

Research Paper

Comparing the Effectiveness of Guided Imagery and Lazarus Multimodal Therapy on COVID-19 Anxiety and Life Expectancy in People Recovered From COVID-19

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ABSTRACT

Objective: Given the well-established and irreversible psychological consequences associated with the COVID-19 disease, it becomes imperative to develop interventions tailored to address these effects and comprehensively evaluate their efficacy in promoting the mental well-being of individuals who have successfully recuperated from COVID-19. The current investigation primarily ascertained and juxtaposed the efficacy of guided imagery and Lazarus multimodal therapy in alleviating COVID-19-induced anxiety and enhancing life expectancy among post-COVID-19 patients

Methods: The present study employed a semi-experimental design, encompassing the objectives, application, and research methodology. Specifically, a pre-test-post-test design with a control group was utilized, incorporating a three-month follow-up period. The statistical population comprised individuals who had recovered from COVID-19 and were residing in Tehran City, Iran, in 2021. Participants were selected from various government hospitals in Tehran who received treatment for COVID-19. A total of 45 participants were randomly assigned into three groups: the guided imagery group (15 participants), the Lazarus multimodal therapy group (15 participants), and the control group (15 participants), using the lottery method. The experimental groups underwent 10 sessions of 90 minutes each, wherein guided imagery and Lazarus multimodal therapy interventions were respectively administered. The control group did not receive any form of training or intervention. The research instruments employed in this study were the COVID-19 Anxiety Questionnaire (CDAS, 2020) developed by Alipour, Gadami, Alipour, and Abdulzadeh, and Miller's Life Expectancy Questionnaire (MLEQ, 1998). Data were analyzed using covariance analysis in SPSS software, version 26. Inferential analysis was performed with alpha 0.05

Results: The findings of the study revealed that both guided imagery and Lazarus multimodal therapy demonstrated effectiveness in mitigating COVID-19 anxiety ($F=11.16$, $P=0.000$) and enhancing life expectancy ($F=5.49$, $P=0.008$) among individuals who had recovered from COVID-19 ($P<0.05$). Furthermore, no significant difference was observed between the effects of these interventions on the aforementioned variables.

Conclusion: Based on the research findings, the educational packages developed in this study hold the potential for utilization in reducing COVID-19 anxiety and enhancing life expectancy among individuals amidst the ongoing pandemic outbreak. These packages offer valuable resources for addressing and managing anxiety related to COVID-19, thereby contributing to improved psychological well-being and overall life expectancy during this challenging period.

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Highlights

- Guided imagery and multimodal therapy reduce COVID-19-related anxiety.
- Guided imagery and multimodal therapy increase life expectancy after recovery from COVID-19.
- There is no significant difference between the effects of guided imagery and multimodal therapy on COVID-19-induced anxiety and life expectancy.

Plain Language Summary

In this study, we investigated compared the effectiveness of two interventions, guided imagery and Lazarus's multimodal therapy, in reducing COVID-19-induced anxiety and improving life expectancy among patients recovered from COVID-19 in Tehran, Iran. They were randomly assigned to three groups: guided imagery, multimodal therapy, and control. The experimental groups received interventions at 10 sessions of 90 minutes, while the control group received no specific training or intervention. The results showed that both methods were effective in reducing COVID-19-induced anxiety and enhancing life expectancy, and there was no significant difference between them. The findings suggest the potential benefits of these methods for reducing anxiety caused by COVID-19 and life expectancy.

Introduction

C COVID-19, an epidemic pandemic, has not only raised concerns regarding physical health but has also resulted in various psychological ailments among individuals affected by or even recovered from the virus (Lai et al., 2020; Cao et al., 2020). Research conducted by Liu et al. (2020) demonstrated a high prevalence of anxiety among individuals with COVID-19. Delpino et al., (2022) in a meta-analysis study, investigated the anxiety level of Corona in 194 studies and showed that the general prevalence of anxiety was 35.1 %, affecting approximately 851,000 participants. The prevalence in low and middle-income countries was similar compared to high-income countries (34.7 %). The fear and anxiety associated with the potential infection can have detrimental effects, leading to psychological disorders and stress. In the short term, fear and stress trigger the hypothalamus in the brain, resulting in the release of cortisol hormone from the adrenal cortex and activation of sympathetic nerves throughout the body, which are beneficial for coping with stressful factors (Lakhan et al., 2020; Mahfud & Gumantan, 2020; Davies et al., 2023). However, if prolonged fear, stress, and the associated physiological response, including elevated cortisol levels and sympathetic activation persist, they can have deleterious effects, compromising the immune system's functioning and reducing the body's ability to combat diseases, including COVID-19 (Asadi et al., 2021). The World Health Organization (WHO) has identified COV-

ID-19 as a significant threat to both physical and mental health. The spread of this disease has caused profound disruptions in the daily lives and routines of families, necessitating substantial adjustments to their lifestyles (Li et al., 2020; Rahmatinejad et al., 2020). The coronavirus Disease 2019 (COVID-19) pandemic has harmed the physical and mental health of the public worldwide. In addition to illness in patients with COVID-19, isolated people and the general population have experienced mental health problems due to social distancing policies, mandatory lockdowns, and other psychosocial factors. The prevalence of depression and anxiety significantly increased during the pandemic (Zhu et al, 2023).

In the context of COVID-19, "COVID-19 anxiety" specifically pertains to the anxiety induced by the contraction of the COVID-19 virus. This form of anxiety often arises due to the unknown nature of the virus and the resulting cognitive ambiguity. The constant stream of information regarding the escalating number of COVID-19 cases contributes to individuals' heightened health concerns, thereby threatening their sense of security and overall well-being (Roy et al., 2020).

The reduction of life expectancy is another significant challenge faced by individuals affected by the COVID-19 virus. The restrictions imposed to control the spread of the pandemic can lead people to feel as if they will not be able to experience positive emotions and that their condition will not improve, which can lead to hopelessness (Javier-Aliaga et al, 2022). Life expectancy is a

statistical measure that represents the average number of years an individual can expect to live within a given society. It serves as an important indicator for assessing the progress and development of nations, as improvements in healthcare and treatment outcomes typically lead to an increase in life expectancy (Snyder and Lopez, 2012; Zournazi, 2023). Snyder (1978) was the first to explore the concept of life expectancy within his theoretical framework. He defined life expectancy as a motivational cognitive structure that emerges through the interaction between a goal-oriented decision-making agent and the pathways available to achieve those goals. The first component of this definition reflects an individual's belief in their ability to initiate and persevere through various pathways toward their desired goals. This dimension of hope often generates the belief of "I can do this". It serves as the motivational aspect of Snyder's theory, providing the psychological drive necessary to initiate and sustain progress toward goals. The second component of the theory, referred to as pathways, pertains to the individual's ability to plan and explore different routes to reach their goals (Snyder, 2009, Elliott, & Olver, 2009). During the coronavirus epidemic, hope helped people adapt to various changes, such as health care, new working environments, social relationships, new laws and regulations, and so on (Braun-Lewensohn et al, 2021). The results of the study by Sarker et al., (2022) showed that hope mediated the relationship between the fear of COVID-19 and mental health controlling for gender, and socioeconomic status, and the hypothesized model explained approximately 27% of the variance in mental health. In the face of the psychological crisis of fear caused by the COVID-19 pandemic, it is relevant to know the positive impact of hope during this context.

To address anxiety and improve life expectancy in patients, various methods have been proposed. An effective approach in the realm of mental health is guided imagery (Ali Far and Nokni, 2012). Guided imagery is a psychotherapeutic technique widely utilized in different psychological interventions, with one of its primary applications being the relaxation of the body, albeit less recognized. This technique involves the client's ability to create vivid mental images of pleasant places or experiences. It operates based on the individual's past life experiences and shares similarities with a form of self-hypnosis (Jenkins, 2010). Guided imagery is a therapeutic approach in which individuals are guided by a facilitator (such as a counselor, doctor, or coach) to reduce stress, anxiety, pain, and negative thoughts while promoting self-awareness and happiness. The method involves utilizing one's imagination to vividly depict a peaceful and satisfying scene, environment, or situation. It often

incorporates deep abdominal and diaphragmatic breathing, muscle relaxation, and visualizing landscapes like forests, seashores, or sacred sites, while attending to surrounding sounds and smells. Research has indicated that focusing on visualization and positive thinking can bring comfort and emotional balance. Through directed attention, guided imagery can alleviate pain, tension, anxiety, and depression while enhancing the sense of well-being (Bassampoor, 2018; Amini, Shirvani, & Bazgir, 2022; Shahabi, et al., 2020; Beizae et al., 2017). Another treatment modality gaining prominence in contemporary practice is Lazarus multimodal therapy, which provides a comprehensive integrative approach to treatment. One of the motivations for comparing these two treatment methods is that the Lazarus model was a multi-faceted treatment, while the guided imagery technique was a uni-faceted treatment. In both treatments, an imaging technique is used, but in guided imaging treatment, this work is done in a structured way.

Lazarus multimodal therapy is rooted in the comprehensive social cognitive learning theory (Naami & Rezayatizadeh, 2022). This therapeutic approach involves the therapist serving as a guide during treatment, considering all aspects of the client's personality. The therapist selects relevant and effective techniques from various perspectives to target and modify inappropriate behaviors and attitudes while promoting more satisfactory and productive behaviors (Lazarus, 2003). The fundamental premise of Lazarus multimodal therapy is that clients present with multifaceted issues that require a comprehensive range of interventions. In the process of multifaceted assessment, each of the seven essential dimensions, referred to by the acronym BASICID, is examined. These dimensions encompass behavior, affect (emotional experiences), sensation (bodily sensations), imagery (mental imagery), cognition (thought processes), interpersonal relationships, and drugs/biology. By thoroughly assessing these dimensions, therapists can gain a comprehensive understanding of the client's concerns and tailor treatment accordingly (Lazarus & Lazarus, 2019).

Lazarus' multifaceted approach has demonstrated its application and effectiveness across various domains (Lazarus, 2006). Research has investigated the effectiveness of this approach in areas such as interpersonal relationships (Barnetta et al., 2007), addressing psychological distress (Shahlapour, Sedaghat, & Pashang, 2022; Singh, Tewari, & Singh, 2019; Naami & Rezayatizadeh, 2022), reducing substance abuse (Khodabakhshy & Fooroozandeh, 2022), and enhancing psychological well-being (Mesbah, 2021). These studies have provided evi-

dence supporting the efficacy of Lazarus’ multifaceted approach in addressing various psychological concerns and promoting positive outcomes.

Given the large population of individuals affected by epidemic diseases, including COVID-19, and the associated decline in mental well-being and the prevalence of various psychological issues such as anxiety, prioritizing mental health and instilling hope becomes crucial in the lives of those affected by the disease. Additionally, due to the limited number of studies investigating the effectiveness of guided imagery and Lazarus multimodal therapy specifically on COVID-19 anxiety syndrome and life expectancy among individuals who have recovered from COVID-19, an important research question arises. The present study examines the effectiveness of guided imagery and Lazarus multimodal therapy on COVID-19 anxiety syndrome and life expectancy in individuals who have recovered from COVID-19. This study also explores any significant differences in the effectiveness between these two therapeutic approaches.

Materials and Methods

The present study employed a quasi-experimental design with a pre-test-post-test arrangement, including a control group and a three-month follow-up phase. The study investigated the effectiveness of guided imagery and Lazarus multimodal therapy on COVID-19 anxiety syndrome and life expectancy in individuals who had recovered from COVID-19. The statistical population consisted of all individuals who had recovered from COVID-19 and were residing in Tehran in 2022. The participants were selected from Labafinejad, Masih Daneshvari, Imam Khomeini, and Milad Hospitals, and a total sample of 45 individuals was randomly assigned to three groups: Guided imagery group (15 participants), Lazarus multimodal therapy group (15 participants), and control group (15 participants). The sample size was determined based on Cohen’s table (1986), considering a confidence level of 0.95, an effect size of 0.5, and a power of 0.81 for each group of 15 individuals.

The inclusion criteria for participation in the study were as follows: 1) Scoring 27 or above on the COVID-19 Anxiety Questionnaire (CDAS), 2) Scoring 144 or below on the life expectancy questionnaire, 3) Being between the ages of 20 and 50 years, 4) Possessing literacy in

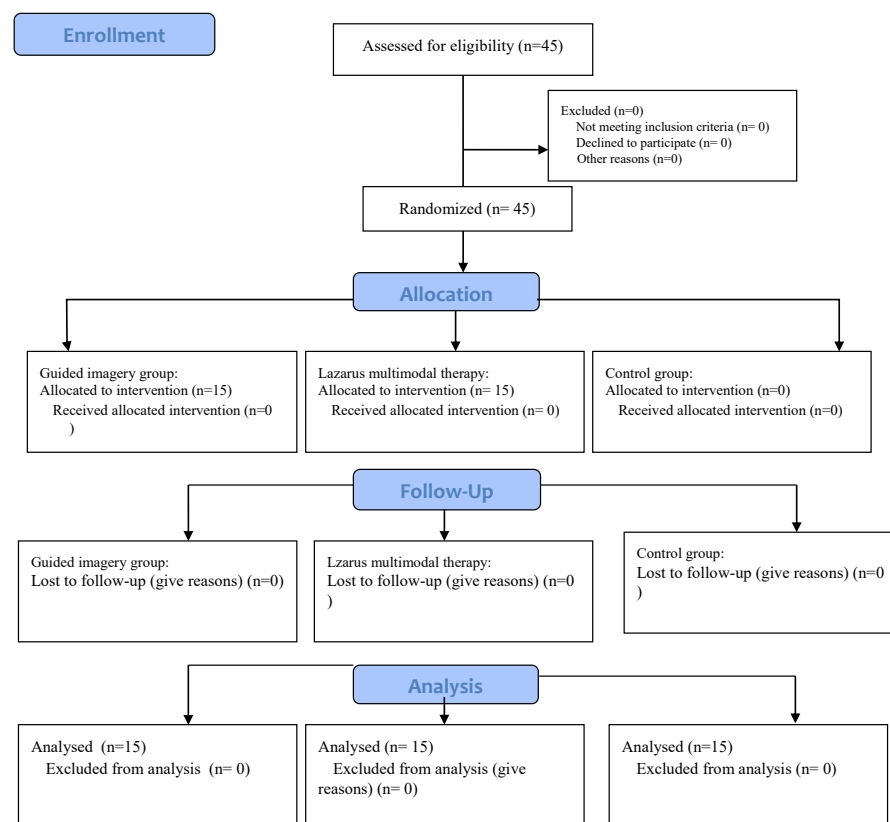


Figure 1. Consortium diagram of the present study

reading and writing, 5) Not having a history of substance abuse, and 6) Expressing willingness to take part in the study. The exclusion criteria were: 1) Concurrent participation in other psychotherapy workshops or sessions during the study, 2) Having more than three absences or delays during treatment sessions, and 3) The use of psychiatric medications during the research (Figure 1).

COVID-19 anxiety questionnaire (CDAS-2020)

The COVID-19 Anxiety Questionnaire (CDAS), developed and validated by Alipour, et al. (2020) was used to measure anxiety related to the spread of the COVID-19 virus in Iran. The final version of the questionnaire consists of 18 items and two components (factors). Items 1 to 9 assess mental symptoms, while items 10 to 18 measure physical symptoms. Participants rate each item on a 4-point Likert scale, ranging from never (0) to always (3). The total scores on this questionnaire can range from 0 to 54, with higher scores indicating higher levels of anxiety. Reliability analysis using Cronbach alpha was conducted for the first factor ($\alpha=0.879$), the second factor ($\alpha=0.861$), and the entire questionnaire ($\alpha=0.919$). Additionally, the reliability coefficient λ -2, based on Gottman's λ -2, was calculated for the first factor (λ -2= 0.882), the second factor (λ -2=0.864), and the entire questionnaire (λ -2=0.922). To establish the valid-

ity of the COVID-19 anxiety questionnaire, it was correlated with the General Health Questionnaire-28 (GHQ-28) questionnaire. The results demonstrated significant correlations between the CDAS and the total score of the GHQ-28 questionnaire, as well as its anxiety, physical symptoms, social functioning disorder, and depression components (ranging from 0.269 to 0.507), all significant at the 0.01 level. These findings support the questionnaire's validity (Alipour et al., 2020). In the present study, the internal consistency of the scale was assessed using the Cronbach alpha, yielding a reliability coefficient of 0.82.

Miller's life expectancy questionnaire (MLEQ-1998)

MLEQ-1998 is classified as a diagnostic test, comprising forty-eight dimensions related to feelings of hopelessness and helplessness. The questionnaire items assess overt and covert behavioral expressions, allowing individuals to indicate their level of hopefulness or disappointment. The scoring range for the Miller test spans from 40 to 200, with a score of 40 indicating complete helplessness and a score of 200 representing maximum hope. In evaluating the validity of this questionnaire, the reference criterion score was employed, revealing a significant positive correlation between the two measures. To establish the questionnaire's reliability in this study,

Table 1. Plan of guided visualization sessions (adapted from Alifar and Noukani, 2012)

Session	Content
1	Preparation of the interventionist, the position of the intervention, and the subject; Gathering information (initial interview), getting to know the subjects and talking about the research program and objectives, and justifying the subjects
2	Performing background exercises for mental imagery to evoke mental images; People were also helped to recognize their false beliefs and irrational thoughts.
3	Explanations about how negative thoughts, beliefs, and perceptions are the basis for anxiety and disturbing mental health. Also, the technique of mental imagery and guided visualization and the steps of this technique were taught to the subjects, as the background exercise of relaxation before mental imagery to prepare for creating mental images.
4	Explaining the logic of intervention and teaching ways to deal with stressful negative thoughts and ideas. Evoking mental images and describing them.
5	Facilitating new adaptive skills through mental imagery by expanding mental images, working on these images, and trying to make changes in these images.
6	The participants were taught to put themselves in relaxing mental imagery and use the techniques taught in the previous steps. The steps of mental imagery and guided visualization were performed three times in each session, each time for 15 minutes.
7	The participants were taught to put themselves in relaxing mental imagery and use the techniques taught in the previous steps. The steps of mental imagery and guided visualization were performed three times in each session, each time for 15 minutes.
8	The participants were taught to put themselves in relaxing mental imagery and use the techniques taught in the previous steps. The steps of mental imagery and guided visualization were performed three times in each session, each time for 15 minutes.
9	The participants were taught to put themselves in relaxing mental imagery and use the techniques taught in the previous steps. The steps of mental imagery and guided visualization were performed three times in each session, each time for 15 minutes.
10	Ending the stage of working on mental imagery in intervention sessions and following up work with mental images, including reflections, thoughts, interpretations, and creating individual meanings.

Table 2. Lazarus multimodal treatment session plan (adapted from Lazarus [Lazarus, 2003; Lazarus, 2005; Lazarus, 2006])

Session	Content
1	Introduction of counseling and the counseling process and the method used discussion about the nature of the disease, acquaintance of the clients with their duties and assignments.
2	Responding to the list of multifaceted life events and discussing it.
3	Preparing a model profile for each client based on the information entered by the client in the multifaceted life history questionnaire.
4	Explanation of logical and illogical thoughts and cognitions and their effect on a person’s feelings, behaviors, and emotions.
5	Focusing on emotions and training and implementing muscle relaxation.
6	Work on client’s behavior, demonstration program with self-expression, reinforcement of good behavior, and use of empty chair technique.
7	Encouraging clients to create positive ideas in themselves and increase resilience and life events and changes that may occur.
8	Training and helping clients to express emotions appropriately and timely, such as anger, expressing their own emotions, and reducing disturbing emotions.
9	The participants were taught to put themselves in relaxing mental imagery and use the techniques taught in the previous steps. The steps of mental imagery and guided visualization were performed three times in each session, each time for 15 minutes.
10	Training and helping clients to establish better and constructive social relationships, self-care and maintaining self-confidence, and reviewing guidelines for dealing with family members.

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both Cronbach alpha and half-splitting methods were employed, yielding coefficients of 90.00 and 89.00, respectively (Miller & Powers, 1998).

Among the twelve sentences comprising Miller’s questionnaire, negative items are included, which are scored in the opposite direction during evaluation. To assess the questionnaire’s validity, Hosseini (2006) employed the criterion question score. This involved correlating the total score of the questionnaire with the criterion question score, revealing a significant positive relationship between the two measures ($r=0.86$). Additionally, Hosseini utilized

Cronbach alpha and Tansif methods to ascertain the questionnaire’s reliability, resulting in coefficients of 0.90 and 0.89, respectively. In the present study, the reliability of the questionnaire was determined through the use of Cronbach alpha coefficient, yielding a value of 0.89.

Treatment protocol

The guided mental imagery protocol draws its content from the practical manual for all psycho-cybernetic mental imagery and meditation systems (Ali far & Nookani, 2012). The validity of guided mental imagery has

Table 3. Demographic variables of the studied subjects by group

Demographic Variable	No. (%)			Chi Square Results
	Guided Visualization	Multimodal Treatment	Witness	
Gender	Female	9(60)	11(73.33)	$\chi^2=2.64$ P=0.30
	Male	6(40)	4(26.67)	
Marital status	Married	4(26.67)	8(53.33)	$\chi^2=3.31$ P=0.07
	Single	11(73.33)	7(46.67)	
Education	Diploma	8(53.33)	10(66.67)	$\chi^2=3.61$ P=0.32
	Associate’s degree	3(20)	3(20)	
	Bachelor degree	3(20)	2(13.33)	
	Masters	1(6.67)	0(0)	

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been reported as 0.83 (Fekri & Shafiabadi, 2015). The multifaceted treatment protocol utilized in this study incorporates the theoretical and therapeutic foundations of the Lazarus approach (Lazarus, 2003; Lazarus, 2005; Lazarus, 2006). This protocol consisted of 10 sessions lasting 90 minutes each, conducted over a period of 10 weeks. The purpose and content of these sessions are outlined in Tables 1 and 2.

Procedure

The study was conducted following a specific method. Subsequently, letters of recommendation were obtained from Labafinejad, Masih Deneshvari, Imam Khomeini, and Milad Public Hospitals to conduct the research. These hospitals were selected as they were designated by the Ministry of Health and Medical Education for the treatment of COVID-19. Potential participants who met the entry criteria were identified, and they were invited to participate in the research after a comprehensive explanation of the research objectives was provided. A purposive random sampling technique was employed to select a total of 45 individuals who fulfilled the entry criteria, and they were equally distributed among three groups. The treatment sessions were conducted at the counseling center of

the Call of Calmness, located in the fifth district of Tehran. The sessions took place from October 2021 to the end of December, with one session per week lasting 90 minutes. The sessions were facilitated by a researcher who possessed a training certificate in guided imagery and Lazarus multimodal therapy. The control group did not receive any treatment during the course of the study. Pre-tests were administered to all three groups before the treatment sessions, followed by post-tests upon the completion of the treatment sessions. Three months after the post-test, a follow-up test was conducted to assess the durability of the intervention's effects. After completing the measurement steps, guided imagery sessions and Lazarus multimodal therapy were also provided to the control group participants to adhere to research ethics and uphold their rights. The participants from all three groups actively participated in the research and did not withdraw from the study. Ethical standards were followed, including obtaining an ethics committee's approval from the university, acquiring written consent from participants for questionnaire distribution and implementation of relevant training, upholding scientific integrity and trustworthiness, ensuring informed consent for participation, maintaining the participants' anonymity, and safeguarding the confidentiality of their information.

Table 4. The Mean and Standard Deviation of the Research Variables According to the Study Groups and Measurement Stages

Variables	Group	Mean±SD		
		Pre-test	Post-test	Follow-up
COVID-19 anxiety	Guided visualization	40.67±1.27	38.40±0.965	38.87±0.945
	Multimodal treatment	41.60±1.444	39.13±1.362	39.33±1.410
	Witness	41.33±1.658	41.27±1.634	41.33±1.549
Psychiatric symptoms COVID-19 anxiety	Guided visualization	21.40±0.955	20.47±0.904	20.67±0.871
	Multimodal treatment	19.73±0.983	19.13±0.904	19.33±0.887
	Witness	22.27±0.808	22.27±0.771	22.40±0.767
Physical symptoms COVID-19 anxiety	Guided visualization	19.27±1.026	17.93±0.819	18.20±0.794
	Multimodal treatment	21.87±1.146	20.00±1.087	20.00±1.134
	Witness	19.07±1.426	19.00±1.401	18.93±1.378
Life expectancy	Guided visualization	89.07±2.861	91.33±2.567	90.80±2.634
	Multimodal treatment	99.60±2.702	103.53±2.701	103.13±2.634
	Witness	87.13±2.239	87.13±2.239	86.93±2.190

Results

The frequency distribution, percentage, and results of the chi-square test comparing the studied groups based on demographic characteristics are presented in Table 3. The chi-square test results indicate that there is a significant difference between the groups based on gender ($P < 0.05$, $\chi^2 = 2$), marital status ($P < 0.05$, $\chi^2 = 3.31$), and level of education ($P < 0.05$, $\chi^2 = 3.61$). However, the groups are considered homogeneous in terms of these characteristics. The average age of the participants was 32 ± 2.67 in the guided imagery group, 30 ± 2.31 in the multimodal therapy group, and 29 ± 3.42 in the control group.

As shown in Table 4, there are differences in the average scores of COVID-19 anxiety and life expectancy variables among the control and experimental groups at different measurement stages.

Based on the results presented in Table 5, the p-values for all the investigated variables in the control and experimental groups are greater than the predetermined significance level of 0.05. Therefore, the assumption of normality of the variables in both groups is confirmed.

Levene’s test of homogeneity of variances was conducted to examine the equality of variances between the

experimental and control groups. The results of Levene’s test indicate that the variances for COVID-19 anxiety ($F = 1.08$, $P < 0.05$), psychological symptoms ($F = 1.43$, $P < 0.05$), physical symptoms ($F = 2.15$, $P < 0.05$), and life expectancy ($F = 0.33$, $P < 0.05$) are homogeneous across the experimental and control groups.

The analysis of covariance (ANCOVA) requires the presence of a correlation between pre-test and post-test scores. Correlation analysis was conducted to examine the relationship between pre-test and post-test scores of COVID-19 anxiety, psychological symptoms of COVID-19 anxiety, physical symptoms of COVID-19 anxiety, and life expectancy. The results indicate that there is a significant correlation between pre-test and post-test scores for COVID-19 anxiety ($r = 0.532$, $P < 0.05$), psychological symptoms of COVID-19 anxiety ($r = 0.613$, $P < 0.05$), physical symptoms of COVID-19 anxiety ($r = 0.673$, $P < 0.05$), and life expectancy ($r = 0.413$, $P < 0.05$). Furthermore, the assumption of homogeneity of regression slopes for COVID-19 anxiety scores, psychological symptoms of COVID-19 anxiety, physical symptoms of COVID-19 anxiety, and life expectancy across the groups was examined. The regression lines depicting the relationship between pre-test and post-test scores of these variables in the three groups were similar,

Table 5. Kolmogorov-Smirnov test related to research variables

Variables	Group	Kolmogorov-Smirnov	
		Statistics	Meaningful
COVID-19 anxiety	Guided visualization	0.541	0.932
	Multimodal treatment	0.644	0.801
	Witness	0.581	0.888
Psychiatric symptoms COVID-19 anxiety	Guided visualization	0.777	0.582
	Multimodal treatment	0.916	0.371
	Witness	0.811	0.526
Physical symptoms COVID-19 anxiety	Guided visualization	0.524	0.946
	Multimodal treatment	0.778	0.581
	Witness	0.694	0.721
Life expectancy	Guided visualization	0.383	0.999
	Multimodal treatment	0.502	0.962
	Witness	0.882	0.418

indicating a linear relationship between the dependent variable and its covariance.

Multivariate covariance analysis was initially employed to assess the impact of the grouping variables on the three dependent variables. The results of the Wilks Lambda test revealed a significant difference in the linear combination of COVID-19 anxiety scores and life expectancy among the groups in the post-test stage ($F=5.053$, $P=0.0001$). The effect size, as indicated by Partial Eta Squared, suggests that 31% of the variance in the dependent variables can be accounted for by the grouping variables (i.e. guided imagery test group, Lazarus multimodal treatment group, and control group). This implies that the changes in the independent variables had a significant effect on at least one of the dependent variables across the groups. However, the results of the Wilks Lambda test indicated that there was no significant difference in the linear combination of COVID-19 anxiety scores and life expectancy among the groups in the follow-up stage ($F=0.78$, $P=0.59$). This suggests that the effects of the independent variables on the dependent variables were not enduring over time. Since the follow-up index did not yield significant results, subsequent analyses focused solely on the post-test phase to test the hypothesis and compare the differences between guided imagery interventions and Lazarus multimodal therapy

regarding COVID-19 anxiety and life expectancy in individuals who have recovered from COVID-19. Univariate covariance analysis and Bonferroni post hoc test were conducted for the post-test phase, and the results are presented in Tables 6 and 7.

The results of the univariate covariance analysis in Table 5 indicate a significant difference in the impact of the independent variables on COVID-19 anxiety and life expectancy in individuals who have recovered from COVID-19. To further examine these differences, a Bonferroni post hoc test was conducted, and the results are reported in Table 7.

The findings presented in Table 7 indicate that there is no statistically significant difference observed in the variables of COVID-19 anxiety and life expectancy within the guided imagery groups of multimodal therapy ($P>0.05$). However, a significant difference is evident when comparing the variables of guided imagery and multimodal treatment to the control group ($P<0.05$). Notably, this difference favors the groups that received guided imagery and multimodal therapy interventions.

Discussion

The primary objective of this study was to compare the effectiveness of guided imagery and Lazarus mul-

Table 6. The results of the covariance analysis comparing the differences between the test and control groups in the scores of COVID-19 anxiety and life expectancy in the post-test stage

Variables	Source of Changes	Sum of Squares	Degrees of Freedom	Average of Squares	F	Meaningful	Partial Eta	Test Power
COVID-19 anxiety	Group	51.333	2	25.667	11.158	0.000	0.364	0.988
	Error	89.714	39	2.300				
	Total	71780	45					
Psychiatric symptoms COVID-19 anxiety	Group	8.284	2	4.142	3.944	0.028	0.168	0.675
	Error	40.958	39	1.050				
	Total	19686	45					
Physical symptoms COVID-19 anxiety	Group	19.598	2	9.799	8.548	0.001	0.305	0.954
	Error	44.707	39	1.146				
	Total	17040	45					
Life expectancy	Group	153.537	2	76.768	5.493	0.008	0.220	0.822
	Error	545.019	39	13.975				
	Total	429536	45					

Table 7. Bonferroni Post Hoc Test Results: Anxiety, Life Expectancy

Variables	Group	Difference of Means	Standard Error	P
COVID-19 anxiety	Guided imagery - a multimodal therapy	0.167	0.589	1.000
	Guided visualization – control	-2.458	0.607	0.001
	Multimodal treatment - control	2.458	0.607	0.001
Psychiatric symptoms COVID-19 anxiety	Guided imagery - a multimodal therapy	-0.205	0.398	1.000
	Guided visualization – control	-1.019	0.376	0.030
	Multimodal treatment - control	-0.814	0.410	0.163
Physical symptoms COVID-19 anxiety	Guided imagery - a multimodal therapy	0.371	0.416	1.000
	Guided visualization – control	-1.272	0.393	0.007
	Multimodal treatment - control	-1.644	0.429	0.001
Life expectancy	Guided imagery - a multimodal therapy	-2.516	1.451	0.272
	Guided visualization – control	2.440	1.373	0.250
	Multimodal treatment - control	4.956	1.497	0.006

timodal therapy in reducing COVID-19 anxiety and improving life expectancy among individuals who have recovered from COVID-19. To address the research question concerning the differential impact of guided imagery and Lazarus multimodal therapy on COVID-19 anxiety and life expectancy in this population, the data analysis revealed that both interventions, in comparison to the control group, yielded significant effects on COVID-19 anxiety scores and life expectancy. However, it is important to note that these effects were not found to be sustained over time. Furthermore, no significant difference was found between the effects of the two intervention methods.

The findings of previous studies support the effectiveness of guided imagery in reducing COVID-19 anxiety and improving life expectancy. [Amini, Shirvani, and Bazgir \(2022\)](#), [Shahabi, et al. \(2020\)](#), and [Beizae et al. \(2017\)](#) have reported positive outcomes concerning the effect of guided imagery on COVID-19 anxiety and life expectancy. The effectiveness of guided imagery in reducing COVID-19 anxiety and enhancing life expectancy can be attributed to its ability to foster mental acceptance of the positive impact of health and recovery on individuals' well-being. Through guided mental imagery, individuals are empowered to envision personal goals, develop resilience to overcome challenges and eliminate negative thoughts from the past. This process enables them to strive toward their goals, surmount ob-

stacles, and gain a sense of empowerment to address life's difficulties. Anxiety is a complex interplay between mental and physiological factors, where sympathetic nerve activity increases during stressful situations and parasympathetic nerve activity rises during relaxation, each contributing to physical symptoms. Utilizing guided mental imagery reduces sympathetic activity and alleviates anxiety symptoms. Moreover, guided imagery facilitates individuals in taking control and managing their mental images, reducing the intrusion of negative thoughts, thereby enhancing mood and fostering hope for a brighter future. Group implementation of these methods may provide additional benefits, as individuals can find solace in observing others who share similar experiences and identifying common themes.

It can be said to explain the effectiveness of guided imagery treatment on corona anxiety, guided imagery is a therapeutic approach in which individuals use positive and calming mental images to reduce stress and anxiety. This method utilizes positive and soothing imagery to promote a state of relaxation and alleviate tension in the body and mind. Although guided imagery does not directly impact COVID-19 anxiety, it can help reduce physical and psychological symptoms of anxiety. Individuals experiencing COVID-19 anxiety may suffer from physical symptoms such as shortness of breath, rapid heartbeat, sweating, and muscle tension. Additionally, anxiety can intensify personal worries and fears.

Guided imagery can guide the individual's psychology towards calmness and tranquility by utilizing calming and positive imagery. This technique can assist individuals in visualizing themselves in a serene and confident state, ultimately reducing everyday tensions and stressors. Moreover, guided imagery exercises can improve sleep, concentration, and overall quality of life (Roffe et al, 2005).

Similarly, the effectiveness of Lazarus multimodal therapy in addressing COVID-19 anxiety and life expectancy aligns with the results of studies conducted by Barnetta et al. (2007), Shahlapour, et al. (2022), Singh, Tewari, and Singh (2019), Naami and Rezayatizadeh (2022), Khodabakhshy and Foroozandeh (2022), and Mesbah (2021). These studies collectively provide empirical evidence supporting the efficacy of guided imagery and Lazarus multimodal therapy in addressing COVID-19 anxiety and improving life expectancy.

Conclusion

The effectiveness of Lazarus' multimodal therapy in reducing COVID-19 anxiety can be attributed to its comprehensive model, which emphasizes the separation of senses from emotions, distinguishing between perceptions and cognitions, and focusing on intrapersonal and interpersonal relationships. Lazarus suggests that emotional maturity involves the ability to differentiate and establish constructive relationships by considering biological, behavioral, emotional, cognitive, and interpersonal aspects (Lazarus, 2008). By incorporating these elements during therapy sessions, the multifaceted approach in this study reduced anxiety caused by the COVID-19 pandemic.

Regarding the effect of Lazarus' multimodal therapy on life expectancy, emotions, such as anxiety, regret, despair, anger, and guilt, are influenced by changes in cognitive interpretations of events. Lazarus suggests that emotions cannot be directly manipulated but are altered through changes in other dimensions of personality (Lazarus, 2006). In this study, participants were guided to explore their thoughts, feelings, and their impact on behavior and emotions. They were encouraged to express their emotions appropriately, establish positive relationships, and develop constructive coping mechanisms. By addressing various dimensions such as behavior, emotion, cognition, interpersonal relationships, and biology, the multifaceted approach aimed to improve life expectancy.

In summary, the results of this research indicate that both guided imagery and Lazarus multimodal therapy were effective in reducing COVID-19 anxiety and improving life expectancy in individuals who have recovered from COVID-19. The findings suggest that there was no significant difference between the two approaches in terms of their effectiveness during the post-test and follow-up assessments. However, it is important to note that this study has limitations, including the restricted sample size of individuals who recovered from COVID-19 in Tehran. Caution should be exercised when generalizing the results to other age groups and geographical locations. Additionally, demographic variables such as education and socio-economic status were not controlled for, which could have influenced the research outcomes. Future studies should address these limitations and further explore the short-term and cost-effectiveness of guided imagery and Lazarus multimodal therapy as compared to other treatment approaches in improving the post-COVID-19 challenges and traumas. These innovative and effective approaches may be recommended to specialists, psychologists, psychiatrists, and counselors for the enhancement of mental well-being in individuals affected by the pandemic.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of the Abhar Branch, Islamic Azad University (Code: 162610737).

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Authors' contributions

Analysis statically, investigation, discussion writer/ Main researcher: Maziar Farzin; Conceptualization and supervision: Mojtaba Amiri Majd; Methodologist, review & editing: Mohammad Ghamari.

Conflict of interest

The authors declared no conflict of interest.

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