-therapy program was confirmed by 10 family counselors, psychologists, and health psychologists. To transform the qualitative judgment of the experts into quantity about the validity of the training program, Lawshe's Content Validity Ratio (CVR) was used. The CVR value was greater than 0.62 (accepted validity value) and score 1 indicated full content validity of the present program. Regarding the reliability of the intervention, higher agreement coefficient meant higher reliability. Kappa coefficient was used to measure the experts' agreement. Kappa agreement was 100% among the scorers, indicating high reliability. Considering the construct validity of the program, it can be stated that since it was based on valid theoretical background, it had proper construct validity.

Then the training package was administered to the experimental group for 10 sessions twice a week for 2 months. Table 1 displays a summary of the program.

Table 1. Group logo-therapy program for patients with metabolic syndrome

Session	Content or Task	Objective	Technique	Task
1	Introducing group members to each other and to the therapist; performing a pre-test for setting goals and rules; a brief explanation of Frankl's logo-therapy and a description of the significance in life; describing the metabolic syndrome and its related features; expressing the problems of group members and unifying the members to attend group meetings	Introducing and presenting members to each other; knowing the significance and meaning of logo-therapy; acquaintance with the features of metabolic syndrome	Using ice breaking technique to facilitate communication	Provide a list of significant events in life
2	Reviewing the previous session assignment; believing and accepting yourself by knowing your own characteristics; paying attention to spiritual freedom as one of the human existence dimensions; the importance of choice in life; learning the paradoxical intention technique	Paying more attention to one's existential dimensions and accept them	Paradoxical intention	Practicing the technique of paradoxical intention
3	Assessing the previous session's tasks and training the three sources of meaning in Frankl's approach including creator values, empirical values, attitudinal values, and describing them using examples in participants' lives	Transparency of values (creator, empirical, and attitudinal values)	Values sheet; techniques of values awareness	Finding examples of three meanings in everyday life; writing pleasing achievements; considering recent events and art experiences

Session	Content or Task	Objective	Technique	Task
4	Assessing the previous session's tasks and making suggestions on how to make sense of things; talking about freedom, responsibility, and the will power; increasing the sense of responsibility as an inevitable part of the human condition and for finding meaning in the present time and accepting the conditions for a better life; highlighting these concepts with the aim of having a proper view for all life's conditions	Focusing on objectives; practicing instances of meaning; freedom and a sense of responsibility	Teaching the concept of parallel values vs. pyramid values	Group discussion on freedom and responsibility and linking the Idea to the reality of patients' life; determine the goals and a different angle of view towards goals
5	Assessing the previous session's tasks; focusing on goals; aligning goals with values; setting new goals; analyzing goals to fit personal values; commenting on the necessity and desirability of experiencing one's values with relatively high abundance; setting new goals for overlooked values	Defining and analyzing the objectives; setting new objectives for overlooked values	Writing the objectives as Specific, Measurable, Achievable, Relevant and Timely (SMART)	Identifying a new goal (short, average, long term) and analyzing it
6	Assessing the previous session's tasks; how to achieve goals; setting short-term goals & determining major and minor steps to achieve goal; knowing constructive frustration & increasing life expectancy	Achievement of objectives; overcoming the despair	\Selecting a short-term objective from goals list that patient can achieve within 24 hours	Selecting the goal and fulfilling it and checking whether or not it has been achieved and identifying potential barriers or enhancers for doing so
7	Assessing the previous session's tasks; understanding existential anxiety, identifying the causes of anxiety and ways to deal with it	Understanding existential anxiety & identifying its causative factors	Using calling techniques during anxiety and painful times in life	Providing a list of areas of concern in the life of patient
8	Assessing the previous session's tasks; understanding the meaning of suffering; reviewing the paradoxical intention techniques; teaching dereflection techniques & modifying attitudes & teaching sensitivity to meaning	Encountering and accepting the suffering and knowing helpful techniques in accepting the meaning of life	Paradoxical intention; dereflection; attitude modification; sensitivity to meaning	Talking about suffering and how to accept it & deal with it
9	Assessing the previous session's tasks; understanding the meaning of nothingness and death; understanding the presence of God in the human's unconscious excellence	Coping with existential anxiety	Paradoxical intention	Talking about the transient life, the reality of death and its meaning; group discussion about the presence of God in the deepest layers of human existence
10	Assessing the previous session's tasks; summarizing the contents of previous sessions; talking about the procedure of the sessions; asking for feedback on individual changes during the sessions; conducting post-test	Summarizing the sessions and conducting post-test	Summarizing	Using methods regularly and critiquing and analyzing them in personal life

During the research implementation and data collection, all the subjects' information was kept confidential and the subjects were assured that their information was confidential and the data were anonymously analyzed just in groups. Therefore, at the time of submission of questionnaires and before they were filled out, consent forms were obtained from the subjects and questionnaires were filled out by those who were willing to participate in the study. Accordingly, participants were free to terminate their cooperation at any time during the research. The data were analyzed using indices and descriptive methods including descriptive analysis of demographic information and subjects' scores on the questionnaires, calculating reliability of questionnaires by calculating Cronbach's alpha coefficient and test-retest reliability coefficient. For final analysis of data, repeated measures analysis of

variance (ANOVA) was used to evaluate the differences between groups. All data were analyzed using SPSS statistical software.

Results

The final sample size was 29 subjects. 15 subjects were in the experimental group and 14 were in the control group. All subjects of the sample group were female. The mean and standard deviation (SD) of their total age was 41.96 ± 7.56. The mean and SD of age in the experimental group was 40.20 ± 6.02 and the mean and SD of the control group was 43.85 ± 8.75. Moreover, 14 subjects (93.3%) from the experimental group were married and 1 (6.7%) was single, while 11 subjects (78.6%) from the control group were married and 3 (21.4%) were single. 12 subjects (80%) in experimental group had high school diploma degree and 3 (20%) had bachelor's degree, while 12 subjects (85.7%) in control group had high school diploma degree and 2 (14.3%) had bachelor's degree. Besides, all subjects in the experimental group (100%) were housewives. 13 subjects (92.9%) in control group were housewives and 1 (7.1%) was retired. Table 2 presents the mean and SD of existential anxiety variable. Mean scores showed that the experimental and control groups had similar and close mean scores in all four variables of existential anxiety in the pre-test stage before receiving any intervention, but after receiving the intervention effects in the post-test stage, the experimental group had lower scores than in the pre-test stage and also reported lower scores in four variables of death anxiety, solitude anxiety, meaning anxiety and responsibility anxiety in comparison to the control group. However, the control group did not show any significant decrease or change for the four mentioned variables in the post-test stage. Furthermore, the follow-up test values in the experimental group showed almost constant changes, while no changes were observed in the test stages in control group.

Table 2. Mean and SD of existential anxiety variable

Variable	Test Stage	Experimental		Control	
		Mean	SD	Mean	SD
death anxiety	Pre-test	21.66	2.52	21.57	2.65
	Post-test	18.20	2.83	23.35	2.09
	Follow-up	19.06	5.03	21.00	2.54
solitude anxiety	Pre-test	15.53	2.16	14.64	2.76
	Post-test	14.00	2.26	15.71	2.23
	Follow-up	15.26	2.15	17.35	3.20
meaning anxiety	Pre-test	24.20	3.12	22.21	2.51
	Post-test	21.46	2.79	22.71	3.09
	Follow-up	20.33	2.76	24.92	2.84
responsibility anxiety	Pre-test	25.46	3.71	24.07	2.55
	Post-test	22.13	4.08	22.35	2.37
	Follow-up	21.26	2.96	23.21	2.11

Analysis of covariance (ANCOVA) was used to evaluate the educational efficacy of group logo-therapy on existential anxiety in patients with metabolic syndrome. Using this test required assumptions that were examined prior to inferential analysis. The results of Shapiro–Wilk test showed that the data of both experimental and control groups were not significantly different in all four variables of existential anxiety and in pre-test, post-test and follow-up stages with normal curve, so the data distribution of these variables were normal (P>0.01). The sphericity hypothesis was tested using Mauchly's test of sphericity. The results showed that the sphericity hypothesis of the covariance matrices of the normal

transformed error in the investigated variables was a homogeneous matrix (P < 0.021, Chi-Square = 53.5, Mauchly's W = 0.702). In addition, the assumption of equality of covariance matrices was examined by Box's M test and the results exhibited that the assumption was also valid (P = 0.0421, F = 1.03, Box's M = 54.99). Levene's test for investigating the equality of variances assumption showed that equality of variances assumption was present for the components of existential anxiety (P>0.01). Therefore, considering the parametric test assumptions, covariance analysis was permitted. Table 3 shows multivariate analysis of covariance (MANCOVA) with repeated measures to examine intergroup differences. Overall findings of the test showed that there was a significant difference in different modes of intra-group and inter-group comparison, time, group comparison and time effect in the group (P<0.01).

Table 3. Multivariate analysis of covariance analysis with repeated measures to examine intergroup differences

Index	Value	F value	Dfassumption	Dferror	Significance level	Eta squared
Pillai's trace	0.750	15.03	2	20	0.001	0.750

Therefore, investigating the triple effects of the tests for comparing time effect, inter-group effect and time effect in the group, are presented in the following tables. Table 4 depicts the pairwise comparisons of the experimental and control groups, regardless of when the variables were examined. The results showed that the experimental group and the control group (average of two stages of post-test and follow-up) had significant differences in the three variables of death anxiety, solitude anxiety and meaning anxiety, irrespective of the time of the test (P<0.01). However, the experimental group and the control group did not show any significant difference in responsibility anxiety variable (P>0.01), regardless of the time of the test.

Table 4. Pairwise comparison of experimental and control groups regardless of when the variables were examined

Variable	Groups comparison		Average differences	Standard error	Significance level
death anxiety	experimental	Control	3.44	0.496	0.001
solitude anxiety	experimental	Control	1.99	0.891	0.035
meaning anxiety	experimental	Control	4.19	0.861	0.001
responsibility anxiety	experimental	Control	1.79	1.07	0.106

Table 5 represents the pairwise comparisons of both experimental and control groups in the interaction effect of the group over time. The findings showed that there was a significant difference between experimental and control groups in post-test of death anxiety and meaning anxiety (p<0.01); according to the descriptive statistics in Table 2, the experimental group, which received less intervention effect, had less death anxiety than control group, but there was no significant difference in solitude anxiety and responsibility anxiety between both groups (P>0.01).

Dependent t-test was used to evaluate the durability of treatment effects at follow-up stage (two months after the end of treatment sessions). Table 6 showed that at follow-up, the

results were consistent for the variables of death anxiety, solitude anxiety, meaning anxiety and anxiety responsibility (P>0.05); but there was a significant difference between the mean of post-test and follow-up stages for the meaning anxiety (p<0.01), which considering the obtained mean over time, the level of mean anxiety had more decrease.

Table 5. Pairwise comparisons of experimental and control groups in the interaction effect of the group over time

Variable	Test stage	Average differences	Standard error	Significance level
death anxiety	Post-test	5.13	1.02	0.001
solitude anxiety	Post-test	1.61	0.926	0.094
meaning anxiety	Post-test	2.82	0.995	0.009
responsibility anxiety	Post-test	1.22	1.12	0.382

Table 6. Comparison of mean components of existential anxiety in experimental group at post-test and follow-up

Variable	Average differences	Standard error	Significance level
death anxiety	0.867	0.622	0.194
solitude anxiety	1.267	0.621	0.069
meaning anxiety	1.133	0.499	0.046
responsibility anxiety	0.867	0.722	0.258

Discussion

The objective of this study was to develop a group logo-therapy training program and evaluate the efficacy of the program on existential anxiety in patients with metabolic syndrome. The results showed that after the intervention effect, the experimental group reported less death anxiety than the control group. This finding was in line with the results of previous studies (HosseiniKiasari *et al.*, 2015; Dehdari *et al.*, 2013; Valaei and Zalipoor, 2015). In terms of group logo-therapy effect on the death anxiety variable, it should be stated that anxiety is a cognitive feature of each person that is rooted in the threat of non-existence, so acceptance and awareness of being mortal inevitably cause of anxiety. Some people have more death anxiety, such as people with illness, the elderly, and people with physical disabilities (Van Deurzen, 2009). According to (Frankl, 1975), people who experience a frightening phenomenon like death, logo-therapy can provide them with an incredible courage to confront death. In fact, even if people like the mentioned groups are suffering, this kind of treatment gives them meaning in life (Kang *et al.*, 2009). Logo-therapy helps people deal with the reality of death or at least gives them the potential to reasonably confront it. Awareness of death increases people's responsibility for life. As a result, people with the knowledge and insight into life and immortality will use all their potencies to take responsibility for all the moments of life. Moreover, awareness of the inevitable death increases the enthusiasm for engaging in challenging or risky activities and will give people the opportunity to live boldly with the awareness of deficiencies, many of which are physical, illness, *etc.* (Ulrichova, 2012).

In addition, the results showed that the formulated therapeutic program had no significant effect on solitude anxiety. This finding was inconsistent with studies conducted by (Jiaqing, 2011). In explaining the result that group logo-therapy training did not have any significant difference in reducing solitude anxiety in the experimental group, there can be two

arguments. First, one of the main reasons is that in most of those studies, the efficacy of group or individual logo-therapy training was performed on specific sample groups that naturally or under social or occupational conditions inevitably encountered more solitude than their past, including the elderly, the elderly living in nursing home, and retirees. But the subjects in the present study were young or middle-aged people who were not exposed to solitude.

The second argument is that although most previous studies have shown a significant efficacy of logo-therapy in reducing solitude anxiety and have put forward arguments in this regard, the current result could be attributed to the appropriate condition of the experimental and control groups in this study. Basically, the efficacy or reduction of solitude anxiety was significantly higher if the target group (experimental) had high or at least higher solitude anxiety than the peer or normal group, whereas the level of solitude anxiety was similar to that of the normal peer group, and both groups did not show high levels of solitude anxiety at any of the test stages. Even people with metabolic syndrome (the sample size) need more care and support, and since supporting, caring and visiting patients are valuable in various cultures, these patients do not experience much loneliness. Consequently, logo-therapy cannot reduce the lack of something (solitude anxiety). Otherwise, the expectation of reducing solitude anxiety, depending on existing research and theoretical foundations, can be expected. Therefore, the results can be explained and justified.

However, the findings of the present study showed that group logo-therapy had a significant effect on meaning anxiety. This result was in line with the results of past studies (Dehdari *et al.,* 2013; Kang *et al.,* 2009; Pirkhaefi and Salehi, 2013; Robatmili *et al.,* 2013). Theoretical foundations in this area can be mentioned in explaining the effect of group logo-therapy on reducing meaning anxiety. Logo-therapy, considering transient life and human existence, makes the patient to work hard instead of insanity and isolation, and expresses that sufferings do not ruin human beings, but it is the insignificance of life that drives human to death. If we bravely accept suffering until the last moment, life will have meaning, and the meaning of life can even include the potential meaning of pain and suffering. (Frankl, 1975) believes that in finding existential meaningfulness lies a great wisdom, and this is the most precious issue to human in the world. This sentence should serve as a slogan for the treatment of mental illness (Frankl, 1975). The most important task of the therapist is to assist the patient in rediscovering the hidden pietism and according to (Frankl, 1975), the therapist should allow the patient to discover their own meaning. In Frankl's view neurosis does not always come from a lack of meaning, but a lack of meaning and purpose in life leads to the emergence of neotenic neurosis. In logo-therapy, the objective is not just to feel successful and happy in dealing with life's issues, but the matter is survival; so, it is vital. A therapist cannot tell the patient what the meaning of life is but can show the patient that life is meaningful. However, the meaning of life differs from person to person and is constantly changing for each individual (Sartre, 2007).

In addition, the findings of the present study showed that group logo-therapy did not have any significant effect on responsibility anxiety. There are no available studies comparing this finding in terms of consistency and inconsistency. It can be noted that in the group logo-therapy, the principle of responsibility acceptance is of particular importance. With a sense of responsibility, one feels that control over the living conditions has not been lost and he/she can take control of the situation by accepting responsibility and carrying out some

actions. The sense of sovereignty and dominance over life, and the shift from external control to internal control, impedes external control and reduces the tendency for internal control, reduces frustration and despair in achieving desires, and reduces the responsibility anxiety. Besides, logo-therapy helps patients not to overlook the present and current improvement and not to fear the future and events that have not yet happened (Robertson, 2008). To sum up, the responsibility anxiety may arise for the following reasons: lack of purpose and meaning in which the person is focused, or of a person's inability to control the conditions and tasks in life, or a sense of external control in individuals. Logo-therapy reduces the responsibility anxiety by creating an objective for effort, creating a sense of internal control and a sense of control over the situation. Considering the insignificant difference between both experimental and control groups in the post-test stage, it can be explained that the passage of time was very important for reducing anxiety in individuals. In other words, "time" was a key point in explaining this equation, and time was an important issue for the effect of logo-therapy on reducing responsibility anxiety. Moreover, in reducing anxiety, it is effective to avoid thinking about anxiety events that have not yet happened or will not happen at all. In fact, this issue is recognized in Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5®; 2013) as one of the cognitive and underlying causes of anxiety. Logo-therapy is effective in setting out to reduce anxiety in the area of responsibility, by proposing that in the present time one must strive for the present purpose. The passage of time is important to confirm this attitude created by logo-therapy. The passage of time indicates that anxieties in the area of one's responsibilities that he/she has expected will never or scarcely happen. Thus, the passage of time was the key point for the efficacy of logo-therapy on reducing responsibility anxiety, and no significant difference between both groups in the post-test was justified. Therefore, further longitudinal studies are needed in subsequent studies.

One of the limitations of this study was the sampling method. In this study, there were limitations to choose sampling method in more straightforward way, such as simple random sampling; so the external validity of the study was affected by the availability sampling method. Another limitation was the inability to control the confounding or moderating variables in the study. In addition to group logo-therapy, which had a significant effect on research variables in general, moderating or confounding variables were also likely to influence, including implicit psychological support such as the degree of social support and family cohesion in the sample group that could influence the level of existential anxiety; but it was not possible to examine or control these variables. Measuring existential anxiety variables on the basis of self-report scale was also a limitation for research that could not reveal hidden changes, or deliberately caused a bias in reporting.

Conclusion

Overall, the results of the present study showed that group logotherapy program was effective in changing some aspects of existential anxiety such as death anxiety and meaning anxiety but did not have a significant effect on loneliness anxiety and responsibility anxiety. Therefore, it is concluded that a well-developed meaningful program will increase individuals' ability to face and rationalize and thus take responsibility for life, and will invite human beings to work and work with people with bold acceptance of suffering until the last minute. This study has also shown that aging can also include the potential meaning of pain and suffering, and can reduce the anxiety of people who are at the root of many diseases,

including metabolic syndrome. Given the results of the significant effect of group logo-therapy on reducing death anxiety, it is recommended to use logo-therapy to reduce death anxiety, especially for patients and the elderly who feel the risk of death. However, due to the instability of the results, group logo-therapy can be integrated with other interventional methods or in other forms and ambiances such as religious logo-therapy, so it has a greater effect on reducing death anxiety or it becomes stable. Furthermore, considering the significant effect of group logo-therapy on meaning anxiety and the consistency of these results over a two-month interval, it is suggested to use group logo-therapy to create meaning in life and reduce anxiety from insignificance or doubt about the meaning and purpose of life.

Conflict of interest

The authors declare that they have no competing interests.

Ethics Committee Approval

Ethics approval was obtained from the Islamic Azad University, Shahrood branch Ethics Committee (IR.IAU.SHAHROOD.REC.1398.004).

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