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International Journal of Body, Mind and Culture

From Nothinging to Nothingness; The Healing Power of Positive Negation

Farzad Goli

Professor, Energy Medicine University, California, USA AND Danesh-e Tandorosti Institute, Isfahan, Iran

Corresponding Author: Farzad Goli; ***Professor, Energy Medicine University, California, USA AND Danesh-e Tandorosti Institute, Isfahan, Iran***
Email: dr.fgoli@yahoo.com

Editorial

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O naught!
Bother not naught!
For naught.
Attributed to ***Rumi***

Negative phenomenology has almost been neglected in the modern thinking. Talking about death, void, Nothingness, absence and loss is a demanding endeavor for our imaginary minds. We prefer to convert these negative phenomena to some positive images. Even amid loss and absence, we persist imagining the lost or absent object which is intertwined with a void locus.

Death is also always embodied in the human skull, the grim reaper, hourglasses, or mythical images, such as Azrael. Death is perceived as an entity or force against life, rather than the end point of life, or an attribute of the life process.

It appears to be a shortfall in the evolution of our present minds that formal thinking and non-conceptual awareness have not advanced adequately to comprehend the negative facets of our phenomenological world in its authentic darkness and silence. This brief essay extends an invitation to contemplate more profoundly into the negative dimensions of the mind and its significance in fostering resilience, adaptability, and the evolution of consciousness. Therefore, finding an authentic way to connect with the negative aspects of life can be pivotal in the management of loss, grief and trauma.

First of all, let's take a glance on types of negative phenomena. In my book (2008); "*Hich inja Mihichad*", meaning, "Nothing is doing nothing here", I explore some of these concepts, ideas and introspections that may elucidate various types of the negative phenomena. Here, I simply introduce two negative dimensions; Nothinging

and Nothingness.

The realm of Nothinging

Nothinging refers to compensatory mental processes aimed at alleviating the pain caused by losses and unrealized desires. As Heidegger (1993) explained in his book," What is metaphysics?" by using the verbal form of nothing: "*das Nichts nichtet*", revealing that non-events, similar to events, are in act in our minds, and even in our societies.

Nothing can stop in the ever-changing world and endless chain of signifiers. When someone loses a job, a spouse, or a property, does that disappear from the mind? Lost objects insist on existing and acting; in other words, they are Nothinging in, and between us. At times, a deceased family member has a more decisive role than the living ones. The images, memes, and impressions of others make a complex intersubjective matrix, and the lost object can act interpersonally. Some mythic or historical-mythical characters, as animistic memes, can do everything amongst their Nothinging.

Abu Zayd Balkhi (2013) was the first to proclaim that mental illnesses are not merely the result of humoral imbalances, but are in fact ineffective reactions to losses. It still makes sense that our inappropriate interpretations and maladaptive coping strategies can form problem-making Nothinging processes.

Nothinging is like a living death as Blanchot (2015, p. 155) writes in Commenting on death in "*The Space of Literature*":

"… In it they die; they do not cease, and they do not finish dying".

The realm of Nothingness

If Nothinging is much ado about absence, Nothingness is the silence of absence. Losses lead to insecure emotions while emotions are intentional states, therefore, directed towards objects and associated with related images. Reactive emotions towards lost objects paired with the darkness of obscurity and trauma raise the chaos of Nothinging.

Understanding of Nothingness in the silence of conceptualization and interpretation is the royal way out of infernos of Nothinging. Nothingness as a state of mind is based on openness to the formless and integrating interoceptive vibrations.

Acceptance and mindfulness and other contextual approaches are transdiagnostic strategies to perceiving losses and our towards-death being without making Nothinging a web of meanings (see Thompson et al., 2021; Hayes et al., 2011). Acceptance in its deep sense is accepting of meaninglessness, as the basic state of mind, and negating the insecure meaning-making procedures.

According to Heidegger, freedom is rooted in Nothingness. This is in line with Taoist and Buddhist scripts for liberty. Lao Tzu (2020) clearly addressed "joy comes from Nothingness". That is why the Buddha (1965) invited people to a heaven of "not-knowing, not-not-knowing"; being aware of Nothingness.

This is not the Schopenhauerian negative negation of will to living, posing consciousness against life, but is a positive negation of the uncontrolled will to knowing. We need a more Nietzschean approach to say yes to the totality of life and being, and saying no to reducing consciousness to cognition (see Blenkinsop and Morse, 2017). This way, we can compose ourselves in the form of a complex elixir of a tragic awareness, a playful knowing nothing, doing nothing, and a whole-body desire to know and act.

A twin black hole

When we are traumatized, we are simultaneously faced with "the bad" and "the

being". The bad comes from an extreme allostatic load and provokes insecurity and related emotions by context, and associates previous memories and fantasies. The being is the hard core of the traumatic event that does not allow for conceptualization, so appears as a dark black hole which may swallow our identity and being (Goli, 2023). The profound dread of confronting "being", undoubtedly hurls us into a dark abyss, and we find ourselves meandering along a Mobius-like path between badness (or negativity) and Nothingness.

What is the way out of this endless suffering, between of the Scylla of "the being" that threatens us to abolition and Nothingness, and Charybdis of Nothinging about "the bad" that evokes all painful memories and expectations?

Joyful Nothingness

In the ancient symbolism of Sufis, the water of life perpetually flows within the absolute darkness of "zolamAt."(Neẓāmī, 1956). This is the mystical address of the way to Nothingness, creating an authentic life and posttraumatic growth, while Nothinging is the unlimited semiosis of insecurity and badness.

Despite all of the devilish associations with darkness and Nothingness, it is insightful to know that the light in itself is dark, and the being in itself is Nothingness, because there is no thing there; no object recognized and no propositional meaning.

A dare to be, a step out of the boundaries of the mental ego to the meaninglessness of the formless state of being, is the key of the bondage of the twin black hole of traumas and pathological griefs. Embracing the meaninglessness of being, or Nothingness, paves the way for a genuine freedom in constructing a more integrated meaning of life and navigating through challenging events.

While the 20th century was a period for growth of the realm of bright rationality and ontology, it seems that the twenty-first century is the time for the development of a dark realm of consciousness and the ontic. This growth promises a balance between the yin and yang of the psychological knowledge and practice.

We are no longer exclusively in pursuit of the joy of success and the clarity of reason, but simultaneously deriving joy from nothing. As Ungaretti (2004) puts it, a light up of immensity [of Nothingness]; "M'illumino d'immenso".

Conflict of Interests

Authors have no conflict of interests.

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The Effect of Acceptance and Commitment Therapy on Cognitive Emotion Regulation and Emotional Inhibition in Girls with Non-Suicidal Self-injury

Fatemeh Falahati[1], Marjan Jaberi[2], Aysan Sharei[3], Fatemeh Yahyapour[4]

1 Department of Clinical Psychology, School of Humanity, Shiraz Branch, Islamic Azad University, Shiraz, Iran
2 Department of Psychology, School of Humanity, Central Tehran Branch, Islamic Azad University, Tehran, Iran
3.Department of Psychology, School of Humanity, Kharazmi University, Tehran, Iran
4 Department of Psychology, School of Humanity, University of Sistan and Baluchestan, Zahedan, Iran

Corresponding Author: Marjan Jaberi; ***Department of Psychology, School of Humanity, Central Tehran Branch, Islamic Azad University, Tehran, Iran***
Email: m.jaberi@gmail.com

Quantitative Study

Abstract

Background: Non-suicidal self-injury (NSSI) is prevalent in adolescent populations worldwide. Emotion dysregulation and emotional inhibition are believed to contribute to NSSI. This study assessed the impact of acceptance and commitment therapy (ACT) on cognitive emotion regulation and emotional inhibition in self-injurious preadolescents.

Methods: The present semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population of the study included all preadolescent girls with NSSI who had been referred to counseling centers in Tehran, Tehran, Iran, in 2019. A purposeful sampling method was used to select 30 preadolescent girls with NSSI for this controlled study. The participants were randomly divided into two experimental and control groups (15 participants per group) to attend weekly training sessions. The data collection tools used included the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001) and Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The experimental group then underwent ACT (Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008) for 8 weekly 90-minute sessions, whereas the control group received no training. Multivariate analysis of covariance (MANCOVA) was used to analyze the data. Data were analyzed using SPSS software. A P-value of less than 0.05 was considered statistically significant.

Results: The results showed that ACT was effective on cognitive emotion regulation ($F = 18.09$; $P = 0.001$) and emotional inhibition ($F = 21.54$; $P = 0.001$) in self-injurious preadolescents. Univariate analysis of covariance (ANCOVA) revealed significant differences between the study groups in terms of cognitive emotional regulation ($F = 18.09$; $P = 0.001$) and emotional inhibition ($F = 21.54$; $P = 0.001$).

Conclusion: The results showed that ACT had a positive impact on cognitive emotion regulation and emotional inhibition in adolescents with NSSI.

Keywords: Acceptance and commitment therapy; Cognition; Emotions; Inhibition, psychological; Self-injurious behavior

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Introduction

In adolescence, non-suicidal self-injury (NSSI) is a common disorder, the severity of which reduces with age (Daukantaite et al., 2021). NSSI is defined as the direct and intentional destruction of a person's body tissue without the intent of death. This disease is very common in adolescent populations, with rates of about 17-18% and rates of up to 60% in child and adolescent clinical settings. NSSI peaks around age 15 with recovery in young to middle adulthood. It is known as a self-diagnostic entity and is associated with a wide range of psychiatric conditions (Ghinea, Fuchs, Parzer, Koenig, Resch, & Kaess, 2021). The prevalence of lifetime suicidal thoughts, suicide attempts, and NSSI among preadolescents was 15.1%, 2.6%, and 6.2%, respectively (Liu, Walsh, Sheehan, Cheek, & Sanzari, 2022). Developmental changes in the brain occur during childhood and adolescence, and are mainly caused by the activity of subcortical areas and subsequent interactions with prefrontal cortex areas. Emotional experiences and environmental influences can significantly alter the developmental trajectory of these regions, potentially contributing to later difficulties in emotion processing and regulation later in life (Westlund et al., 2017; Mayo et al., 2021).

Emerging evidence indicates that emotion processing deficits are associated with NSSI (Liu et al., 2022; Esfahani, Hasirchaman, Naeini, Sharifpour, Boorboor, & Jafari, 2021; Liao et al., 2022). Emotion regulation is often engaged in the following exposure to an aversive stimulus, in which it motivates the individual to regulate ensuing negative thoughts and/or experiences through a variety of strategies. These strategies can function in either healthy or unhealthy ways, which reflect one's psychological well-being (Liu et al., 2022). Indeed, individuals who engaged in NSSI, compared to controls, are also more likely to experience consistent negatively valenced emotions and report difficulties regulating their negative emotions (Boyes, Wilmot, & Hasking, 2020; Mayo et al., 2021). In addition, a recent experimental study also showed a significant relationship between interpersonally focused negative emotions and acute NSSI behaviors (Ammerman, Sorgi, Fahlgren, Puhalla, & McCloskey, 2021). According to the general strain theory (GST), external stressful events or situations can trigger negative emotions such as anxiety, depression, and anger, and to release these negative emotions, individuals react by attacking others or injuring themselves (Liao et al., 2022). The role of NSSI in emotion regulation has been further supported by research using experimental and ecological momentary assessment techniques. For example, Ewing, Hamza, and Willoughby (2019) conducted a meta-analysis of lab-based experimental (e.g., guided imagery, and acute pain) and moment sampling approaches to NSSI (Ammerman et al., 2021). Overall, the researchers found decreased negative affect following the administration of pain for both those who engaged in NSSI and those who did not engage in NSSI, a phenomenon referred to in the literature as pain-offset relief (Ewing, Hamza, & Willoughby, 2019).

The findings suggest that difficulty inhibiting ongoing motor responses triggered by negative emotional reactions may be a shared neurocognitive characteristic of NSSI (Allen, Sammon, Fox, & Stewart, 2020). Previous findings suggest that emotional response inhibition deficits specifically to self-harm (SH) stimuli may pose a vulnerability to increased NSSI urge intensity during real-time, state-level negative effects (Burke et al., 2021). Previous results suggest that impulsive behavior in NSSI may involve specifically impaired inhibitory control over started negative emotional impulses. This deficit in late response inhibition regarding negative emotional stimuli might reflect a cognitive mechanism or pathway to elevated negative urgency among

people who self-injure (Allen & Hooley, 2019). It has been reported that impulsive individuals may be more likely to choose self-harm as an emotion regulation strategy when they experience strong and poorly controlled emotional states. Emotional dysregulation contributes to impulsivity, and it has shown emotional instability to predict impulsive behaviors even after controlling for trait impulsivity (Peters, Baetz, Marwaha, Balbuena, & Bowen, 2016).

Both psychological and biological factors appear to increase vulnerability to NSSI. The psychological factors may include problem-solving, lack of self-esteem, impulsiveness, vulnerability to pessimistic thoughts about the future (i.e., despair), and feeling trapped. The biological factors include disturbances in the serotonergic system and stress response (Wilks, Gurtovenko, Rebmann, Williamson, Lovell, & Wasil, 2021). Psychological approaches are used to treat this group of people that are involved in SH, typically including brief individual and group psychological therapy. Currently, there is no single treatment that is the gold standard for children and adolescents struggling with NSSI (Gilbert et al., 2020). There is a noticeable increase in the number of trials and approaches to the treatment of psychosocial interventions in SH (Witt et al., 2021). For example, effective interventions typically include an important component of family or parent education (Glenn, Esposito, Porter, & Robinson, 2019), mentalization-based treatment (MBT), cognitive behavioral therapy (CBT) (Witt et al., 2021), dialectical behavior therapy (DBT) (Wilks et al., 2021), mindfulness (Najian, Kachooei, & Farahani, 2022), routine psychiatric care, augmentation of usual care, active comparator, placebo, alternative drug therapy, or a combination of these (Wilks et al., 2021). There is a lack of evidence for the effectiveness of interventions in the treatment of SH in children and adolescents, although the social and psychological contribution to the risk of developing NSSI is relatively high. The biological mechanisms underlying NSSI have recently been revealed and have guided the development of effective psychosocial treatments for self-injury. Less is known about self-injurious thoughts and behaviors (SITBs) in preadolescence, than in older age groups, partly because of the common view that young children are incapable of non-suicidal self-injurious thoughts.

The present study investigated the effectiveness of Acceptance and Commitment Therapy (ACT) on cognitive emotion regulation and emotional inhibition of people who perform NSSI. Considering that most of the previous studies in different fields have conducted different research on preadolescents suffering from self-injury disorder, we tried to use treatment based on acceptance and commitment, the effectiveness of which has been confirmed on emotional disorder and self-compassion among preadolescents (Izakian, Mirzaian, & Hosseini, 2019). The aim of this study was to examine cognitive emotion regulation and emotional inhibition in self-injurious preadolescents using acceptance and commitment-based therapy.

Methods

The present semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population of the study included all non-suicidal self-injurious preadolescent girls who had been referred to Tehran Counseling Center, Tehran, Iran, in 2019. A purposeful sampling method was used to select 30 preadolescent girls with NSSI for this controlled study. The participants were randomly divided into two experimental (n = 15) and control groups (n = 15). Based on an effect size of 0.25, alpha of 0.05, and test power of 0.95, the minimum number of samples to achieve the desired power was 30 individuals. The study inclusion

criteria were a high score on the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), conscious consent to participate in the study, lack of participation in similar psychological interventions, female gender, age of 11-13 years, and lack of any other serious mental disorders, such as thyroid, schizophrenia, bipolar disorder, and taking no medications. The exclusion criteria were being absent from more than 2 sessions, physical disability, and providing incomplete information.

To conduct the research, psychological centers in Tehran were consulted (Negah, Pirouzi, and Masire-sabz centers), after obtaining the necessary permissions. The screening consisted of interviewing 81 preadolescent girls with NSSI and selecting 30 girls to attend weekly training sessions (n = 15 per group). The second author implemented the treatment protocol in Masire-sabz centers since it had more amenities. Before the intervention, both groups completed questionnaire. The experimental group was then subjected to ACT for 8 weekly 90-minute sessions, whereas the control group received no training. A summary of the sessions of the training program is provided in table 1 (Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008). To evaluate the effect of training, the tests were repeated in both groups by the researcher. Ethical considerations were observed in this study. The subjects were informed about the objectives and rules of the research and their attitudes and opinions were respected. All subjects were allowed to withdraw from the research at any stage. Moreover, the control group could undergo the ACT sessions after the study.

Deliberate Self-Harm Inventory: The DSHI was designed by Gratz (2001) to measure various types of self-harming behavior in the non-patient community. This questionnaire contains 17 descriptive phrases on common intentional self-injury behaviors (scratching the head and face, scratching and piercing the skin, burning, engraving writings and photos on the skin, etc.). Each phrase asks about the

Table 1. Treatment protocol of acceptance and commitment

Meetings	The content of the meetings
1st	Conducting the pretest, determining the goals of the meetings, inviting the participants to form groups of 2 and introduce themselves to each other, reviewing and examining the participants' problems, explaining the philosophy of the ACT therapy intervention, and signing a consulting contract to attend on time
2nd	Mindfulness practice: meditation and awareness of the body, breathing, sounds and thoughts
3rd	Understanding the nature of emotions, thoughts, and actions, investigating the effectiveness of avoidance strategies and ultimately creative despair, using the metaphor of pushing the board
4th	Creative frustration: examining the behaviors that the group has presented to avoid thoughts and feelings and asking about ineffective actions such as self-harm - using the metaphor of wrestling in the sand and tug of war with monsters
5th	Explanation of the illusion of control control the metaphor of thinking about ice cream Acceptance: the use of boards on the knees and divas in the boat
6th	Dissociation: showing separation between oneself and one's inner experiences and behaviors, observing oneself as a background
7th	Diffusion: use of the leaves on the river, thoughts like stars, and fish and sea metaphors
8th	Acceptance: Creating space for painful feelings caused by relationships and accepting these feelings instead of hurting yourself (allowing yourself to have painful internal experiences to act in line with your values)
9th	Introducing the concept of purpose: practicing the purpose circle, the concept of values, and discovering the practical values of life
10th	Mindfulness training: preparation to end the meetings, a general review of the program, and review and discussion of the programs, and discussion of the positive reasons for continuing the training post-test implementation

frequency of various self-injury behaviors in the past year. Scoring included yes (score 1) and no (score 0). Gratz (2001) reported the Cronbach's α coefficient of the questionnaire to be 0.82 and its reliability coefficient after 2 weeks (test-retest) to be 0.68 (Gratz, 2001). The Cronbach's α coefficient of the DSHI in the Iranian sample was 0.71, which indicates acceptable reliability and validity. The content of the test were obtained through a survey of psychologists and educational scientists (Nobakht & Dale, 2017).

Emotion Regulation Questionnaire (ERQ): The ERQ was designed by Gross and John (2003). The ERQ consists of 10 items in the 2 subscales of cognitive reappraisal (6 items) and expressive suppression (4 items). The items are scored on a 7-point Likert scale ranging from 1 (totally disagree) to 7 (agree). The Cronbach's alpha coefficient of the subscales of cognitive reappraisal and expressive suppression was 0.79 and 0.73, respectively. The test-retest reliability of the whole scale after 3 months was 0.68 (Gross and John, 2003). The staff and Catholic students of the University of Milan reported the intrinsic homogeneity coefficient of this scale to be 0.48-0.68 for the cognitive reappraisal subscale and 0.42-0.63 for the expressive suppression subscale. The Persian version of the ERQ has been standardized by Hasani (2016). In this study, the validity of the scale was calculated based on the internal consistency method (Cronbach's alpha domain: 0.60-0.81).

Multivariate analysis of covariance (MANCOVA) was used to analyze the data. Data were analyzed using SPSS software (version 23; IBM Corp., Armonk, NY, USA). A P-value of less than 0.05 was considered statistically significant.

Results

The participants comprised 30 preadolescent girls with a mean age of 12.13 ± 0.68 years in the experimental group and 11.78 ± 0.66 years in the control group.

As illustrated in table 2, the mean cognitive emotional regulation scores of the control and experimental groups in the pretest were 49.72 ± 6.35 and 48.37 ± 6. 29, respectively, and in the posttest were 48.73 ± 6.25 and 55.43 ± 6.21, respectively. Moreover, the mean emotional inhibition scores in the control and experimental groups in the pretest were 69.52 ± 8.19 and 69.78 ± 7.64, respectively, and in the posttest were 70.35 ± 8.73 and 78.76 ± 8.23, respectively. As can be seen in table 3, the experimental and control groups have significant differences based on the dependent variables at the level of P <≤0.001.

Therefore, it is possible to conclude that at least one of the dependent variables (cognitive emotional regulation and emotional inhibition) differs significantly between the two groups. To find out the difference, 2 analysis of covariance (ANCOVA) tests were performed in the MANCOVA context. According to the

Table 2. The distribution of the scores of variables in the pretest vs. posttest phases

Variable	Groups	Statistical index	Mean ± SD	P-value
Cognitive emotion regulation	Pretest	Control	49.72 ± 6.35	0.200
		Experimental	48.37 ± 6.29	0.178
	Posttest	Control	48.73 ± 6.25	0.231
		Experimental	55. 43 ± 6.21	0.153
Emotional inhibition	Pretest	Control	69.52 ± 8.19	0.211
		Experimental	69.78 ± 7.64	0.200
	Posttest	Control	70.35 ± 8.73	0.189
		Experimental	78.76 ± 8.23	0.200

SD: Standard deviation

Table 3. Results of multivariate analysis of covariance on variables

Statistic test	Value	F	P-value	Effect size
Pillai's trace	0.693	59.23	0.001	0.71
Wilks' lambda	0.184	59.23	0.001	0.71
Hotelling's trace	7.82	59.23	0.001	0.71
Roy's largest root	3.29	59.23	0.001	0.71

calculated effect size, about 77% of the total variance of the experimental and control groups is due to the effect of the independent variable.

Based on table 4, MANOVA revealed significant differences between the experimental and control groups at the level of $P < 0.001$. As a result, 2 univariate ANCOVA tests were conducted. Univariate ANCOVA revealed significant differences between groups in terms of cognitive emotional regulation ($F = 18.09$; $P = 0.001$; $\eta p^2 = 51$) and emotional inhibition ($F = 21.54$; $P = 0.001$; $\eta p^2 = 0653$). Regarding the emotional inhibition variable, ACT proved more effective than one (0.65).

Discussion

The aim of this study was to assess the effectiveness of the ACT approach on cognitive emotion regulation and emotional inhibition in self-injurious preadolescents. The findings showed that the effect of ACT was significant on the cognitive regulation of emotion and emotional inhibition in this sample, meaning that this treatment approach increased both of these variables.

Thus, to explain and strengthen the findings, it can be noted that there are studies that have used similar approaches to treat this group of people, and we have compared the results of those studies with the desired approach. As was explained in the introduction section, this approach has only been examined in one previous article. Finding in this study is in line with the studies by Izakian et al. (2019), and Keshtkar, Naziri, Mohammadi, and Fath (2021). In the study by Keshtkar et al. (2021), ACT effectively reduced aggression and increased flexibility in students with self-injurious behavior. The findings of Izakian et al. (2019) demonstrated that ACT led to improvements in emotional dysregulation among self-harming students in both the posttest and follow-up stages. Previous findings indicated that individuals with a history of NSSI reported significantly more difficulties in regulating their negative and positive emotions than those who had not engaged in NSSI (Allen et al., 2020; Burke et al., 2021; Allen & Hooley, 2019; Peters et al., 2016; Wilks et al., 2021).

In explanation of these results, it can be said that treatment based on acceptance and commitment taught female students with self-injurious behavior to focus on creating a valuable life instead of changing and reducing the symptoms and freeing their thoughts, feelings, memories, and physical sensations.

This method of therapy through cognitive dissonance seeks to help people with self-injurious behavior not to yield inflexibly to their thoughts and mental laws, and instead to find ways to interact effectively with the world so as to increase their flexibility and their ability to manage negative emotions, or help them through emotional inhibition (Keshtkar et al., 2021; Hayes, Strosahl, & Wilson, 1999).

Table 4. Results of analysis of covariance in multivariate analysis of covariance

Dependent variable	SS	MS	F	P-value	ηp^2
Cognitive emotion regulation	2476.75	2476.75	18.09	0.001	0.51
Emotional inhibition	4967.23	4967.23	21.54	0.001	0.65

SS: Sum of squares; MS: Mean squares

The comparison of the pretest and posttest illustrated the significant effect of this treatment approach. In a review of the research literature in the field of the effectiveness of ACT in the sample group of self-harming children, not many findings were obtained. In this therapy method, the component of ACT provides the client with the possibility to accept unpleasant internal experiences without trying to control them, and this makes those experiences seem less threatening. In other words, it directs attention and allows the individual to observe mental events instead of considering these events as a part of his being (Heath, Carsley, De Riggi, Mills, & Mettler, 2016). The authors believe that since this therapy method is based on acceptance and commitment, in accepting the reactions of being in the present, and observing yourself to achieve an activated sense, it has an effective method of regulating excitement, and controlling mental ruminations and negative thoughts (Hayes et al., 1999).

These results should be considered preliminary. The limitations of the study justify caution in interpreting the results, such as the small sample size, the lack of homogenization of the groups, and the presence of disturbing variables, so it cannot be said that the results obtained are completely influenced by the implementation of the desired approach. Therefore, it is suggested that the variables of cognitive flexibility, cognitive diffusion, rumination, and cognitive fusion be investigated in adolescents with NSSI with this approach in future studies. As this study focused on girls with self-injury, it is recommended that further research be conducted on boys as well. Future studies should examine age groups, duration of self-injury, parent characteristics, and economic conditions because this study did not assess these factors.

Conclusion

The results showed that ACT training had a positive impact on cognitive emotion regulation and emotional inhibition in adolescents with NSSI. Treatment based on ACT uses train metaphors to help adolescents with NSSI distinguish between the built world of thoughts and minds as a continuous process; thus, the trained person can distinguish between who is thinking and verbal categories that people give to themselves by thinking.

Conflict of Interests

Authors have no conflict of interests.

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The Effectiveness of Family Therapy on Psychological Capital of Adolescents with Major Depressive Disorder

Faranak Mohammadiyas[1], Maryam Namvar[2], Zahra Kardi[3], Sara Esmaeilzadeh[4], Tahereh Khaleghyan-Chaleshtory[5]

1 Department of Clinical Psychology, Ahar Branch, Islamic Azad University, Ahar, Iran
2 Department of Clinical Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
3 Department of Psychology, Science and Arts University, Yazd, Iran
4 Department of Psychology, West Tehran Branch, Islamic Azad University, Tehran, Iran
5 Department of Psychology, Payame Noor University, Tehran, Iran

Corresponding Author: Tahereh Khaleghyan-Chaleshtory; ***Department of Psychology, Payame Noor University, Tehran, Iran***
Email: taherehkhaleghyan135475@ gmail.com

Quantitative Study

Abstract

Background: Major depressive disorder (MDD) is a common mood disorder. It has been shown that adolescents are more likely to experience depression during this term, with high recurrence rates and poor functional outcomes. The central purpose of this study was to investigate the effectiveness of family therapy on the psychological capital dimensions of adolescents with MDD.

Methods: The study was quasi-experimental, with a pre-test, post-test, and control group. The statistical population of this study was all adolescents with MDD who were referred to psychological clinics in Tehran, Iran, from October to December 2022. In this study, 30 eligible patients were selected and invited to take part purposefully. Researchers randomly divided the participants into two groups: a family therapy counseling group (n = 15) and a control group (n = 15). The interventions were held in eight 90-minute sessions, one session per week, and were designed and implemented to enable adolescents with MDD to promote their psychological capital dimensions based on the family therapy protocol. Beck Depression Inventory-II (BDI-II) and Psychological Capital Questionnaire (PCQ) were administered. Data were analyzed with SPSS software using multivariate analysis of covariance (MANCOVA).

Results: Family therapy intervention had a positive and significant effect on resilience ($P < 0.001$, $F = 22.08$), self-efficacy ($P < 0.001$, $F = 18.54$), hope ($P < 0.001$, $F = 29.37$), and optimism ($P < 0.001$, $F = 21.50$) in adolescents with major depression.

Conclusion: Family therapy increased resilience, self-efficacy, hope, and optimism in patients with MDD. Therefore, family therapy for adolescents with MDD is recommended to increase the psychological capital dimensions and improve their quality of life (QOL).

Keywords: Family therapy; Psychological capital; Major depressive disorder; Adolescents

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Introduction

Major depressive disorder (MDD) is a common mood disorder that has a lifetime prevalence of 13.2% (Fan et al., 2019). 350 million people worldwide suffer from the MDD, which contributes to the most significant number of disability years and is the top cause of disability in adolescents. During adolescence, the incidence of depressive symptoms and MDD increases sharply. It has been shown that adolescents are more likely to experience depression during this term, with high recurrence rates and poor functional outcomes (Rice et al., 2019). Psychological capital is a conceptual structure of positive psychology characterized by a set of beliefs: self-efficacy, hope, optimism, and resilience (Shariat Panahi, Razaghpour, Mirtabar, & Hoseinzadeh, 2022). This set of beliefs plays a moderating role in the occurrence of depression, acting as a protective component or enhancing symptoms (Tenenbaum, Capelos, Lorimer, & Stocks, 2018; Kwok & Gu, 2019; Bibi, Hayat, Hayat, Zulfiqar, Shafique, & Khalid, 2022).

In Beck's cognitive theory (1979), depression is caused by the activation of schemas that track and encode the individual's negative experiences, resulting from a negative perspective about the individual, reflected in four dimensions: negative self-perceptions, a negative view of the world, a negative interpretation of interpersonal relationships, and a sense of hopelessness (Beck, Rush, Shaw, Emery, 1979; Nunes & Faro, 2021). Existing research broadly supports the negative link between hope and psychological health challenges. Higher hope is related to lower stress and depressive symptoms, a better quality of life (QOL), positive cardiovascular outcomes, and improvements in daily functioning (Arslan & Yıldırım, 2021). Several pieces of evidence point to the relationship between self-efficacy and depression in adolescents, and their role in promoting adaptive outcomes in the face of adversity inherent in this stage of development, such as transitioning from a family-enjoy setting to an impersonal location and the complexity of middle school (Guerra, Farkas, & Moncada, 2018). Optimism versus pessimism is operationalized as a dispositional tendency to expect positive versus negative outcomes in one's life (Arslan & Yıldırım, 2021). Optimism is positively related to greater subjective well-being, self-esteem, hope, self-efficacy, social support, mental health, and flourishing (Dupuis & Foster, 2020; Reyes et al., 2020). Pessimism is positively related to depression and anxiety (Giardini et al., 2017) and stress (Jones et al., 2020). Studies show that dispositional optimism moderated the relationship between psychological stress and depression, perceived stress and psychological well-being, and depressive symptoms (Romswinkel, Konig, & Hajek, 2018).

Resilience is the ability to cope positively with unpleasant and bitter experiences in life, which includes not only resistance to damages or threatening conditions, but also the active and constructive involvement of the person in the environment (Asadollahi, Karimpoor, Kaveh, & Ghahremani, 2022). A resilient person is less likely to feel lonely and frustrated, shows better tolerance to problems, and has excellent capabilities for dealing with difficulties and incompatibilities if they are supported (Azizi & Ghasemi, 2017). According to a study conducted by Dawson and Golijani-Moghaddam (2020), resilience is significantly associated with greater well-being and negatively associated with depression, anxiety, and coronavirus disease 2019 (COVID-19) distress (Dawson & Golijani-Moghaddam, 2020). Teymourpour (2018) showed that the benefits of behavioral activation treatment as an effective intervention were used to increase the cognitive flexibility and emotional flexibility of women with MDD (Teymoorpur et al., 2019). Zhao et al. found that psychological capital could relieve depression degree, while insecure attachment had a positive predicting effect on adolescent depression (Zhao, Li, & Wang, 2021).

Family therapy is: "any psychotherapeutic approach that explicitly focuses on altering interactions between or among family members and seeks to improve the functioning of the family as a unit, and/or the functioning of the individual members of the family" (Waraan et al., 2023). Although many studies have investigated the effectiveness of family therapy on positive and negative psychological characteristics (Amirfakhrayi, Karimi Afshar, & Manzari Tavakoli, 2019; Rezaei Sharif, Sadeghi, & Amini, 2020; Katsuki, Watanabe, Yamada, & Hasegawa, 2022), there is no study on the effect of family therapy on the psychological capital dimensions of adolescents, especially in our country, Iran. Hence, further studies seem necessary. The main purpose of this study was to investigate the effectiveness of family therapy on the psychological capital of adolescents with MDD.

Methods

The study was quasi-experimental, with a pre-test, post-test, and control group. The statistical population of this study was all adolescents with MDD who were referred to psychological clinics in Tehran, Iran, from October to December 2022. In this study, 30 eligible patients were selected and invited to participate purposefully. The assignment of individuals to experimental and control groups was done randomly. Each participant received an envelope containing a number, and a randomly selected identifier to determine whether they were in the experimental (n = 15) or control (n = 15) group (Moloudi, Arian, Mahdavi, Madah, & Roghaeeh Taghipour, 2022).

Inclusion criteria were: age between 12 and 16 years, being a girl, a diagnosis of MDD, either single-episode or recurrent depression according to the International Classification of Diseases, 10th Revision (ICD-10), established by a certified psychiatrist and verified by the Mini International Neuropsychiatric Interview (MINI) (Timmerby, Austin, Ussing, Bech, & Csillag, 2016), and living with parents. Exclusion criteria included severe suicidal or psychotic symptoms, suicide attempt or serious non-suicidal self-injury requiring hospitalization within 3 months of admission, substance dependence, and intelligence quotient (IQ) estimated to be at least 80, according to the referral letter or diagnostic evaluation.

Then, they were asked to fill out the Beck Depression Inventory-II (BDI-II) and Psychological Capital Questionnaire (PCQ). To protect patient data privacy, researchers assured them that their data would be kept confidential. The interventions were held in eight 90-minute sessions, one session per week, and were designed and implemented to enable adolescents with MDD to promote their psychological capital dimensions based on the family therapy protocol (Table 1) (Solati Dehkordi & Nikfarjam 2013). Both groups received post-test evaluations following these sessions. This study met all the standards of ethical behavior in research. The Ethics Committee of the Islamic Azad University of Tehran (IR.IAU.KHUISF.REC.1400.098) approved the study.

PCQ: Luthans has designed PCQ. This questionnaire includes 24 questions and four sub-scales (self-efficacy: items 1 to 6, hope: items 7 to 12, resiliency: items 13 to 18, optimism: items 19 to 24). Each sub-scale includes six items and the subject answers to each item with a 6-point Likert scale (strongly agree to strongly disagree). Moreover, Asadollahi et al. (2022) indicated the reliability of this instrument with Cronbach's alpha of 0.82, [intraclass correlation coefficient (ICC) ≥ 0.80] (Asadollahi et al., 2022). Cronbach's alpha of this scale was 0.74 in this study.

BDI-II: Depressive disorders are assessed using the BDI-II, a self-reporting instrument. The inventory consists of 21 statements describing different types of depression (Beck, Steer, & Brown, 1996).

Table 1. Family therapy protocol

Session	Intervention
1	Familiarizing students with the course and other members of the group and distributing information brochures; at the beginning of each meeting, summaries of the previous meeting were presented, and after the discussion, the group members reviewed and evaluated the homework.
2	Establishing a therapeutic relationship, talking about treatment and its goals
3	Awareness about the initial symptoms of major depressive disorder
4	Introducing control as a problem, teaching about predisposing and revealing factors, and the family's responsibility in dealing with symptoms
5	Therapeutic solutions to prevent a recurrence, reducing stress in the family environment by clarifying the role of the family in creating or reducing stress
6	The role of stress in increasing the recurrence of disease, identifying the sources of stress in the family and how to deal with these stresses
7	Communication and recognition in the family, self-worth and communication in the family, and conflict resolution in interpersonal relationships
8	Summary of treatment sessions

The items are scaled from zero to 3 which makes an overall range of 0-63. As far as no depression is concerned, the inventory does not predict a cut-off point. The cut-off points suggested for this inventory are scores of 0-13 indicating minor depression, 14-19 suggesting mild depression, 20-28 showing moderate depression, and the score range of 29 to 63 which demonstrates severe depression (Asgharipoor, Asgharnejad, Arshadi, & Sahebi, 2012). Cronbach's alpha was 0.86 in this study.

In this study, to determine the significance of the difference between the scores of test and control groups in the dependent variables, a multivariate analysis of covariance (MANCOVA) method was used. Before analyzing the data, to ensure that the data of this research met the underlying assumptions of the covariance analysis, they were examined.

Results

The mean ± standard deviation (SD) of age of adolescents was 14.20 ± 1.77 and 14.91 ± 1.95 in the experimental and control groups, respectively. The age difference between the two groups was not significant according to an independent t-test (P = 0.064). Table 2 shows the pre-test and post-test results for variables scores in the experimental and control groups.

Table 2. Mean ± standard deviation (SD) of variables in experimental and control groups

Variable	Groups	Statistical index	Mean ± SD
Resilience	Pre-test	Control	15.31 ± 3.24
		Family therapy approach	14.82 ± 4.12
	Post-test	Control	15.98 ± 3.29
		Family therapy approach	21.43 ± 4.67
Self-efficacy	Pre-test	Control	15.26 ± 4.69
		Family therapy approach	16.63 ± 4.75
	Post-test	Control	16.91 ± 3.17
		Family therapy approach	20.46 ± 4.43
Hope	Pre-test	Control	16.51 ± 4.81
		Family therapy approach	17.26 ± 4.29
	Post-test	Control	17.86 ± 4.54
		Family therapy approach	25.39 ± 4.38
Optimism	Pre-test	Control	15.78 ± 3.97
		Family therapy approach	14.26 ± 3.16
	Post-test	Control	15.66 ± 3.65
		Family therapy approach	22.45 ± 4.36

SD: Standard deviation

Table 3. Results of multivariate analysis of covariance (MANCOVA) on variables

Test statistics	Value	F	df	df error	P-value	Effect size	Eta
Pillai's trace	0.784	51.43	2	28	0.001	0.71	1
Wilks' lambda	0.165	51.43	2	28	0.001	0.71	1
Hotelling's trace	6.450	51.43	2	28	0.001	0.71	1
Roy's largest root	5.710	51.43	2	28	0.001	0.71	1

df: Degree of freedom

The linear significance level of the relationship between the pre-test and the post-test of resilience (r = 0.73), self-efficacy (r = 0.67), hope (r = 0.77), and optimism (r = 0.62) was obtained (all correlation coefficients are significant at the P < 0.05 level). According to the Kolmogorov-Smirnov test, the assumption of normality of the distribution of the variables was greater than 0.05; therefore, this assumption has been met.

Considering dependent variables, table 3 shows a significant difference between the test group and the control group at a level of P ≤ 0.001. In MANCOVA's text, two covariance analyses were conducted to determine this difference. In the experimental and control groups, 71% of the variances were explained by the independent variable, based on the calculated effect size.

Based on the results of table 4, the results of family therapy intervention had a positive and significant effect on resilience (P < 0.001, F = 22.08), self-efficacy (P < 0.001, F = 18.54), hope (P < 0.001, F = 29.37), and optimism (P < 0.001, F = 21.50) in adolescents with major depression. In addition, it can be seen that the largest effect size was related to the hope variable (0.745), which shows that 74% of the total variances of the experimental and control groups in the hope variable were caused by the effect of the independent variable.

Discussion

The purpose of the present study was to determine the effectiveness of family therapy-based training on psychological capital of adolescents with MDD. Based on the results, resilience, self-efficacy, hope, and optimism differ significantly between the experimental and control groups. The results of many studies (Stark, Banneyer, Wang, & Arora, 2012; Amirfakhrayi et al., 2019; Rezaei Sharif et al., 2020) are in line with findings of this study. Stark et al. (2012) reviewed twenty-five trials of family-based treatment programs for child and adolescent depression. The researchers used several formats in these studies, including conjoint family sessions, interpersonal therapy (Pu et al., 2017) sessions combined with some family or parent sessions, and concurrent group-based parent and child training sessions (Rhode, 2017). The key features of effective family interventions include psycho-education about depression, relational reframing of depression, maintaining family interaction patterns, facilitating clear communication between parents and children, promoting systematic family problem-solving, disrupting negative critical interactions between parents and children, promoting secure parent-child attachments, and teaching children how to deal with negative mood states and change pessimistic beliefs (Carr, 2019).

Table 4. Results of analysis of covariance (ANCOVA) in the multivariate ANCOVA (MANCOVA) context

Dependent variable	Source	SS	df	MS	F	P-value	Eta
Resilience	Group	1768.41	1	1768.41	22.08	0.001	0.667
Self-efficacy	Group	2178.27	1	2178.27	18.54	0.001	0.583
Hope	Group	6549.39	1	6549.39	29.37	0.001	0.745
Optimism	Group	3278.65	1	3278.65	21.50	0.001	0.691

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

Amirfakhrayi et al. (2019) found that the inadequate performance of family and parents could lead to the teenager's participation in high-risk behaviors, mental health problems, and increased psychiatric disorders. Emotional issues also have a direct relationship with resilience. Adolescents throughout their lives face chronic and acute needs that can unpleasantly influence their physical and psychological health. Therefore, equipping adolescents with resilience instead of doing only disturbing things to avoid thoughts, feelings, memories, or desires is more suitable than different options (Amirfakhrayi et al., 2019). The family therapy intervention may assist families in gaining knowledge about MDD, developing coping strategies for problems in daily life, and enhancing communication between family members and patients. Appropriate coping strategies among family members, such as positive thinking, may reduce stress for both the patients and family members. This may also reduce caregivers' expressed emotion (EE) and may have a positive effect on the patient's prognosis. As a result, both family members and patients are believed to experience less stress, as well as a reduction in depression symptoms (Katsuki et al., 2022). Belief in their ability to take action to achieve results is a crucial factor in teenagers' emotional well-being.

There is evidence pointing to the relevance of self-efficacy in explaining depression in adolescents (Guerra et al., 2018; Tak, Brunwasser, Lichtwarck-Aschoff, & Engels, 2017). Bandura et al. (1999) explain that lowered levels of self-efficacy can produce depressive symptoms in three manners. The first would be the discrepancies between personal aspirations and perceived abilities. From this perspective, adolescents establish patterns that are incompatible with their abilities, reducing the probability of success and achievement of their goals and, consequently, producing feelings of guilt and incapacity. A second path would be through a low sense of social effectiveness to develop satisfactory interpersonal relationships that help to control chronic stressors. Finally, a third way would be through the low sense of exercising control over one's depressive thoughts (Nunes & Faro, 2021).

The primary source of self-efficacy for children early in life is the family. Families provide opportunities for children to develop, explore, experience new things, master challenges, and develop confidence in themselves. Parents who engage children in active learning experiences enable them to achieve some level of self-control at an early age (Matteson, 2020). Indeed, family environments impact general levels of self-efficacy in children (Anvari, Kajbaf, Montazeri, & Sajjadian, 2014). As children grow, Bandura (1994) posited they develop self-efficacy through peer influences in addition to family influences. Finally, upon entering adolescence, individuals continue to develop self-efficacy through various transitional experiences. As adolescents gain more independence, their sense of efficacy is expanded as they navigate novel life events (Bandura, 1994; Matteson, 2020). In this study, adolescents in the experimental group reported greater hope. These findings are consistent with the findings of Scheel et al. (2012) and Rezaei Sharif et al. (2020). In family therapy, positive qualities can be strengthened to increase hope. When a person recognizes those positive features, it creates internal reinforcement. Therefore, external reinforcement and hope by the therapist are enhanced by internal reinforcement. The therapist uses solution-focused questions to cause increased hope (Rezaeisharif et al., 2020).

According to studies by Zhao et al. (2021) and Tyndall et al. (2020), each dimension (self-efficacy, positive thinking, psychological flexibility, and hope) of psychological capital showed a negative effect on depression, namely, the adolescents with high psychological capital levels were less probable to feel the depressive

symptoms, which is in accordance with the results of this study. Psychological capital is a positive mental state gradually formed in the individual growth process. To figure out why, those with a high psychological capital level believe they can solve problems and are more inclined to adopt positive and effective coping strategies, so that the problems can be effectively solved. As a result, mental pressure due to various difficulties and setbacks can be reduced, while negative emotions such as depression and anxiety are also repressed (Jones et al., 2020). Besides, those with high psychological capital can use active attribution to realize goals, hold optimistic expectations of future events, and are capable of undertaking very difficult tasks. Moreover, they will spare no effort to overcome difficulties and achieve their goals. Those with this personality trait can learn more efficiently, live more optimistically, and, on top of that, are free from frustration, not to mention a sense of anxiousness and depression (Liese, Kim, & Hodgins, 2020).

Among the study's strengths is that the intervention demonstrates comparable efficacy to more expensive, longer, and more intensive treatments, and the delivery of treatments in a community mental health setting with patients recruited from a defined catchment area strengthens the external validity of the findings. The present study had some limitations. First, researchers collected data using self-reported questionnaires. Second, the sample size of patients in the intervention and control groups was small, and there was no attention control group in this study. Because of a few similar studies in this sample group, further large-scale, rigorously-designed studies are recommended for the generalization of the results.

Conclusion

The results showed that family therapy counseling increased resilience, self-efficacy, hope, and optimism in patients with MDD. Therefore, family therapy for adolescents with MDD is recommended for increasing the psychological capital dimensions and improving their QOL. All healthcare providers must be trained to identify the needs of patients, help them cope with and adapt to their problems, and encourage psychological capital dimensions in them.

Conflict of Interests

Authors have no conflict of interests.

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The Effects of Acceptance and Commitment Therapy on Anxiety and Depression in Patients with Asthma

Akhmedova Dilafruz Bahodirovna[1], Khalid Abdullah[2], Suhair Mohammad Husein Kamona[3], Ali Abdul Razaq[4], Tawfeeq Alghazali[5], Sarah Hassan Jalil[6], Mais Mazin Al-Hamdani[7], Riyadh Mohammed Mohsin[8], Faeza A FKhry[9]

1 PhD, Department of Neurology, Bukhara State Medical Institute, Bukhara, Uzbekistan
2 Department of Nursing, Al-Hadi University College, Baghdad, Iraq
3 Department of Nursing, Al-Manara College For Medical Sciences, Amarah, Iraq
4 Department of Nursing, Al-Hadba University College, Mosul, Iraq
5 College of Media, Department Of Journalism, The Islamic University of Najaf, Najaf, Iraq
6 College of Pharmacy, National University of Science And Technology, Dhi Qar, Iraq
7 College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq
8 Department of Nursing, Mazaya University College, Nasiriyah, Iraq
9 Department of Nursing, Al-Esraa University College, Baghdad, Iraq

Corresponding Author: Akhmedova Dilafruz Bahodirovna; ***PhD, Department of Neurology, Bukhara State Medical Institute, Uzbekistan***
Email: doctordilya81@mail.ru

Quantitative Study

Abstract

Background: Asthma is one of the major prevalent chronic illnesses in the world, and it can lead to psychological disorders. The current research aimed to examine the effects of acceptance and commitment therapy (ACT) on anxiety and depression of patients with asthma.

Methods: The current research was a randomized clinical trial with pre-test, post-test, and follow-up stages. The statistical population included 827 patients with asthma referred to Baghdad Allergy Institute, Baghdad, Iraq, in 2022. Using simple random sampling, 120 people were chosen and separated into both experimental and control groups. The Beck Depression Inventory (BDI-II) and Beck Anxiety Inventory (BAI) were utilized to collect data. Data were analyzed utilizing the chi-square test, independent t-test, two-way repeated measures analysis of variance (ANOVA), and Bonferroni post hoc test via SPSS software, with the statistical significance level equal to 0.05.

Results: ACT was effective on the anxiety ($F = 9.74$, $P < 0.001$) and depression ($F = 10.24$, $P < 0.001$) of patients with asthma.

Conclusion: It can be concluded that ACT has decreased anxiety and depression in patients with asthma. Consequently, hospital medical staff must pay special attention to ACT.

Keywords: Asthma; Acceptance and commitment therapy; Anxiety; Depression

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Introduction

Asthma is an inflammatory and chronic respiratory disease characterized by clinical symptoms of wheezing, coughing, and shortness of breath (Chong, Mak, Leung, Lam, & Loke, 2019). Genetics, environment, and psychological variables all affect persistence of symptoms of emotional and mood problems caused by this disease. The prevalence of this disease has increased significantly over the last few decades, doubling in the last 20 years (Bahramiabdolmalaki, Homayouni, & Aliyali, 2021). Although genetic parameters have a great effect on the occurrence of symptoms of the illnesses, many studies have shown that environmental factors such as pollution, contact with pets, detergent exposure, poor diet, and smoking also significantly affect the occurrence of this disease (Zargar, Rabiei, Naderi, & Tarrahi, 2022).

On the other hand, many studies show a complex interaction of biological and psychological factors in the occurrence of various medical diseases such as asthma (Zemestani & Mozaffari, 2020). In line with these findings, studies show that anxiety and depression are prevalent in patients with asthma and allergy (Vakilian, Zarei, & Majidi, 2019). In addition to emotional challenges, one of the significant issues for patients with asthma is a lack of control over the disease, which can lead to increased symptoms (Ebrahimi, Nasiri-Dehsorkhi, Hosseini, Afshar-Zanjani, & Schroeder, 2021). Thus, it is important to examine the effects of psychological therapies on patients with asthma in order to maximize disease control and reduce emotional problems such as anxiety and depression (Meuret, Tunnell, & Roque, 2020).

Many psychological treatments have been used to treat patients' psychological disorders, focusing on emotions and cognitions (French, Golijani-Moghaddam, & Schröder, 2017). Rather than altering cognitions and emotions' shape, frequency, or situational sensitivity, their function is targeted (Han, Yuen, Lee, & Zhou, 2020). One of them is acceptance and commitment therapy (ACT). Six key processes in ACT lead to psychological flexibility (Çiçek Gümüş & Öncel, 2022). Several studies show that this treatment reduces patients' psychological problems (Fadhil, Kadhim, Shakir, Alaraji, Hussein, & Yousuf, 2022). ACT teaches patients that experiences should be accepted without any reaction to eliminate them (Moazzezi, Ataie, Ataie, & Pishvaei, 2015). The major goal of ACT is to create psychological flexibility; rather than simply acting to beware disturbing thoughts, feelings, memories, and desires, the ability to choose actions among different and more suitable options is created (Graham, Gouick, Krahe, & Gillanders, 2016). Changing the function of thoughts and feelings is accepted in this approach rather than changing their form, content, or frequency. ACT considers motivational and cognitive aspects, making the treatment more effective (Sharbafchi, Afshar-Zanjani, & Rostami, 2020; Li, Wong, Jin, Chen, Chong, & Bai, 2021).

Anxiety is characterized by fear and physical symptoms indicating increased autonomic activity (such as heart palpitations and sweating). Anxiety is frequently triggered by new experiences and is perceived as threatening one's identity and self-confidence (Casey et al., 2018). Anxiety has a widespread effect and can impair patients' sufficiency to afford with physical symptoms and drug treatment. Anxiety combined with a chronic medical condition increases the risk of death, lowers quality of life, causes functional disability, and raises medical care costs (Gueserse, Zali, Hassanzadeh, Hatami, & Ahadi, 2022).

Depression is characterized by long periods of low mood, sadness, pessimism, and nervous system malfunction (Lappalainen, Langrial, Oinas-Kukkonen, Tolvanen, & Lappalainen, 2015). To diagnose depression, at least one of the criteria of depressed mood or lack of interest in daily activities must be present. Researchers investigate

the role of genetic predisposition, personality traits, and long-term stress in developing depression (Ferreira, Gillanders, Morris, & Eugenicos, 2018). Every human being can suffer from depression at various stages of their lives. This disease can bring people's physical health, feelings, behavior, and mental health to light. Evidence suggests that people with high neuroticism, low extroversion, and certain diseases exhibit more symptoms of depression (Rostami, Moheban, Davoudi, Heshmati, & Taheri, 2022).

Considering the psychological needs of patients with asthma, the lack of detailed research on these patients' psychology, and the need to find a short-term and low-cost method confirms the importance of conducting research in this field. Because asthma causes many emotional disturbances and mental coherence and distress tolerance are essential in patients' psychological states, it highlights the importance of researching psychological interventions. The current research aimed to examine the effects of ACT on anxiety and depression of patients with asthma.

Methods

The current study was a randomized clinical trial with three stages: pre-test, post-test, and follow-up, as well as a control group design. The statistical population included 827 patients with asthma referred to Baghdad Allergy Institute, Baghdad, Iraq, in 2022. Among these, 120 patients were chosen by simple random sampling method and separated into both experimental and control groups (60 people in each). The inclusion criteria were a diagnosis of asthma according to a specialist doctor, being at least 18 years old, not using psychiatric drugs, not having similar intervention in the previous year, and having minimal literacy. Exclusion criteria included refusal to take part in the research, missing more than two sessions, and failing to complete the questionnaires. To fulfill with ethical considerations, the confidentiality principle was followed.

Patients in the control group had standard therapies, whereas patients in the experimental group underwent ACT intervention based on cystic fibrosis (CF) protocol (O'Hayer, O'Loughlin, Nurse, Smith, & Stephen, 2021) through eight 90-minute sessions, the details of which are shown in table 1 (1 session per week). Patients in the control group had no intervention, and ACT was also provided to them after the study completion in the follow-up stage to comply with ethical considerations.

This intervention was carried out by an experienced treatment team that included a psychologist and a psychiatrist. Between psychotherapy sessions, no psychiatric treatment was administered. The Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) were used to collect the necessary data. Patients in both groups completed these inventories in three stages: pre-test (before the intervention), post-test (immediately after the intervention), and follow-up (two months after the intervention).

BAI (Beck, Epstein, Brown, & Steer, 1988) was performed to examine the patient's level of anxiety. This inventory contains 21 questions about common anxiety symptoms. The grading system consists of a four-point Likert scale with the options: absolutely (0), mildly (1), moderately (2), and severely (3). In this order, a person's score can range from zero to 63, where a higher value displays a person's greater anxiety. Bardhoshi et al. (2016) obtained the validity of the BAI equal to 0.65 and its reliability equal to 0.91 using Cronbach's alpha method. The content validity of the BAI in the present research was 0.78, and its reliability, according to Cronbach's alpha method, was 0.81.

Table 1. Description of acceptance and commitment therapy (ACT) intervention sessions

Session	Description
1	Education about ACT and its goals, education about anxiety and depression, and discussion about strategies to control and avoid anxiety and depression
2	Mindfulness practice includes examining the person's control strategies, assessing the costs and damages caused by these strategies in the person's life, examining the benefits of these control strategies, and introducing the desired control strategies.
3	Mindfulness exercises teach people to observe anxiety and depression instead of reacting to them. Control is an ineffective strategy for dealing with anxiety and depression, using desired metaphors to control the external world versus the internal world and proposing desire instead of avoidance.
4	Explaining the permanence of mental laws and the fact that some are harmful, teaching cognitive fusion violations, and assigning homework
5	Learning to live a meaningful life by accepting and observing oneself, positing self as context versus self as content, focusing on the self-observer, and providing homework
6	Examining the reaction to the previous and last meeting's assignments, clarifying values, specifying the valuable directions of life, and developing flexible behavior patterns through value-oriented exposure
7	Development of a behavioral treasury and more adaptable patterns of anxiety and depression response through mindfulness, values, and commitment (participation in value-based activities).
8	Using selected activities to practice ACT techniques and how to deal with obstacles in a worthwhile life

ACT: Acceptance and commitment therapy

BDI-II (Beck, Steer, & Brown, 1996) is an updated version of the original BDI (Beck et al., 1987), which was designed to examine the level of depression. This inventory was developed for rapid screening of depressed and abnormal patients, and it has since been translated into several languages and used in numerous studies. BDI-II contains 21 questions on a four-point Likert scale, with a higher value indicating a more severe case of depression. The questions in BDI-II are not based on a specific theory of depression or the research studies results but on clinical observations and descriptive statements about symptoms commonly expressed by depressed patients. Storch et al. (2004) determined that the BDI-II had a validity of 0.74 and a reliability of 0.90. The content validity of the BDI-II in the current study was 0.83, and its reliability, according to Cronbach's alpha method, was 0.87.

Data were analyzed using the chi-square test, independent t-test, and two-way repeated measures analysis of variance (ANOVA). Bonferroni's post hoc test was also used to evaluate the experimental group's results at various stages of the current study. The data were analyzed by SPSS software (version 23, IBM Corporation, Armonk, NY, USA), with the statistical significance level equal to 0.05.

Results

The demographic variables of patients in two groups are shown in table 2.

Table 2. Demographic variables of patients in two groups

Variable		Experimental group [n (%)]	Control group [n (%)]	P-value
Gender	Men	41 (68.3)	38 (63.3)	0.17
	Women	19 (31.7)	22 (36.7)	
Age (year)	< 40	36 (60.0)	33 (55.0)	0.56
	> 40	24 (40.0)	27 (45.0)	
Marital status	Married	47 (78.3)	51 (85.0)	0.43
	Single	13 (21.7)	9 (15.0)	
Education	Secondary	43 (71.7)	37 (61.7)	0.29
	College	17 (28.3)	23 (38.3)	
Job	Employed	46 (76.7)	41 (68.3)	0.41
	Unemployed	14 (23.3)	19 (31.7)	

Table 3. Mean and standard deviation (SD) of anxiety and depression variables in three stages

Variable	Stage	Experimental group (mean ± SD)	Control group (mean ± SD)	P-value
Anxiety	Pre-test	25.08 ± 13.67	24.51 ± 13.42	0.620
	Post-test	17.35 ± 10.71	24.16 ± 14.19	< 0.001
	Follow-up	16.24 ± 10.38	24.37 ± 13.53	< 0.001
Depression	Pre-test	18.62 ± 9.83	18.47 ± 9.76	0.590
	Post-test	13.79 ± 8.46	18.28 ± 9.89	< 0.001
	Follow-up	13.24 ± 8.57	18.59 ± 9.82	< 0.001

SD: Standard deviation

According to table 2, 69 people (57.5%) were under 40, with a mean age of 36.17 ± 6.23 years in the experimental group and 37.62 ± 6.49 years in the control group. In addition, 79 (65.8%) were men, 98 (81.7%) were married, 80 (66.7%) had a secondary education, and 87 (72.5%) were employed. The findings revealed no significant difference between the both groups for demographic variables ($P > 0.05$). Table 3 displays the findings of the anxiety and depression variables in three stages.

According to table 3, regarding the anxiety and depression variables, there was no statistically significant difference between the two groups in the pre-test stage ($P > 0.05$). The values of the variables mentioned above were very similar in all three stages for patients in the control group.

In comparison, the values of the variables in the post-test and follow-up stages for the experimental group patients greatly decreased. The results of independent t-test showed a statistically significant difference between the both groups regarding the values of anxiety and depression in the post-test and follow-up stages ($P < 0.001$).

The Kolmogorov-Smirnov test was performed to check the assumption of normality of data distribution, and the Levene's test was performed to check the assumption of equality of variances in two-way repeated measures ANOVA. The results indicated that both assumptions were confirmed in all three stages ($P > 0.05$). Moreover, the findings of Wilks' lambda test showed that ACT caused a significant change in one of the variables of anxiety and depression ($P < 0.001$). Table 4 indicates the findings of two-way repeated measures ANOVA.

Table 4 indicates that group, time, and their interaction significantly affected anxiety and depression ($P < 0.001$). Thus, using ACT improved the variables, and the mean difference between the variables was also significant. In addition, according to table 4, ACT was responsible for 18.7% of group changes and 74.8% of time changes in the anxiety variable and 24.6% of group changes and 78.3% of time changes in the depression variable ($P < 0.001$). The findings of Bonferroni post hoc test are presented in table 5.

Table 4. The findings of two-way repeated measures analysis of variance (ANOVA)

Variable	Source of variation	SS	df	MS	F	P-value	Eta squared
Anxiety	Group	938.06	1	938.06	9.74	< 0.001	0.187
	Time	686.73	2	343.37	82.34	< 0.001	0.748
	Group × time	853.47	2	426.74	102.33	< 0.001	0.673
	Error	1463.59	56	26.14			
Depression	Group	1086.79	1	1086.79	10.24	< 0.001	0.246
	Time	914.43	2	457.22	104.87	< 0.001	0.783
	Group × time	1258.92	2	629.46	144.37	< 0.001	0.742
	Error	1941.64	58	33.48			

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

Table 5. Findings of the Bonferroni post hoc test

Variable	Stages		Mean difference	Standard error	P-value
Anxiety	Pre-test	Post-test	7.73	0.67	< 0.001
	Pre-test	Follow-up	8.84	0.83	< 0.001
	Post-test	Follow-up	1.11	0.24	0.710
Depression	Pre-test	Post-test	4.83	0.56	< 0.001
	Pre-test	Follow-up	5.38	0.62	< 0.001
	Post-test	Follow-up	0.55	0.14	0.560

According to table 5, the difference for the variables' values at the pre-test stage with those at the post-test and follow-up stages was statistically significant ($P < 0.001$). The difference for the post-test and follow-up stages, on the other hand, was not significant ($P > 0.05$). As a result, ACT reduced anxiety and depression in patients with asthma during the post-test and follow-up stages. The findings of table 5 can also be interpreted as the difference for the post-test and pre-test stages demonstrating the effect of the ACT method and the difference for the follow-up and pre-test stages demonstrating the continuous effects of ACT in the follow-up stage.

Discussion

The current research aimed to examine the effects of ACT on anxiety and depression of patients with asthma. The results demonstrated that ACT affected anxiety and depression variables in these patients, causing them to decrease. The results of current research are consistent with some previous researches in the field (Wicksell, Dahl, Magnusson, & Olsson, 2005; Ataie Moghanloo, Ataie Moghanloo, & Moazezi, 2015; Esser et al., 2021), but not with others (Ruiz, Luciano, Florez, Suarez-Falcon, & Cardona-Betancourt, 2020).

To explain the findings of the current study, it can be stated that the success of ACT on diverse types of clinical disorders has been proven (Chong et al., 2019). By teaching mindfulness skills, ACT enabled participants to experience being in the present moment. It also led to the realization that, with the help of breathing, body awareness, and nonjudgmental acceptance of thoughts, negative thoughts were not always correct. ACT generally improves self-control and makes people feel more and better in control of their surroundings and have a greater sense of self-control (Joharifard, Nouri, Hazrati, & Fekryan-Arani, 2022). ACT emphasizes people's desire for internal experiences, so that they experience their troubling thoughts as just thoughts (Wynne et al., 2019). Patients with asthma who used themselves as the context could experience unsavory interior fillings in the present tense and dissociate themselves from unpleasant repercussions, memories, and thoughts.

In explaining anxiety, it can be stated that the therapeutic strategy for negative internal experiences (anxiety) based on ACT is not eliminating or not having these experiences. Rather than suppressing negative emotions, this therapeutic approach emphasizes fully experiencing them. ACT provides a foundation for guiding people toward their values despite negative emotions and without suppressing them. In this regard, therapists employ a variety of metaphors and strategies to assist clients in relinquishing control over their inner experiences (Han, Yuen, & Jenkins, 2021).

Through ACT, patients with asthma learned to evaluate the effects of anxiety symptoms and modify methods of dealing with them; ineffective strategies for controlling and avoiding painful experiences were identified and accepted without struggle. They also objectified psychological content and language rule change by disentangling the destructive effects of language and cognition on each other.

Patients learn to accept the painful consequences of anxiety by using a nonjudgmental approach to internal experiences, being exposed to pleasant feelings and thoughts, and not avoiding feelings when using mindfulness strategies in the ACT (Ferreira, Mariano, Rezende, Caramelli, & Kishita, 2022). People find the chosen directions of their lives to improve the relationship through committed action despite their problems with their illness. These issues, in turn, lead to a reduction in anxiety symptoms (Parmar et al., 2021).

People by ACT are encouraged to evaluate their behavior about the success of their strategy (Chong, Mak, & Loke, 2020). People in this treatment observe their depressing thoughts to save themselves from the ruminations that come with depression, and their depression is reduced. In other words, this treatment can reduce these patients' psychological distress and depression by reducing fusion with ineffective thoughts and feelings (Niles, Burklund, Arch, Lieberman, Saxbe, & Craske, 2014).

In general, ACT assisted the participants in the current study in correctly understanding emotions and fully experiencing them. Indeed, the whole experience of emotions occurred through the processes of acceptance, rejection, and self as the backdrop; it moderated the expression of emotions and changed the participants' connection with their thoughts, beliefs, and emotions, which improved their moods and interpersonal interactions and effectively reduced the amount of anxiety and depression variables.

One limitation of this study was the research community's restriction to patients from only one hospital in Baghdad. It is suggested that other educational methods for reducing anxiety and depression be used and compared to this research and ACT be used in various educational and therapeutic settings and counseling centers to improve interpersonal interactions.

Conclusion

The present research found that ACT effectively reduced anxiety and depression in patients with asthma. Therefore, it improves other aspects of patients' mental health. In this regard, it is recommended that doctors and nurses use interventional methods, such as ACT, in collaboration with experienced psychologists to improve patients' physical and mental health.

Conflict of Interests

Authors have no conflict of interests.

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Designing a Healing Model Based on Paintings, Descriptions, and Background Music with a Music Therapy Approach

Henry Susanto Pranoto[1], Timotius Christian Febry[2], Teofilus Teofilus[3], Tommy Christian Efrata[4], Carlence Maurlen[5], Auditia Setiobudi[6]

Ciputra University, Surabaya, Indonesia

Corresponding Author: Henry Susanto Pranoto; ***Ciputra University, Surabaya, Indonesia***
Email: henry.pranoto@ciputra.ac.id

Quantitative Study

Abstract

Background: Coronavirus disease 2019 (COVID-19) has caused devastating experiences and problems for many people in many financial aspects, getting laid off from work, and losing their loved one. These problems may cause both direct or indirect pains and scares, mentally and emotionally. Arts may be used as a method of healing for such conditions which provides a moment to self-healing for the participants of the art exhibition. The purpose of this research was to promote a new understanding regarding the art function as a healing method to help people heal from their depression due to the COVID-19 pandemic.

Methods: This research applies a descriptive and quantitative approach in accommodating parametric and non-parametric analytic measurements, based on the questionnaires that have been collected from 77 participants of the art exhibition. The inner wound self-healing focused on the simultaneous activation of the five senses: sight, hearing, smell, taste, and touch, to sync the pain experiences with the prepared, meaningful art works. The researcher applies healing music as a stimulus of the exhibition. The event was equipped with a pre-test (before entering the art exhibition) and post-test (after experiencing the art works exhibition) as the source data for the parametric and non-parametric statistical measurements.

Results: The results of the study using non-parametric test showed that there was a positive influence of the art works towards research participants' feelings, while in the parametric test, there was no positive influence of the art works towards research participants' feelings.

Conclusion: Based on the research, researchers suggest the use of Hidden Sense of People Likert Scale (HSPLS instrument) to measure the gray area of people's decision making. The HSPLS instrument will help make simultaneous and digital measurement of the decision making that involves the responding time and the direction of the response by the participants.

Keywords: Music therapy; Mental healing; Hidden sense of people likert scale; Art; Painting

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Introduction

Healing is something that is necessary for people in the era of coronavirus disease 2019 (COVID-19) which has been happening for the last two years. The impact of COVID-19 creates a deep wound for the community that requires recovery, especially psychologically. Apart from that, psychological therapy also experienced problems in dealing with the community during the COVID period, due to the isolation, quarantine, and social distancing procedures carried out to handle COVID-19 (Rehman & Lela, 2020). As a result, one of the recovery methods may be suggested through the medium of art that can be virtually distributed. There has been much evidence for mental health recovery using art media, especially in the application of visual arts, such as: influencing connectedness functions related to psychological problems, that can reduce salivary cortisol levels, stress levels, and systolic blood pressure (Gallo, Giampietro, Zunszain, & Tan, 2021). By looking at the effects of this art, the design of a healing model based on the use of paintings and their descriptions, accompanied by the addition of musical elements as background accompaniment, can be used as a form of healing model approach in music therapy. This healing model will be needed during the pandemic as well as during the recovery period for COVID-19. The design of this healing model is supported by several literacies related to art and healing, such as the application of works of art to heal the mind, body, and spirit by nurses for patients (Lane, 2005) and the application of music therapy in the form of pictures, stories, dance, and singing as a medium for emotional, somatic, artistic, and spiritual healing as a complement to biomedical treatment (Stuckey & Nobel, 2010). The application of music art can also be used to help reduce pain, stress, and anxiety like analgesic drugs or anesthetics (Moris & Linos, 2013). In the article titled "Creativity and Spirituality in Nursing", Lane also stated that music could be used as a medium for balancing human psychology in terms of the application of technology in the world of health (Lane, 2005). Therapy through art media is used as a treatment for patients with post-traumatic stress disorder (PTSD) to help the traumatic coding process, so that it can be integrated with thoughts, emotions, and other events that have occurred (Avrahami, 2005). Observing the positive impact of art, especially music, and the urgency of human needs for health in this COVID-19 era, research that accommodates the elements and functions of art/music needs to be carried out.

The specific objective of this research activity is to educate and provide a new understanding to the public about the functions of art that can be used to recover from the pandemic of COVID-19. Through art healing and self-expression, researchers want to help improve people's understanding of the important functions of works of art, descriptions of works, and background music in art exhibition activities. This is done by synergizing and activating the five senses consistently and simultaneously. The five senses are collaborated with elements of art to express the depth of the meaning of art that is felt, so that it can help restore public health that occurred during the COVID-19 pandemic. This research focuses on developing a healing model based on artwork, artwork descriptions, and background music that refers to entrepreneurship and sociopreneurship management.

A healing model based on paintings, work descriptions and background music, with a music therapy approach, is a solution that can be used for mental, emotional, and physical recovery and treatment for people in the pandemic and post-COVID-19 era. The treatment aims to address other health problems that may occur, such as psychosomatic illnesses caused by stress and emotional problems. Psychosomatic

disease causes an energy imbalance in the patient's body, with the condition of the patient feeling continuous pain even though a medical test has been carried out and declared healthy by a doctor (Triaz & Hadiwono, 2019).

The forms of treatment efforts that can be carried out are through art media using visual arts healing methods, both actively and passively, such as the mirror maze room-healing space carried out by Dr. Esther Sternberg, which uses an infinity room created by a Japanese artist, Yayoi Kusama, who is an expert in fiber art installation and other interactive installations (Triaz & Hadiwono, 2019). The application of the elements and functions of music as part of mental, emotional, and physical healing media helps regulate hormones that can affect a person's psychological condition and improve the quality of personality, using the sound and rhythm of music (Kurniawati, 2007). The benefits of art can also be obtained by viewing and discussing a work of art, so that it can stimulate curiosity, increase the desire to always be creative, and increase cognitive power. Therefore, art museums can be a place to empower and inspire people to explore and express emotions (Bennington, Backos, Harrison, Etherington Reader, & Carolan, 2016). The aim of this study is to promote a new understanding regarding the art function as a healing method to help people heal from their depression due to the COVID-19.

Methods

This research used quantitative, descriptive method by applying non-parametric and parametric tests to the questionnaire data obtained from 77 participants. The population of this study was the students of Ciputra University in Surabaya, Indonesia, and the data were processed using JASP software. This study accommodates the provision of a stimulus in understanding the meaning of works of art in the form of healing music as a background, as well as applying pre-test and post-test procedures in the form of questionnaires for visitors to art exhibition activities.

Art exhibition activities are carried out in several stages. Preparation for exhibition activities was conducted by arranging the room and placing the works of art according to the flow of the mood that could inspire the feeling and imagination of the visitors. The exhibition committee also placed fragrances, in the form of aromatherapy, to strengthen the sensation of the visitors' smelling experience. Apart from that, visitors would also be given candies of various flavors (sweet, sour, bitter, mint-spicy), which were adjusted to the works of art seen, in order to get a taste experience. Thus, visitors would get a complete and in-depth experience according to the mood, the five senses of the visitors, and in accordance with the perceived meaning of the work of art.

At the entrance, visitors must do a pre-test by filling out a questionnaire via Google Form. After filling in the questionnaire, the visitor entered the exhibition area by looking at the knitted works that could be seen and touched. From the prepared artworks in the first session, visitors would enjoy sweet candy to see works of art that reminded them of sweet memories, hopes, and dreams they once had. In the 2nd and 3rd sessions, visitors would enjoy sour and bitter sweets, while they enjoyed works of art that elevated sad experiences, or works of art that reminded visitors of feelings of anger and even traumatic experiences. Furthermore, in the 4th session, visitors would be shown the presence of works of art that made them aware of the dark times that had occurred. The contemplation toward the artworks may also present new hopes and goals in life for the visitors. Thus, the visitors would enter the 5th arranged-artwork session which might lead them to choosing freedom, rising from adversity,

and being able to pursue new hopes they had dreamt. Next, visitors would fill out a post-test Google Form electronic questionnaire. The experience from the art exhibition trip in this study ended at the post-test filling stage.

The research model used by the researcher, for the purpose of calculating parametric analysis, was applying the positive art (M) function mediation model, from the independent variable of present feelings (participants' feelings before entering the exhibition space) – (X1) and the COVID-19 variable (experiences of feelings during pandemic) – (X2), to positive change (Y1) and positive tendency (Y2). From the model analysis carried out, the researcher would focus on the mediating role of the positive art function within the art exhibition. The research would be observing the result of the mediation process that occurred. In addition, the researcher focused on the impact of the mediating variable on the two variables Y (Y1 and Y2), regarding the criteria for the possible impact that might be given from the mediation function of positive art. The methods used in this study were parametric and non-parametric. The parametric method itself used JASP software, and the nonparametric method used Excel calculations manually.

Results

The non-parametric calculation results of the research, using chi square (χ^2), can be observed in table 1.

The results of χ^2 in table 1 show that the research applied a test using one sample χ^2 in determining if there was a significant difference in the positive effect of painting on the feelings of art exhibition visitors. The research results showed that there was a significant difference (χ^2 (3, 77) = 30.273, P < 0.05, ϕ = 0.627). Furthermore, to determine where these differences occur, it is necessary to conduct a series of binomial tests using a modified Bonferroni correction. The results of the test showed that there was a significant difference in the positive influence of paintings on the feelings of art exhibition visitors between positive change and positive tendency (z = -3.45, P < 0.04), positive change and negative tendency (z = -2.69, P < 0.04), positive tendency and negative tendency (z = -4.67, P < 0.04), and positive tendency and unchanged preference (z = -3.54, P < 0.04). Furthermore, no significant differences were found in the positive influence of paintings on the feelings of visitors to art exhibitions.

Researchers also obtained the results of parametric calculations using the JASP instrument, which can be observed in table 2.

Table 1. Chi square test of non-parametric calculation results

Description	PC	PT	NT	UP
Observed	21.00	38.00	6.00	12.00
Expected	19.25	19.25	19.25	19.25
χ^2	0.15	18.26	9.12	2.73
Z score (PC-PT)	-3.45			
Z score (PC-NT)	-2.69			
Z score (PC-UP)	-1.39			
Z score (PT-NT)		-4.67		
Z score (PT-UP)		-3.54		
Z score (NT-UP)			-1.18	

Source: Data processed by the author, 2022
PC: Positive change; PT: Positive tendency; NT: Negative tendency; UP: Unchanged preference

Table 2. JASP parametric calculation results

Description			Estimate	SE	Z-value	P-value	95% CI	
							Lower	Upper
Present feelings	Positive art	PC	0.058	0.059	0.973	0.331	-0.051	0.180
COVID-19	Positive art	PC	0.051	0.036	1.403	0.160	-0.015	0.124
Present feelings	Positive art	PT	0.019	0.020	0.923	0.356	-0.016	0.076
COVID-19	Positive art	PT	0.016	0.013	1.265	0.206	-0.003	0.052

Source: Data processed by the author, 2022
COVID-19: Coronavirus disease 2019; CI: Confidence interval; SE: Standard error; PC: Positive change; PT: Positive tendency

From the results of parametric statistical calculations, in the present feelings analysis model (participants' feelings before entering the exhibition space) and COVID-19 (experiences of feelings during a pandemic), through the mediation function of the positive art towards positive change and positive tendency, there were no positive results. Thus, the results of the continued calculation regarding the significance of the non-parametric test (compared to the $P < 0.05$) were not significant based on the calculation of the parametric test. The model of the influence of present feelings and COVID-19 on positive change gives a value of 0.410. It means that the variability of the positive change construct which can be explained by the variability of the present feelings and COVID-19 constructs is 41%, while the rest is explained by other variables outside this study. Furthermore, the result for positive tendency is 9.2% and positive art is only 3.9%. Additional results obtained from research can be seen in the path plot image, to see a comparison of the distribution, direction, and magnitude of influence between the variables used (Figure 1).

Discussion

The aim of this study was to promote a new understanding regarding the art function as a healing method to help people heal from their depression due to the COVID pandemic. The occurrence of significant differences (positive change and positive tendency, positive change and negative tendency, positive tendency and negative tendency, and positive tendency and unchanged preference) in the non-parametric test result indicates a positive influence of the art works towards research participants' feelings.

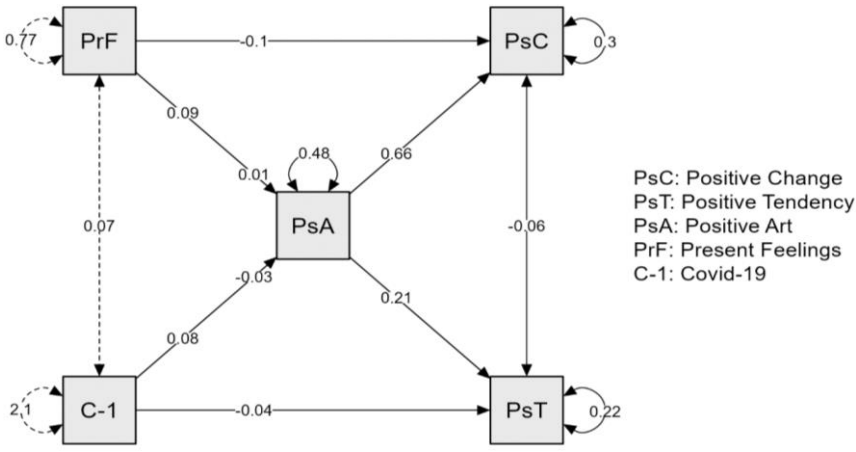

Figure 1. Path plot (source: data processed by the author, 2022

It means that the direction of positive art influence could be described and observed. On the contrary, there are no positive results in a parametric test that observes the present feelings analysis model of art exhibition participants and the feeling experiences during pandemic COVID-19, through the mediation function of the positive art, towards positive change and positive tendency. Notwithstanding, the parametric test result also shows that the positive change construct from the variability of the present feelings and COVID-19 constructs is 41% (value: 0.410), indicating that some degrees of positivity occur in this research. Thus, it requires a deeper level and detailed observation to conduct similar research in relation to human's feelings.

During conducting the project, researchers prepared a comfortable environment (prepared exhibition venue/room) for participants that enabled them to think, solemnly imagine, and meditate on their life experiences. Participants would be able to make a response without talking (direct expression to depict their feeling as a response to the art work). Other findings that researchers find during conducting the project include: decision response time (length of time for decision making) and the degree of choice within a full scale of choice (not using interval choice as Likert scale does). The time to make a response and to decide could be analyzed as an important variable of human psychology. Meanwhile, the full scale of choice is different from the one to five scale choice. The more choices that people have, the more variable choices people can make that could create confusion in the human brain, especially during their painful and traumatic experiences. Therefore, we need to conduct further research to make a thorough observation of this study. Further observation research could apply a significant tool, the Hidden Sense of People (HSP), to calculate the gray area of human feelings. This HSP tool will be able to measure time response, using a full scale of choice (not an interval or a scale of choice) through a direct response (without the need to speak/talk in expressing their feelings).

Conclusion

This study concludes that there are significant differences in the positive influence of paintings on the feelings of visitors to art exhibitions. In this case, art exhibition activities by applying positive art can have a positive impact on society by giving a positive tendency to positive change of the participants. However, this positive impact has not been able to show a significant impact on the parametric test calculations carried out, through the application of positive art as mediation. To see the difference in these results, researchers need to conduct more in-depth research, apply other calculation models, and even use measuring instruments with more in-depth/detailed analysis capabilities, related to measuring the inner being of people.

Limitations in research occur, especially related to the analysis of attitudes, feelings, thoughts, and inner being of humans which are very complicated and complex; therefore, special handling is needed in analyzing and calculating research results. Mistakes in calculating, drawing conclusions, and even handling the wrong elements of feelings for one's healing needs will have fatal consequences. From the differences in the results of significance in non-parametric calculations and parametric tests, it can be concluded that it is necessary to study or apply measurement tools that can provide a more in-depth analysis of human interaction with works of art, to consider applying the gray area calculations using the Hidden Sense of People (HSP) tool. This HSP tool acts like a Likert scale in general; the difference is knowing the emphasis on hidden feelings (gray areas) in making

psychological decisions in the process of selecting an observed work of art. Calculations using the HSP will be carried out digitally and directly from the participants to electronic calculations, so that it will reduce the bias and error functions of researchers in calculating and interpreting research data treatises.

Conflict of Interests

Authors have no conflict of interests.

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An Explanation of Impulsivity, Cognitive Flexibility, and Metacognitive Thinking in Non-Suicidal Self-Injury Behaviors

Sepideh Asadolahi[1], Nilofar Gholamipour[2]

1 Department of Clinical Psychology, Zahedan Branch, Islamic Azad University, Zahedan, Iran
2 Department of Clinical Psychology, Shahid Bahonar University of Kerman, Kerman, Iran

Corresponding Author: Nilofar Gholamipour; *Department of Clinical Psychology, Shahid Bahonar University of Kerman, Kerman, Iran*
Email: gholami.niloufar1370@gmail.com

Quantitative Study

Abstract

Background: Non-suicidal self-injury (NSSI) is a common symptom of psychiatric disorders. The main aim of the current study was to explain the role of three specific aspects of executive functioning (EF) (impulsivity, cognitive flexibility, and metacognitive thinking) in the prediction of adolescent NSSI.

Methods: This was a descriptive and correlational study. The statistical population consisted of all online responders in Iran under the age of 18, in the year 2022-2023. An online sample of 250 individuals was selected using voluntary sampling. The subjects completed the Barratt Impulsiveness Scale-11 (BIS-11), Cognitive Flexibility Inventory-Iranian Version (CFI-I), the Metacognitions Questionnaire-30 (MCQ-30), and Deliberate Self-Harm Inventory (DSHI). To analyze data, descriptive statistics, correlation matrix, Pearson correlation coefficient, and multiple regression method with SPSS software were used.

Results: The patients with deliberate self-harm (DSH) showed a positive and significant relationship between impulsivity and self-harm ($r = 0.526$, $P < 0.001$). Besides, there was a negative and significant relationship between the variable of cognitive flexibility and self-harm ($r = -0.519$, $P < 0.001$). Research has suggested an association between NSSI behaviors in adolescence and deficits in EF.

Conclusion: According to the study, metacognitive thinking and impulsivity were significantly associated with self-harm. More research is needed to understand the implications of such deficits, and if the results could be used for adapting treatment services and strategies.

Keywords: Impulsivity behavior; Cognition; Flexibility; Metacognition; Thinking; Non-suicidal self-injury; Adolescence

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Introduction

Non-suicidal self-injury (NSSI) is among the most frequent maladaptive behaviors reported in adolescence, with prevalence rates around 18%-22% in community samples worldwide. The onset of NSSI typically occurs between early and middle adolescence, with a peak during middle adolescence (14-15 years) and a subsequent decline during late adolescence (Esposito, Dragone, Affuso, Amodeo, & Bacchini, 2022). A comprehensive systematic review reported the prevalence of NSSI in adolescence between 7.5% and 46.5% (Cipriano, Cella, & Cotrufo, 2017). In another review study, the prevalence of NSSI in Iranian adolescents was 4.3% to 26.8% (Ezakian, Mirzaian, & Hosseini, 2018). In an Iranian study, results showed that the lifetime prevalence of NSSI among students was 6.2% (Marin et al., 2020). Despite its prevalence and lifelong consequences, there has been little progress in the accurate prediction of self-harm (Westers & Plener, 2020).

Adolescence and young adulthood are critical periods of biological and social development. Usually beginning with the onset of puberty, major physical and neurobiological changes occur, characterized by the development of key brain circuits responsible for higher-order cognitive and emotional functions that, if suboptimal or disrupted, can have a significant impact on behaviors and the development of the disorder (Iorfino et al., 2019). Neurocognitive deficits have been documented in adolescents with NSSI (Murner-Lavanchy et al., 2022). Neuro-cognition is one of the factors potentially contributing to an enhanced risk for self-harming behavior. As such, the youth engaging in these behaviors show difficulties regulating their emotions and a lack of impulse control (Kaess, Resch, Parzer, von Ceumern-Lindenstjerna, Henze, & Brunner, 2013). Interestingly, on task-inducing forms of negative affect relevant to NSSI, deficits in inhibitory control have been found more consistently (Allen, Fox, Schatten, & Hooley, 2019).

A systematic review and meta-analysis conducted by McHugh et al. (2019) demonstrated that deficits in inhibitory control, prediction interval, and impulsive decision-making were associated with self-harm or suicidal behavior (SB) (McHugh, Chun Lee, Hermens, Corderoy, Large, & Hickie, 2019). Previous cross-sectional studies have indicated that symptoms of hyperactivity-impulsivity, but not inattention, are associated with NSSI among adolescents (Gerrard, 2018). However, in a longitudinal study of girls with and without attention deficit hyperactivity disorder (ADHD) in childhood, both symptoms of inattention and hyperactivity-impulsivity were associated with NSSI and SB in adolescence and young adulthood (Meza, Owens, & Hinshaw, 2021). In the study of Mozafari et al. (2022), adolescents who reported NSSI had higher scores on risky decision-making, behavioral inhibition, and emotion dysregulation, and lower scores on cognitive flexibility than participants without a history of NSSI (Mozafari, Bagherian, Zadeh Mohammadi, & Heidari, 2022).

Cognitive flexibility refers to the ability to adapt responses/strategies based on environmental feedback. Greater cognitive flexibility may increase one's cognitive access to suicide, making it a more appropriate option in times of distress, especially for those with a prior history of NSSI. Conversely, lower cognitive flexibility may create a negative bias that exacerbates the effects of NSSI on suicidality (Park & Ammerman, 2023). There is evidence that individuals who engage in deliberate self-harm (DSH) may have difficulty dissociating their attention from aversive emotional experiences and other DSH-related stimuli, as well as difficulties shifting their attention to alternative stimuli (Dixon-Gordon, Gratz, McDermott, & Tull, 2014). In a related study, Nilsson et al. (2021) found that patients with DSH showed deficits

in cognitive flexibility and inhibition compared to healthy individuals. In addition, patients with DSH had more deficits in cognitive flexibility than patients without DSH. This effect was independent of the concurrent severity of depressive symptoms, but not of borderline symptoms (Nilsson, Lundh, Westrin, & Westling, 2021).

Moreover, in a comparison between patients seeking treatment for NSSI and a non-psychiatric comparison group, Garreto et al. (2017) found that the NSSI group showed significantly lower problem-solving capacity and mental flexibility (Garreto, Giusti, Oliveira, Tavares, Rossini, & Scivoletto, 2017). In Young et al. (2021) study, regardless of NSSI history, state self-criticism led to more negative insight capacity and reduced participants' metacognitive insight. In individuals without a history of NSSI, state self-criticism also increased auditory accuracy – an effect that was reduced in those with NSSI. These findings suggest that individuals with NSSI are characterized by a blunted and intermittent response to negatively valenced self-focused attention (Young, Davies, Freegard, & Benton, 2021). Considering the role of these variables in teenagers' performance and considering that in the background of the research, these variables have not been discussed together, the purpose of the present research is to explain impulsivity, cognitive flexibility, and metacognitive thinking in NSSI behaviors in adolescence.

Methods

The current research design was correlational. The statistical population included online respondents under the age of 18 in 2022-2023. Regarding the sample size, it was determined by using Morgan's sample size table (n = 180 if N > 280). A voluntary sample of 482 participants from Iran was selected online. Using the cut point of the questionnaire [Inventory of Statements About Self-Injury (ISAS)], among 482 participants, 250 teenagers with self-harm were identified and analyzed. The particular criteria to include in the research process were: being at least 13 years old, being a middle school or high school student, not using psychiatric drugs, not having a stressful event in the past six months, having access to the Internet and virtual space, and not using psychiatric drugs. Exclusion criteria included incomplete questionnaires and missing some questions that were prepared as an online survey using Proseline. Then the link to the online questionnaire was shared through social media and messaging platforms including Instagram, WhatsApp, and Telegram. After removing incomplete items, the final 250 responses were obtained. Researcher considered compliance with ethical guidelines for all ethical principles in this paper.

The Barratt Impulsiveness Scale-11 (BIS-11): This scale has been designed by Barratt (1995). The BIS-11 is a 30-item self-report measure that assesses impulsivity using a 4-point Likert scale (1 = rarely/never and 4 = almost always/always). Higher scores indicate higher levels of impulsivity. Reliability coefficients were calculated using Cronbach's alpha and retest methods, which were 0.81 and 0.77, respectively. The results provide evidence that the structure of the BIS-11 scale applies to the Iranian sample (Javid, Mohammadi, & Rahimi, 2012). In this study, Cronbach's alpha was 0.80.

Cognitive Flexibility Inventory-Iranian Version (CFI-I): The Cognitive Flexibility Inventory (CFI) is a brief 20-item self-reporting instrument designed to measure aspects of cognitive flexibility that enable individuals to challenge and replace maladaptive thoughts with more adaptive ones (Dennis & Vander Wal, 2010). More precisely, Cronbach's alpha for CFI, control, and alternative subscales were 0.91, 0.84, and 0.91, respectively. The seven-week retest reliability coefficients for the CFI, control, and alternative subscales were 0.81, 0.77, and 0.75, respectively (Dennis &

Vander Wal, 2010). The original version of the CFI provided by its developers was first translated into Persian and then re-translated by two expert assistant professors in the English language department of Shiraz University, Shiraz, Iran, to ensure its consistency with the original version. Cronbach's alpha coefficients and retest coefficients for CFI-I reliability were 0.90 and 0.71, respectively (Shareh, Farmani, & Soltani, 2014). Cronbach's alpha in this study was 0.68.

Metacognitions Questionnaire-30 (MCQ-30): This questionnaire contains 30 items and measures people's metacognitive beliefs. The questions of this questionnaire assess five subscales of metacognitive beliefs as follows: cognitive trust (items 1, 6, 11, 16, 21, and 26), positive beliefs about worry (items: 2, 7, 12, 17, 22, and 27), cognitive self-awareness (items: 3, 8, 13, 18, 23, and 28), uncontrollability and risk (items: 4, 9, 14, 19, 24, and 29), and need to control thought (items: 5, 10, 15, 20, 25, and 30). The score for each question ranges from 1 to 4 (strongly agree, agree, have no opinion, and strongly disagree). MCQ-30 has internal consistency and convergent validity, as well as acceptable test-retest reliability (Wells & Cartwright-Hatton, 2004). Cronbach's alpha coefficient and test-retest reliability coefficient of the Persian version have been reported as 0.93 and 0.78, respectively (Abolghasemi, 2007). In this version, the internal consistency coefficient of the whole scale is 0.92, while the coefficients of its subscales are between 0.73 and 0.90, which indicates the favorable validity of all subscales (Bakhtavar, Neshat-Doost, Molavi, & Bahrami, 2007). In this study, Cronbach's alpha was 0.88.

ISAS: It is a self-reporting instrument consisting of 39 questions that assess the frequency and performance of self-injurious behaviors with non-suicidal intent. The items are rated on a three-point Likert scale with a score of 0 (completely unrelated), 1 (somewhat related), and 2 (completely related). In addition, the average score of the overall scales is obtained from the sum of the scores of the subscales and their number. Therefore, the scores of each of the 13 self-injurious behavioral domains can range from 0 to 6. The internal consistency of the scale using Cronbach's alpha method was 0.84 (Klonsky & Glenn, 2009). The content validity of Persian version of the scale was confirmed by Rezaei et al. (2021). The reliability of the scale was 0.76 based on Cronbach's alpha. According to the current research, Cronbach's alpha was 0.83.

For data analysis, descriptive statistics, correlation matrix, Pearson correlation coefficient, and multiple regression methods with SPSS software (version 23, IBM Corporation, Armonk, NY, USA) were used.

Results

The mean ± standard deviation (SD) of the participants' age was 16.84 ± 7.40 years. 145 (58%) of them were girls, and 105 (42%) were boys. Of the participants, 60 (24%) were only child, and 238 (96%) lived with both parents. 118 of the participants (47.2%) were in middle schools, and 132 (52.8%) were in high schools.

Table 1 shows the results of the Kolmogorov-Smirnov test to check the assumption of normality of the distribution of the variables.

Table 1. Descriptive statistics of the variables

Variables	Mean ± SD	Min	Max	K-S	P-value	VIF	Tolerance
Impulsivity	81.16 ± 9.73	98	121	0.75	0.23	0.846	1.16
Cognitive flexibility	65.34 ± 7.65	35	78	0.68	0.28	0.571	10.29
Metacognitive thinking	59.34 ± 6.65	44	102	0.79	0.36	0.719	10.74
DSH	61.74 ± 6.19	27	68	0.82	0.33	0.814	10.68

DSH: Deliberate self-harm; SD: Standard deviation; K-S: Kolmogorov-Smirnov test; VIF: Variance inflation factor

Besides, to check the collinearity of the data, the statistics of the tolerance factor (tolerance) and the variance inflation factor (VIF) can be used. As can be seen, the value of the VIF for all predictor variables is less than 0.10, as well as the value of the tolerance factor which is greater than 0.1 for all variables. Therefore, the assumption of non-collinearity of predictor variables has been met.

The results of Durbin-Watson test to check the independence of the errors of the predictor variables were as follows: multiple correlations = 0.815, correlation coefficient = 0.667, adjusted R = 0.540, standard error (SE) = 2.36, and Durbin-Watson's value = 1.73. The Durbin-Watson statistic is in the range of 1.5 to 2.5, and it can be said that the assumption of independence of errors has been met.

The contents of table 2 shows that there was a positive and significant relationship between impulsivity and self-harm in all subjects ($r = 0.526$, $P < 0.001$). Further, there was a negative and significant relationship between the variable of cognitive flexibility and self-harm in all subjects ($r = -0.519$, $P < 0.001$). Moreover, there was a negative and significant relationship between the variable of metacognitive thinking and self-harm in all subjects ($r = -0.594$, $P < 0.001$).

As shown in table 3, according to the results of the regression analysis with the step-by-step method, among the predictor variables of self-harm, only two variables of metacognitive thinking and impulsivity were predictors for self-harm in adolescents and it is possible to obtain a prediction equation by combining two predictor variables. For a linear combination of predictor variables, the multiple correlation coefficient is 0.702, and for squared multiple correlations, it is 0.492 at the $P < 0.001$ level.

Discussion

The aim of this study was to examine whether three specific aspects of executive functioning (EF) (impulsivity, cognitive flexibility, and metacognitive thinking) predict adolescent NSSI. According to the results of the regression analysis with the step-by-step method, among the predictor variables of self-harm, only two variables of metacognitive thinking and impulsivity were predictors for self-harm in adolescents. The presence of a relationship between impulsivity and self-harm has been shown in many studies (Esposito et al., 2022; Cipriano et al., 2017; Westers & Plener, 2020; Murner-Lavanchy et al., 2022; McHugh et al., 2019; Raffagnato et al., 2022). McHugh et al. (2019) found that deficits in inhibitory control and impulsive decision-making were associated with self-harm or SB (McHugh et al., 2019). A study found that inpatients with both NSSI and internalization had higher levels of impulsiveness and alexithymia, and were emotionally distorted (Raffagnato et al., 2022). An important explanation for NSSI is EF, which refers to a broad category of cognitive processes that are involved in the self-regulation of thought and behavior, and make it possible for us to think before we act, stay focused on a task, resist temptations, and adapt to new situations by shifting strategy. It is assumed that higher-order capacities such as reasoning, problem-solving, and planning are built on these core EFs (Meza et al., 2021; Nilsson et al., 2021).

Table 2. Simple correlation coefficients between variables

Variables	r	P-value
Impulsivity	0.526	< 0.001
Cognitive flexibility	-0.519	< 0.001
Metacognitive thinking	-0.594	< 0.001

Table 3. The results of multiple regression analysis related to the interaction of variables with the step-by-step entry method (Part I)

Statistical index	Unstandardized beta	Standardized beta	T	P-value	Multiple correlation
Metacognitive thinking	2.317	0.693	8.93	< 0.001	0.684
Impulsivity	1.619	0.586	6.84	< 0.001	0.702

Table 3. The results of multiple regression analysis related to the interaction of variables with the step-by-step entry method (Part II)

Statistical index	Squared multiple correlation	Coefficient F	P-value
Metacognitive thinking	0.467	51.19	< 0.001
Impulsivity	0.492	39.61	< 0.001

Consequently, the researchers concluded that they might find it more difficult to control their negative moods with such a deficit. Although good working memory is necessary to distract oneself from negative moods, it takes other abilities as well (Nilsson et al., 2021).

Furthermore, the variable of cognitive flexibility was found to have a negative and significant association with self-harm. In line with this finding, numerous studies approved this relationship (Nilsson et al., 2021; Young et al., 2021; Antezana, 2022). There is a significant difference in EF, emotion regulation, and behavioral activation system/behavioral inhibition system (BAS/BIS) between adolescents with NSSI and normal counterparts based on previous results, which is in line with literature that highlights the significance of differences between adolescents with NSSI and normal adolescents. It was found that a person's capability to shift attention was associated with decreased chances of self-harming (Antezana, 2022). DSH behavior is to be associated with higher levels of depression, hopelessness, anxiety, hostility, impulsivity, self-critical rumination, lower optimism, and self-efficacy, as well as lower levels of self-esteem (Nilsson et al., 2021; Young et al., 2021). Theoretical models of self-injurious behavior have suggested that certain factors might increase the capacity to physically harm the body (Hooley & Franklin, 2018).

Moreover, there is a negative and significant relationship between the variable of metacognitive thinking and self-harm in all subjects. There has been little attention paid to this finding in previous studies. The authors could not identify the alignment or non-alignment study. In the following section, we explain the results we obtained from the related article. One of the thinking processes we can monitor to check if we experience dysfunctional thinking is metacognition. The model explains that when a situation or a stimulation triggers the worry, the first type of worry will be activated based on "positive meta-beliefs" that then will activate "negative meta-beliefs" in cascade, which will then create a meta-worry "type 2 worry" that will influence emotional, behavioral, and cognitive response. Patients need to have complex consciousness about their ideas and feelings to implement change, engage in recovery processes, and find motivation for implementing change (Marin et al., 2020).

One limitation of the current study was the use of self-reporting measures. It is possible that subjective reports differ about scales. Another limitation was due to online recruitment that may have been biased due to the confusing in answering the questionnaires. Impulsivity and cognitive flexibility may aid in suicide screening and intervention among vulnerable and high-risk populations should be done.

Conclusion

Implementing these factors in our assessment could help us orient our patients to the

right therapy, as they do not all work directly on the same processes. These results need to be generalized to stand the comparison to other individuals.

Conflict of Interests

Authors have no conflict of interests.

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Evaluating the Effect of Acceptance and Commitment Therapy on Anxiety and Quality of Life in Stomach Cancer Patients

Shlyakhtunov Mikhail Andreevich[1], Hamad Jandari Jumaa[2], Sadeq Sahib Sadeq[3], Israa Abed Jawad[4], Haady Abdilnibi Altememy[5], Abeer Mhussan Jabbar[6], Mutni A. Majeed[7], Wathiq K. Mohammed[8], Hind Ali Nasser[9]

1 PhD of Historical Sciences, Associate Professor, Moscow Aviation Institute, Moscow, Russia
2 Department of Nursing, Al-Hadba University College, Mosul, Iraq
3 Department of Medical Laboratories, College of Health and Medical Technology, Sawa University, Almuthana, Iraq
4 Department of Education, Al-Nisour University College, Baghdad, Iraq
5 College of Islamic Sciences, Islamic University of Najaf, Najaf, Iraq
6 College of Nursing, National University of Science and Technology, Dhi Qar, Iraq
7 Nursing College, Al-Esraa University, Baghdad, Iraq
8 Al-Hadi University College, Baghdad, Iraq
9 College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq

Corresponding Author: Shlyakhtunov Mikhail Andreevich; ***PhD of Historical Sciences, Associate Professor, Moscow Aviation Institute, Moscow, Russia***
Email: micha-the-best@mail.ru

Quantitative Study

Abstract

Background: Stomach cancer is one of the most common cancers and can cause psychological problems and negatively impact patients' lives. The present research evaluated the effect of acceptance and commitment therapy (ACT) on anxiety and quality of life (QOL) in stomach cancer patients.

Methods: The present semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population consisted of 738 stomach cancer patients who visited Hiwa Cancer Hospital in Sulaymaniyah, Iraq, in 2022. Using simple random sampling, 150 people were selected and divided into two experimental and control groups (75 each). The Beck Anxiety Inventory (BAI; Beck et al., 1988) and SF-36 Quality of Life Questionnaire (Ware & Sherbourne, 1992) were used to collect data. The collected data were analyzed using the independent t-test, chi-square test, and analysis of covariance (ANCOVA) in SPSS software. The significance level was considered to be less than 0.05.

Results: The study findings showed that ACT had a significant effect on decreasing anxiety ($F = 130.91$; $P < 0.001$), and increasing QOL ($F = 110.01$; $P < 0.001$) in stomach cancer patients.

Conclusion: The results indicated that ACT affects the level of anxiety and the QOL of patients with gastric cancer and while reducing anxiety, it increases their QOL. Consequently, it is recommended that treatment personnel consider ACT as an effective psychological intervention in these patients.

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Keywords: Stomach cancer; Acceptance and commitment therapy; Anxiety; Quality of life

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Introduction

Stomach cancer is the fourth most prevalent cancer in the world. The process of creating cancerous tissue in the stomach causes the spread of this cancer, which is classified as a multifactorial disease. The causes of this cancer are the presence of infectious, environmental, and genetic factors (Ghiglieri, Dempster, Wright, & Graham-Wisener, 2022). Patients with stomach cancer may experience a variety of mental disorders (Mosher et al., 2022).

Today, with the emergence and expansion of health psychology and positive psychology, attitudes toward disorders have moved beyond the medical framework, as a result, it has been found that individuals' environment and social relationships partly influence the single-factor model and the quality of their mental health (McKinnon, 2017). Acceptance and commitment therapy (ACT) has been proposed as an intervention for improving patients' mental health (Abow, Razak, Abulkassim, Adnan, Rahi, & Fadhil, 2022).

The first stage of the ACT method involves attempting to accept unwanted mental experiences without reacting to them (Wicksell, Olsson, & Hayes , 2011). The second step is to increase people's awareness in the present moment; this means that they become aware of their mental states, notions, and behaviors in the present moment. In the third step, people are taught to detach from negative mental experiences (cognitive detachment), which allows them to act independently of these experiences (Malmir, Jafari, Ramezanalzadeh, & Heydari, 2017). The fourth step is to reduce the person's mental focus on the self-image (cognitive defusing) or personal story, such as being a victim (Vowles, Witkiewitz, Sowden, & Ashworth, 2014). The fifth step is to assist the individual in identifying his/her major personal values, clearly defining them, and translating them into behavioral aims (value clarification). Finally, it creates motivation for committed action, activity aimed at specified goals and values, and acceptance of mental experiences, which can be depressing and anxiety-inducing in the sixth stage (Hajatnia, Tajeri, & Haji-Alizadeh , 2023).

One of the mental disorders caused by cancer is anxiety. Anxiety is characterized by fear and physical symptoms indicating increased autonomic activity (such as heart palpitations and sweating). Anxiety impairs cognitive function and causes perceptual distortions (Akbarinejhad & Faroughi, 2021). New experiences frequently trigger anxiety and can be perceived as a threat to one's identity and self-confidence. Anxiety combined with cancer increases the risk of death, lowers quality of life (QOL), causes functional disability, and raises medical care costs (Twohig, 2009).

Researchers attribute the emergence and spread of mental disorders to poor lifestyle choices and low QOL (Gueserse, Zali, Hassanzadeh, Hatami, & Ahadi, 2022). As a result, in treatment, one should strive to improve and change QOL, as well as to broaden capabilities and create satisfaction with life and well-being in individuals and societies. QOL is one of the most critical aspects of the general concept of mental health (He et al., 2019). According to previous research, two factors affect the QOL; the first is instrumental and reflects the living environment and family situation of the individual, and the second is communication and reflects the quality of interpersonal communication. These factors demonstrates the importance of different aspects of life in improving QOL, and it appears that this improvement should exist in all aspects of life (Maathz et al., 2023).

ACT, whose primary focus is on accepting the present circumstances and the content of thought, has been shown in studies to affect the physical aspect of QOL (Karimi & Aghaei, 2018). A person's assessment of his/her physical pain, need for

medical therapy, the energy to perform daily activities, satisfaction with his/her appearance, sleep, the ability to perform actions, and the ability to work are all physical dimensions of QOL. A person's cognitions, beliefs, and fundamental thoughts are crucial in determining her/his physical condition (Osborn, Demoncada, & Feuerstein, 2006). It is noteworthy that QOL is examined through the examination of the individual's conditions and physical dimensions (primary evaluation), and QOL is examined through the individual's evaluation of these conditions (secondary evaluation). As a result, ACT, whose primary focus is on changing one's beliefs and thoughts, can also impact the physical dimension and psychological assessment of the individual's QOL (Pujiastuti & Herwina, 2022).

Given the impact of cancer on the patient's psyche, it is critical to investigate all types of mental disorders. Assessing the effectiveness of non-pharmacological methods, such as psychological interventions, in these patients is also crucial. The present research evaluated the effect of ACT on anxiety and QOL in stomach cancer patients.

Methods

The current semi-experimental research was conducted using a pretest-posttest design and a control group. The statistical population consisted of 738 stomach cancer patients referred to Hiwa Cancer Hospital in Sulaymaniyah, Iraq, in 2022. Using simple random sampling, 150 people were chosen and divided into experimental and control groups (75 patients in each group). The inclusion criteria included interest in participating in the research, stomach cancer diagnosis confirmation by the hospital doctor for each participant, lack of intake of any psychiatric drugs, lack of participation in a similar therapeutic intervention in the previous year, and reading and writing literacy. The exclusion criteria included the presence of other psychological disorders in the patient, absence from more than two sessions, and lack of completion of questionnaires or presentation of incomplete questionnaires. The participants were assured that their identities would remain confidential to comply with ethical considerations. As can be seen in table 1, the participants in the experimental group participated in eight 90-minute ACT sessions (one session per week).

Data were collected using a demographic questionnaire, the Beck Anxiety Inventory (BAI; Beck et al., 1988), and the SF-36 Quality of Life Questionnaire (Ware & Sherbourne, 1992). The research participants completed these questionnaires during the pretest stage (before the start of the intervention) and the posttest stage (immediately after the end of the intervention). Finally, the values of the desired variables were compared between the two groups to evaluate ACT's effect on patients' anxiety and QOL.

The BAI includes 21 anxiety signs and symptoms. The participants should score these items on a 4-point scale ranging from 0 to 3 (never, mild, moderate, or severe). The total BAI score can range from 0 to 63, with higher scores indicating greater anxiety. The content validity of the BAI was 0.83, and its reliability, using Cronbach's alpha method, was 0.89 in the current research.

The SF-36 is used in clinical practice, health policy evaluation, and general population studies, among other things. This questionnaire measures concepts that are not age, group, or disease-specific. The SF-36 aims to assess the state of health, which is accomplished by adding the scores of the eight health domains.

Table 1. Description of acceptance and commitment therapy sessions

Session	Topic	Description
1	Psychoeducation and therapy goals	Introducing and explaining group work, general assessment and discussion of negative thoughts, feelings, and concerns of the participants, the nature and characteristics of anxiety, focusing on the goal of treatment and the therapist's commitment, performing concentration exercises, and introducing mindfulness
2	Preparation of therapy context for acceptance	Practicing focus, exploring anxiety patterns, , and observing anxiety rather than reacting to it by practicing acceptance of thoughts and feelings
3	Acceptance of and appreciation for life as an alternative to anxiety control	Practicing anxiety acceptance of awareness by explaining the nature of acceptance and understanding of anxiety acceptance, as well as discussing the difference between controlling external events and internal issues
4	Acceptance of and appreciation for life as an alternative to anxiety control	Measuring performance, reflecting on previous sessions' reactions, and introducing oneself as context rather than content
5	Creating flexible behavioral patterns through guided exposure to values	Discussions of emotional tendencies through attempting or performing the desired exercises, practicing the, confronting thoughts and emotions in a guided setting
6	Committing to moving on a valuable life path	Focus on training, measuring performance, reviewing responses to previous sessions, activating beneficial natural behavior through behavioral activation, defusing techniques and focusing on awareness, and identifying mental and linguistic traps
7	Committing to moving on the valuable life path	Experiential life-enhancing exercises including anxiety acceptance exercises, life feeling exercises (internal exercises or visualization), activities related to valuable life goals, and continuing to monitor anxiety-related experiences and quality of life
8	Committing to moving on a valuable life path	Introducing values, increasing the emphasis on behavioral commitment, preparing participants for the end of treatment, providing a summary of treatment steps to prepare for problem recurrence and possible failures, and identifying high-risk situations for participants to implement these principles in their lives

This questionnaire contains 36 questions that examine eight health concepts. The SF-36 has a total score range of 0 to 100 (Hagell, Westergren, & Arestedt, 2017). In the current study, the content validity of the SF-36 was 0.78, and its reliability, according to Cronbach's alpha, was 0.86.

The independent t-test and chi-square test were used for analysis after data collection. Analysis of covariance (ANCOVA) was also used to evaluate the impact of ACT on anxiety and QOL variables. SPSS software (version 23; IBM Corp., Armonk, NY, USA) was used for the analysis, with a significance level of less than 0.05.

Results

Table 2 displays the demographic variables of the participants in both groups.

As can be seen in table 2, 99 participants (66%) were men, and 66 (44%) were over 60 year of age. The mean age of the participants in the experimental and control groups was 56.72 ± 6.51 years and 58.35 ± 6.84 years, respectively. In addition, 130 (86.7%) participants were married, 114 (76%) had a secondary education, and 91 (60.7%) were employed.

Table 2. Demographic variables of the participants in both groups

Variable		Experimental group [n (%)]	Control group [n (%)]	P-value
Gender	Male	47 (62.7)	52 (69.3)	0.18
	Female	28 (37.3)	23 (30.7)	
Age (year)	< 50	26 (34.7)	22 (29.3)	0.12
	50-60	17 (22.7)	19 (25.4)	
	> 60	32 (42.6)	34 (45.3)	
Marital status	Married	64 (85.3)	66 (88.0)	0.64
	Single	11 (14.7)	9 (12.0)	
Education	Secondary	56 (74.7)	58 (77.3)	0.41
	College	19 (25.3)	17 (22.7)	
Job	Employed	44 (58.7)	47 (62.7)	0.56
	Unemployed	31 (41.3)	28 (37.3)	

The findings revealed no statistically significant differences between the two groups' demographic variables ($P > 0.05$). Table 3 summarizes the findings for anxiety and QOL variables at the pretest and posttest stages.

Table 3 illustrates no statistically significant differences between the two groups in the pretest stage ($P > 0.05$). However, there was a significant difference in the values of the variables in the posttest stage ($P < 0.001$). ANCOVA was used to investigate ACT's effect on anxiety and depression variables. The ANCOVA assumptions were examined first, followed by the effect of ACT on the mentioned variables. Table 4 shows the ANCOVA tests for the investigated variables in the two groups.

The results presented in table 4 show that the ACT treatment factor has a significant effect. This effect indicates a significant difference between the two groups in at least one variable (anxiety or QOL) ($P < 0.001$). Tables 5 and 6 show the results of one-way ANCOVA and MANCOVA, respectively.

The results presented in table 5 revealed a statistically significant difference in the values of anxiety and QOL variables between the participants of the two groups in the pretest and posttest stages ($P < 0.001$). As a result, it can be stated that ACT affects the values of anxiety and QOL of patients with stomach cancer, reducing anxiety while increasing QOL.

Discussion

The present research evaluated the effect of ACT on anxiety and QOL in stomach cancer patients. The findings indicated that ACT positively affects the anxiety and QOL of patients with stomach cancer, thereby decreasing anxiety and increasing QOL. The findings of the present research are consistent with many previously conducted studies (Angiola & Bowen, 2013; Zhao et al., 2021; Burns et al., 2023).

In explanation of the present findings, it can be stated that the presence of stomach cancer always causes a person to feel anxious. In addition, this disease causes anxiety in various situations for these individuals, and studies indicate a high prevalence of anxiety among these patients (Kolahdouzan, Kajbaf, Oraizi, Abedi, & Mokarian, 2020).

Table 3. Mean and standard deviation (SD) of anxiety and quality of life variables in different study stages

Variable	Stage	Experimental group (mean ± SD)	Control group (mean ± SD)	P-value
Anxiety	Pre-test	34.57 ± 13.41	34.16 ± 13.26	0.490
	Post-test	25.38 ± 6.14	34.48 ± 13.67	< 0.001
Quality of life	Pre-test	32.76 ± 7.59	33.41 ± 7.73	0.320
	Post-test	79.18 ± 9.06	33.62 ± 8.27	< 0.001

SD: Standard deviation

Table 4. Analysis of covariance tests for the investigated variables in the two groups

Variable	Test	Value	F	Hypothesis df	Error df	P	Partial Eta squared
Anxiety	Pillai's Trace	0.374	17.26	3	114	< 0.001	0.374
	Wilks' Lambda	0.608	17.26	3	114	< 0.001	0.374
	Hotelling Trace	0.627	17.26	3	114	< 0.001	0.374
	Roy's Largest Root	0.627	17.26	3	114	< 0.001	0.374
Quality of life	Pillai's Trace	0.134	12.83	3	114	< 0.001	0.134
	Wilks' Lambda	0.868	12.83	3	114	< 0.001	0.134
	Hotelling Trace	0.143	12.83	3	114	< 0.001	0.134
	Roy's Largest Root	0.143	12.83	3	114	< 0.001	0.134

df: Degree of freedom

Acceptance reduces the annoyance of anxiety-provoking conditions for patients in the interim. Although this treatment does not directly target the frequency and content of the anxious person's thoughts, it does reduce anxiety as a result of the use of breaking techniques and acceptance of thoughts and emotions about the disease. The objective here is to assist the individual in perceiving a schema-driven thought as merely a thought and, rather than responding to it, acting in accordance with their priorities and values. These factors significantly reduce anxiety in patients (Feros, Lane, Ciarrochi, & Blackledge, 2013).

Instead of focusing on eliminating and removing the harmful factors that caused the disease, the ACT method helps clients accept their controlled emotions and cognitions and abandon the verbal rules that caused their problems. It also allows them to cease battling with their thoughts and feelings (Weineland, Arvidsson, Kakoulidis, & Dahl, 2012). ACT's therapeutic methods aim to reduce avoidance of psychological experiences and increase awareness, with emphasis on focusing on the present moment in a non-confrontational and non-evaluative manner. Additionally, focusing on altering the content of psychological experiences modifies how these experiences influence behavior. This process teaches the patient to distance him/herself from pain and disturbed states to lessen the behavioral impact of these experiences (Ruiz, 2010).

Acceptance of the problem, on the other hand, creates and strengthens the ability to control internal events, thoughts, feelings, and subsequent emotions, and strengthening these beliefs leads to psychological flexibility (Ito & Muto, 2020). The psychological flexibility created is effective in reducing patients' anxiety, and by reducing anxiety, it improves social disability and QOL.

Values are another important aspect of ACT. In the present research, participants were asked to identify the values in their lives that anxiety prevents them from achieving. Then, they were asked to specify goals to achieve those values and commit to attempting to accomplish those value-based goals.

Table 5. The findings of one-way analysis of covariance in the investigation of the impact of acceptance and commitment therapy

Variable	Source	SS	df	MS	F	P	Effect size
Anxiety	Pretest	472.19	1	472.19	45.32	< 0.001	0.861
	Group	1364.07	1	1364.07	130.91	< 0.001	0.947
	Error	281.43	27	10.42			
Quality of life	Pretest	925.44	1	925.44	48.28	< 0.001	0.713
	Group	2108.76	1	2108.76	110.01	< 0.001	0.925
	Error	517.61	27	19.17			

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

Indeed, this component of the treatment was effective in increasing the individual's motivation to confront fear and anxiety (Galvez-Sanchez, Montoro, Moreno-Padilla, Reyes Del Paso, de la Coba, 2021). In general, clarifying values and internalizing committed action during ACT provide people with sufficient motivation to change (Mirsharifa, Mirzaian, & Dousti, 2019). This issue is a suitable explanation for the improvement in the mental health of patients with stomach cancer as a result of reducing anxiety and increasing QOL.

Cognitive defusion is another essential factor in ACT. Cognitive defusion and its exercises reduce anxiety-inducing thoughts (Hulbert-Williams, Storey, & Wilson, 2015). Given the importance of dysfunctional beliefs in exacerbating anxiety symptoms, reducing cognitive defusion significantly improves QOL (Mosher et al., 2021). This treatment assists the patient in seeing him/herself as being free of the anxiety caused by stomach cancer. It also helps the patient become merely an external, disembodied observer of thoughts and feelings, thus facilitating the acceptance of the self as context. In addition, rather than ignoring emotions and inner experiences, ACT guides the patient to become aware of them, accept them, and use them appropriately. As a result, the patient should develop a suitable relationship with his/her circumstances and interactions and experience them from a different angle (Jawad, Abulkassim, Mohameed DAA-H, Razak, Al-Baghdady, 2023).

Among the limitations of the current research, the lack of a follow-up stage and the research sample was limited to patients suffering from one type of disease, so caution should be taken in generalizing the results of this study. The effectiveness of ACT on other patients and in different communities should be evaluated and compared with the findings of the current study in future studies. It is also suggested that other interventional training methods be considered and used in patients with stomach cancer.

Conclusion

The results of the present study show that ACT affects the anxiety and QOL scores of patients with stomach cancer, reducing anxiety while increasing QOL. Given the positive effectiveness of ACT on the investigated variables, hospital consultants should use this method along with other treatment methods to resolve the mental health issues of these patients.

Conflict of Interests

Authors have no conflict of interests.

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Comparison of the Efficacy of Mindfulness-Based Parenting and Choice Theory Parenting Programs on Mother's Parenting Stress in Children with Oppositional Defiant Disorder

Fatemeh Babaei-Motlagh[1], Zahra Tanha[2]

1 Assistant Professor, Department of Psychology, School of Humanistic Sciences, Islamic Azad University, Khorramabad Branch, Khorramabad, Iran
2 MA in Clinical Psychology, School of Humanistic Sciences, Islamic Azad University, Khorramabad Branch, Khorramabad, Iran

Corresponding Author: Zahra Tanha; *MA in Clinical Psychology, School of Humanistic Sciences, Islamic Azad University, Khorramabad Branch, Khorramabad, Iran*
Email: tanha_zahra1986@yahoo.com

Quantitative study

Abstract

Background: Oppositional defiant disorder (ODD) is one of the most common childhood manifesting disorders, and the mother's distress is an essential predictor for ODD. The present study aimed to compare the effectiveness of mindfulness-based parenting and choice theory parenting programs on parenting stress in mothers of children with ODD.

Methods: This semi-experimental study was conducted with a pretest-posttest design with the control group. The population consisted of all mothers with children of 7-12 years old with ODD in Tehran, Iran. Forty-five mothers were selected and then randomly divided into two experimental groups (each group with 15 people) and one control group (15 people) using the convenience sampling method. The experimental groups underwent mindfulness-based parenting (8 sessions of 90 minutes) and choice theory parenting (12 sessions of 90 minutes) programs, but the control group remained on the waiting list. To collect the data, Hommersen et al.'s Oppositional Defiant Disorder Rating Scale (ODDRS) and Abidin's Parenting Stress Index-Short Form (PSI-SF) were used. Data analysis was performed using SPSS software.

Results: Mindfulness-based parenting and choice theory parenting programs were effective on decreasing parenting stress in mothers ($P < 0.05$). In addition, the results showed that mindfulness-based parenting was more effective than the choice theory parenting program ($P < 0.05$).

Conclusion: It can be concluded that mindfulness-based parenting and choice theory parenting programs can be used as a treatment method for parenting stress in mothers with children with ODD in counseling centers.

Keywords: Mindfulness; Choice theory; Parenting stress; Oppositional defiant disorder

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Introduction

The concern in the field of children's mental health and its impact on the evolution and psychological and behavioral functions has increased significantly with the prevalence of children's mental disorders in recent years (Mohammadi, Zadhasan, Rahimi, & Amini, 2023). In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), oppositional defiant disorder (ODD) is characterized as argumentative or defiant behavior, vindictive or irritable mood, and these behaviors must exist for at least six months and are reflected as a destructive behavior (American Psychiatric Association, 2013); these children are characterized by social problems or limited prosocial emotions (Chrysosferidis, Burns, Becker, Beauchaine, & Servera, 2023). They suffer from vicious communication (Braenden, Coldevin, Zeiner, Stubberud, & Melinder, 2023). The prevalence of this disorder is reported to be 1.4%-16% in the general population and 28%-50% in clinical samples (Demmer, Hooley, Sheen, McGillivray, & Lum, 2017). It is believed that ODD is a risk factor for conduct disorder (Gosh, Rai, & Basu, 2017; Dehghani, Farhangi, & Rahmani, 2022). In addition, more than 14% of children with ODD have anxiety, and more than 9% of them have depression (Jones, 2018). Moreover, about 50% of patients with ODD are associated with suffering from attention deficit and hyperactivity disorder (ADHD) (Vetter, Beckhausen, Bossi, Rosner, and Smolka, 2020). It can also be said that the symptoms of this disorder lead to social, emotional, and academic defects in childhood, which, if not treated, continue until adulthood (Burke, Rowe, & Boylan, 2014) and spread throughout life (Nock, Kazdin, Hiripi, & Kessler, 2007). Parent-focused therapies based on behavioral elements, such as positive reinforcement of desired child behavior, have been identified as evidence-based treatments for ODD (Kaminski & Claussen, 2017). However, one-third to one-half of children with ODD do not respond to these treatments (Hawes, Price, & Dadds, 2014).

Due to its pervasiveness, resistance to change, and financial burden of its treatment (Foster & Jones, 2005), families of these children experience various problems, including distress and stress in the field of parenting (Ding, Lin, Hinshaw, Liu, Tan, & Meza, 2022). Parental stress has been defined as the result of inconsistency between the perceived demands of parents and the availability of resources needed to meet these demands (Abidin, 1995; Cochrane, Ronaghan, Cadieux, Ward, Henrikson, & Theule, 2023). In this context, mothers tend to experience higher levels of parenting stress than fathers, which is the result of mothers' more significant involvement in the daily care of children (Dabowska & Pisola, 2010; Hayes & Watson, 2013; van Steijn, Oerlemans, van Aken, Buitelaar, & Rommelse, 2014). Considering the existence of these problems, including parenting stress and psychological distress, providing new parenting interventions can help mothers cope better with the damage caused by a child with ODD. In addition, they are maintaining their psychological health benefits to improve the symptoms of ODD in their child.

Nowadays, mindfulness-based parenting (Algandi et al., 2021; Aslani, Mardani, & Shiralinia, 2021) and choice theory parenting (Nili Ahmadabadi, Bagheri, & Salimi Bajestani, 2019; Nili Ahmadabadi, Baqeri, & Salimi Bajestani, 2019) programs were considered. Mindfulness-based parenting is a multifaceted approach that can increase parents' awareness of their child's needs and feelings, listening to the child with full attention, recognizing their reactions to situations related to their child, and learning to respond compassionately. The parents help themselves and their children with compassion (Ruth and Green, 2020; Hosseinimotlagh, Rahimi, & Aminimanesh, 2023). Based on prior studies, parenting training based on mindfulness reduces the

stress of parenting in mothers (Algandi et al., 2021; Aslani et al., 2021) and reduces the psychological problems of their children (Emerson, Biesters, Bruin, & Bogels, 2021; Bondar Kakhki, Mashhadi, & Amin Yazdi, 2019).

Moreover, another research illustrated that this training had long-lasting effects on improving parents' parenting. Therefore, parenting training based on mindfulness is efficacious in improving mothers' stress and psychological flexibility (Sharif). Another educational intervention to empower mothers' parenting style is the choice theory parenting program (Nili Ahmadabadi et al., 2019; Nili Ahmadabadi et al., 2019). In this educational approach, teaching and using principles such as avoiding punishment, paying attention to the logical and natural results of behavior, responsibility, self-discipline, communication skills, distinguishing between discipline and punishment, and choosing simple educational methods for children reduce the behavioral problems of affected children and increase their behavioral performance and relationships with their parents (Seyyed Mahmoodian, Alizadeh, Pezeshk, Barajali, & Farrokhi, 2016). In confirmation of the choice theory parenting program, the results of a study have shown that parenting education with emphasis on choice theory has a significant effect on improving the parent-child relationship and mothers' life satisfaction, and this program can improve the relationship (Nili Ahmadabadi et al., 2019). Besides, another research has shown that parenting training emphasizing the choice theory increases parental self-efficacy, and a parenting training program focusing on the choice theory increases parental self-efficacy (Nili Ahmadabadi et al., 2019). Previous research usually pays less attention to related comparative studies. Therefore, our question is whether there is a difference between the effectiveness of mindfulness-based parenting and choice theory parenting programs on parenting stress in mothers with children suffering from ODD.

Methods

The research was semi-experimental, with a pre-test, post-test, and follow-up with a control group. The statistical population was all mothers with 7 to 12-year-old children suffering from ODD in Tehran, Iran, in 2022-2023. Based on the convenience sampling method, among the mothers referring to counseling centers and psychological services in Tehran, forty-five mothers whose children had a score of 12 and above on the Oppositional Defiant Disorder Rating Scale (ODDRS) of Hommersen et al. (2006) were selected, and these 45 mothers were randomly replaced in 3 groups of 15 people. It should be noted that Cohen's table was used to determine the sample size in this study. This way, at the 95% confidence level, the effect size was 0.70, and the statistical power was 0.91 for each group. However, since there was a possibility of dropping some samples and to generalize the results more, 15 mothers were considered for each group.

Inclusion and exclusion criteria: The inclusion criteria were: the age range of 7 to 12 years, having a higher score (cut-off point 12) in the ODDRS, and not having physical, personality, and psychological diseases axis 1 and 2 according to the mother's report. Besides, the absence of more than two sessions from training sessions, simultaneous participation in other psychological sessions, and failure to complete the post-test questionnaires or follow-up were criteria for excluding from the research.

The ODDRS by Hommersen et al. (2006): This scale has eight questions to diagnose children with ODD, including eight symptoms of ODD. It follows the fourth edition of DSM, and parents answer each symptom that describes their child during the last six months on a 4-point Likert scale. In this way, the options of "never" are given one

mark, "sometimes" two marks, "often" three marks, and "almost" and "always" four marks. The higher the person's score, the greater the severity of the disorder (Sharifi Awadi et al., 2012), that is, a score higher than 12 points is considered the scale's cut-off point. The scale creators have calculated its reliability and reported 0.92 and a retest coefficient of 0.95 using Cronbach's alpha method (Hommersen, Murray, Ohan, & Johnston, 2006). In Iran, Cronbach's alpha was used to check the scale's reliability, and the coefficient was 0.81 (Esmaeilpour, Mir, & Zarei, 2016). Moreover, in research to match the scale's reliability, Cronbach's alpha was used, and the coefficients ranged from 0.94 to 0.97 (Lee et al., 2022), and the Cronbach's alpha coefficient was reported as 0.91 (Rice, Prout, Walther, & Hoffman, 2022). In the present study, the scale's reliability was calculated using Cronbach's alpha method; the total coefficient of the questions in the pre-test stage was 0.71, the post-test was 0.80, and the follow-up stage was 0.90**.**

Parenting Stress Index-Short Form (PSI-SF) by Abdin (1995): This questionnaire has 36 questions and three components of parental confusion with questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, child's dysfunctional interactions with questions 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24, and the characteristics of the problematic child with questions 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36. The scoring of the questionnaire is based on a 5-point Likert scale. In this way, 5 points are given for completely agreeing, 4 points for agreeing, 3 points for having no opinion, 2 points for disagreeing, and 1 point for completely disagreeing. In a study, the Cronbach's alpha coefficient was between 0.59 and 0.86, and the retest reliability coefficient was between 0.92 and 0.97 during the 16 days after the first round (Shirzadi, Framarzi, Ghasemi, & Shafiee, 2015). Moreover, the internal homogeneity of the questionnaire was calculated to check the reliability with Cronbach's alpha coefficient of 0.86 (Sheykholeslami, Mohammad, & Seyedesmaili Ghomi, 2016). Cronbach's alpha coefficient was used in the research to check the internal consistency of the questionnaire. The coefficient for parents' confusion was 0.88, the child's ineffective interactions 0.78, the problematic child's characteristics 0.81, and all questions 0.73 (Zamani, Jalali, & Pourahmadi, 2018). In a foreign study, the internal consistency of the questionnaire on samples from China was 0.79 (Lu, Wang, Lei, Shi, Zhu, & Jiang, 2018). Further, the coefficient of the subscales was in the range of 0.84 to 0.90. (Wang, Huang, & Kong, 2020). In the present study, the scale's reliability was calculated using Cronbach's alpha method; the total coefficient of the questions in the pre-test stage was 0.80, the post-test was 0.82, and the follow-up stage was 0.92.

Table 1 shows mindfulness-based parenting sessions adapted and table 2 shows parenting sessions based on choice theory adapted.

This research used descriptive statistics such as mean, standard deviation (SD), and inferential statistics, including analysis of covariance (ANCOVA). In addition, the Bonferroni follow-up test and SPSS software (version 24, IBM Corporation, Armonk, NY, USA) were used to compare mindfulness-based parenting with the choice theory parenting program and to compare pre-test and post-test.

Results

The mean ± SD of the age of children in the mindfulness, choice theory, and control groups were 9.20 ± 1.74, 9.00 ± 1.41, and 9.67 ± 1.23, respectively. The F obtained from comparing the averages of the three groups in the age variable was equal to 0.804, which was not statistically significant (P = 0.454), indicating that the three groups were similar in age.

Table 1. Mindfulness-based parenting sessions adapted from Bogels and Restifo (2013)

Sessions	Aim	Content
1	Automatic parenting	Determining the goals of the meeting, setting the general policy, taking into account the confidentiality and personal life of the people, inviting the participants to form groups of two, and introducing themselves
2	Parenting with a beginner's mind	Physical examination exercise, exercise review, homework review, discovering positive experiences in the child-parent relationship
3	Establishing a new relationship with the body as a parent	Awareness of the five senses, understanding of pleasant events, awareness of bodily sensations when experiencing parenting stress, practicing "seeing" or "hearing"
4	Reacting vs. not reacting to parenting stress	Awareness of the tension of parenting and its acceptance, how stress is exacerbated by thoughts, clarifying the advantages and disadvantages of reacting and not reacting to stress, doing sitting meditation, deep and conscious breathing for three minutes, awareness of breathing, body, voice, and thoughts
5	Schemas and practices of parenting	Recognizing parents' childhood parenting patterns, how the quality of parents' parenting affects the type and quality of their current parenting
6	Conflict and parenting	Investigating parent-child conflicts, seeing the conflict situation as challenging instead of stressful and difficult
7	Love and limitations	Self-compassion, setting limits and defining boundaries consciously, preparing to finish the course, and practicing physical examination
8	Mindful parenting	Using insight and introspection to change the attitude towards life and their children, predicting possible obstacles to failure and progress in the future, reviewing past materials, summarizing the completion of post-test questionnaires, and determining the time for implementing the follow-up phase

The chi-square test resulting from comparing the frequency and percentage of 3 groups in the education variable was equal to 3.252, which was not statistically significant (P = 0.777), and indicates that the three groups were similar in terms of education.

Table 3 shows the mean and SD of parenting stress in mothers with children with ODD. Since the Shapiro-Wilk test values were insignificant in each of the stages (P < 0.05), it can be concluded that the distribution of scores was normal. Levene's test was also used to check the homogeneity of variances. According to the results, the index of Levene's test was not statistically significant in the three evaluation stages (P < 0.05); thus, the assumption of equality of variances was confirmed.

Table 2. Parenting sessions based on choice theory adapted from Nili Ahmadabadi et al. (2019)

Sessions	Content
1	Parenting and the role of parents in the formation of self-esteem
2	Explaining the main concepts of choice theory, bad relationships, and its strategies
3	Good relationship and entrance into the desired world of the child
4	Investigating strategies for establishing a good relationship
5	Investigating strategies for establishing a good relationship
6	Introduction about the growth in different dimensions of the child, strengthening the mental dimension
7	Strengthening the mental dimension
8	Strengthening the emotional and social dimension
9	Strengthening the behavioral dimension
10	Strengthening the behavioral dimension
11	Strengthening the physical dimension
12	Posttest and final assessment

Table 3. Mean and standard deviation (SD) of parenting stress in mothers with children suffering from oppositional defiant disorder (ODD)

Dependent variables	Stages	Mean ± SD		
		Mindfulness	Choice theory	Control
Parental confusion	Pre-test	35.21 ± 2.13	33.21 ± 1.95	30.12 ± 2.54
	Post-test	30.12 ± 0.12	29.12 ± 1.54	30.54 ± 2.36
Child dysfunctional interactions	Pre-test	31.87 ± 2.26	31.27 ± 0.70	32.27 ± 2.46
	Post-test	27.53 ± 3.13	28.60 ± 1.59	31.80 ± 3.09
Problematic child characteristics	Pre-test	32.60 ± 2.13	32.13 ± 1.80	32.53 ± 1.95
	Post-test	27.73 ± 3.21	28.07 ± 2.25	32.07 ± 2.25
Total parenting stress	Pre-test	99.20 ± 2.98	96.40 ± 3.39	99.07 ± 5.36
	Post-test	83.73 ± 5.71	87.00 ± 4.24	97.93 ± 5.91

SD: Standard deviation

The significance level of the interaction between the group and the pre-test was more than 0.05, indicating the homogeneity of the slope of the regression line. Thus, multivariate ANCOVA (MANCOVA) tests can be implemented, the results of which have been summarized in table 4.

The results of table 4 indicate that considering the combined variable introduced into the MANCOVA model, there was a statistically significant difference between the experimental and control groups (Eta = 0.350, P < 0.01, F = 6.201). According to the Eta coefficient, it was found that about 35% of the changes between the experimental and control groups were due to the intervention. The power of the test is due to the significance of Pillai's trace test.

Table 5 reveals the results of the ANCOVA of parental confusion (F = 11.401), child dysfunctional interaction (F = 12.854), problematic child characteristics (F = 10.251), and parenting stress (F = 25.312), as well as the difference between the control group and the two experimental groups in terms of post-test at the level of P < 0.01. Table 6 lists the results of the Bonferroni post hoc test plus the difference in parenting stress score and its components between the experimental and control groups.

The results of the table 6 showed that the difference between mindfulness-based parenting and parenting based on choice theory was not significant in the variables of parental confusion (mean = 0.618, P > 0.05), child dysfunctional interaction (mean = 0.850, P > 0.05), problematic child characteristics (mean = 0.910, P > 0.05), and total parenting stress (mean = 0.541, P > 0.05). As a result, both interventional methods were effective in reducing parenting stress and its components with no significant difference.

Discussion

The purpose of this research was to compare the effectiveness of mindfulness-based parenting and choice theory parenting programs on parenting stress in mothers with children with ODD.

Table 4. The results of multivariate analysis of covariance (MANCOVA) to compare the composition of the dependent variable in the experimental and control groups

Test	Value	F	df	Effect size	P-value
Pillai's trace	0.705	6.201	8	0.350	0.0001
lambda	0.325	9.900	8	0.452	0.0001
Hotelling's trace	2.190	15.104	8	0.517	0.0020
Roy's larges root	2.502	28.114	4	0.695	0.0001

df: Degree of freedom

Table 5. The results of analysis of covariance (ANCOVA) to compare the differences between experimental and control groups in parenting stress scores and its components

Source	SS	df	MS	F	P-value	Effect size
Parental confusion	142.021	2	71.010	11.401	0.0001	0.301
Child dysfunctional interaction	185.205	2	92.602	12.854	0.0001	0.354
Problematic child characteristics	136.201	2	68.100	10.251	0.0001	0.387
Total parenting stress	402.310	2	201.155	25.312	0.0001	0.412

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

The results showed that mindfulness-based parenting and parenting based on theory significantly reduced parenting stress. Moreover, the results showed that the average difference between the parenting group based on mindfulness and the control group was greater than the average difference between the parenting group based on the choice theory and the control group, which indicates that the parenting group based on mindfulness was more effective than the choice theory parenting program. This result can be compared with the results of Aliakbari and Aslezaker (2022), Khazaei et al. (2021), Sharif Mohammady et al. (2020), Mohri et al. (2017), and Ghazanfari et al. (2016), which are aligned and consistent, and have shown the effectiveness of mindful parenting on mothers. Additionally, no inconsistent finding was found for the result obtained from this hypothesis**.**

In explaining this result, it can be said that mindfulness-based parenting may help mothers show more empathy and compassion towards themselves and their children, tolerate their and their child's complex emotions and show more acceptance towards themselves and their child, recognize the patterns of their upbringing that have entered into the here and now relationship with their child, and as a result, achieve a better resolution of conflicts and create a stronger bond with their child (Bogels & Restifo, 2013). One of the mediators of the influence of mindfulness is the role of attention in this process (William and Wahler, 2010; Yaghoubian & Babakhani, 2019). Mothers' attention can be biased due to the child's problems. For example, mothers of children with ODD may selectively pay attention only to the child's negative behaviors. Mothers' mental issues can also cause biased attention towards the child's negative behaviors.

For example, mothers suffering from psychological stress and depression may find mental rumination about their child's negative behaviors and be less mentally present. Mothers of children with ODD may generally pay less attention to their children except when their children show behavior that requires attention.

Table 6. Bonferroni post hoc test of the difference in the effectiveness of interventions on parenting stress

Variable	Group	Mean difference	P-value
Parental confusion	Mindfulness-choice theory	0.618	0.0200
	Mindfulness-control	1.107	0.0001
	Choice theory-control	1.459	0.0001
Child dysfunctional interaction	Mindfulness-choice theory	0.850	0.2010
	Mindfulness-control	1.801	0.0001
	Choice theory-control	1.314	0.0001
Problematic child characteristics	Mindfulness-choice theory	0.910	0.1110
	Mindfulness-control	3.695	0.0001
	Choice theory-control	2.523	0.0001
Total parenting stress	Mindfulness-choice theory	0.541	> 0.9999
	Mindfulness-control	3.120	0.0001
	Choice theory-control	2.058	0.0001

Totally, biased maternal attention towards the child's negative behaviors may be an unintended consequence of the child's involvement in mental health services because negative behaviors are the focus of diagnosis and treatment (Bogels & Restifo, 2013) in the sense that mental health professionals may teach mothers to pay attention to their children's negative behaviors and use diagnostic labels for the child's behavior or himself (Khazaei, Shairi, Azadfalah, & Jalali, 2021). Therefore, mothers' perspective is limited to negative aspects of their child's behavior (Kabat-Zinn & Kabat-Zinn, 2021). When mothers pay attention to all the child's manifestations without judgment, they can better respond to the child with sensitivity. Therefore, it is reasonable to say that there is a significant difference between the effectiveness of mindfulness-based parenting and choice theory parenting program on the stress of parenting in mothers with children with ODD.

While the current research has strengths, such as a control group and a follow-up study, it also has limitations. First, the present study was conducted only on mothers, and fathers with children suffering from ODD were not examined and studied. Due to the time limit, this research could not carry out a longer-term follow-up phase to investigate the continuity and permanence of the effects of mindfulness-based parenting and choice theory parenting programs and was limited to only a two-month follow-up measurement phase. This research could have been done on mothers and fathers at the same time, but due to the lack of conditions, only the sample of mothers of children with ODD was limited. Limitations of data collection tools to questionnaires and non-use of other measurement tools are other limitations and problems of this research. Because there is a possibility of bias in the mothers' answers and they may have given society-friendly answers to the questions, it is suggested that this research be repeated in other samples, including the fathers of children with ODD and some of the questions arising from this study and the background of the research should be scientifically investigated and answered with more certainty. It should be given whether these parenting methods are potent and effective compared to common parenting interventions to reduce the problems caused by parenting stress and psychological distress of the mothers of these children. The follow-up stage in this study was two months. On this basis, it is suggested that the continuation of parenting be considered based on a more prolonged follow-up stage in future studies. In this study, the number of each group was 15 people. It is suggested that future researchers expand the sample and conduct research on both parents, along with paying attention to other variables related to the effectiveness of mindfulness-based and theory-based parenting. Choosing and comparing it with other existing parenting programs can help in understanding the point of these parenting methods on mothers with children suffering from ODD.

Despite the limitations, the present study has important clinical implications. Conscious parenting and choice theory parenting programs can be considered new intervention methods for mothers of children with ODD, which is one of the symptoms of externalizing problems in a wide range of externalizing disorders, such as stubbornness and oppositional disobedience disorder. The lack of sample dropout in the parenting courses based on mindfulness and choice theory parenting programs and the mothers' overall positive evaluation of these interventions in the present study show that the parenting programs carried out in this study are acceptable and effective in the mental health programs of the mothers of these children. The improvement in the mother's parenting behavior and the reduction of the child's behavioral and emotional problems (including stubbornness-confrontational

disobedience disorder) show the effectiveness of these methods in a range of problematic factors in the family of these children.

The results showed that there was a significant difference between the effectiveness of mindfulness-based parenting and choice theory parenting programs on parenting stress in mothers with children with ODD, in such a way that mindfulness-based parenting has been more effective than the parenting group based on the choice theory on reducing the stress of parenting of mothers with children suffering from ODD. In this regard, it can be said that in recent years, treatments based on mindfulness and acceptance have increased in Iran. Because of these interventions' unique characteristics, it is recommended that metaphors and multiple stories be used to understand their concepts better. These metaphors and stories are derived from ideas, traditions, and teachings of non-Iranian cultures, and the techniques and concepts of these models must be adapted to the culture and linguistics of Iranian society to obtain better results. Therefore, counselors and psychologists in the field of the family can help parents by emphasizing parenting packages based on Iranian culture by holding workshops and training sessions in counseling centers and even training sessions on TV programs to reduce the stress of parenting.

Conclusion

The study results showed that the post-test of mindfulness-based parenting and choice theory parenting programs had a significant effect on parenting stress in mothers, and the parenting group based on mindfulness was more effective than the choice theory parenting program. Despite the limitations, the present study has important clinical implications. Mindfulness-based parenting and choice theory parenting programs can be considered new intervention methods for mothers of children with ODD who suffer from symptoms of externalizing problems in a wide range of externalizing disorders (such as ODD). The lack of sample dropout in the parenting courses based on mindfulness and choice theory parenting programs, along with the mothers' overall positive evaluation of these interventions in the present study, show that the parenting programs conducted in this study are acceptable and effective interventions in the mental health programs of the mothers of these children. The improvement in the mother's parenting behavior and the reduction of the child's behavioral and emotional problems (including ODD) show the effectiveness of these methods in a range of problematic factors in the family of these children.

Conflict of Interests

Authors have no conflict of interests.

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Comparing the Effectiveness of Cognitive-Behavioral Therapy and Compassion Focused Therapy on Psychological Distress and Quality of Life of Patients with Psoriasis

Azam Arabi[1], Jafar Hasani[2], Mehdi Akbari[2], Mohammad Hatami[2], Mohammad Reza Sharbafchi Zadeh[3]

1 PhD in Health Psychology, Department of Psychology, Kharazmi University, Tehran, Iran
2 Associate Professor, Department of Psychology, Kharazmi University, Tehran, Iran
3 Assistant Professor of Psychiatry, Department of Psychiatry, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Corresponding Author: Azam Arabi; ***PhD in Health Psychology, Department of Psychology, Kharazmi University, Tehran, Iran***
Email: azamarabi1@gmail.com

Quantitative Study

Abstract

Background: Skin diseases, such as psoriasis, are associated with significant psychological and social disabilities. Thus, the present study was conducted with the aim of comparing the effects of classical cognitive-behavioral therapy (CBT) and compassion focused therapy (CFT) on psychological distress and quality of life (QOL) of patients with psoriasis.

Methods: The present study was a quasi-experimental research with a pretest-posttest design, follow-up, and a control group. The statistical population of the present study included all patients with psoriasis who referred to skin treatment centers in Tehran, Iran, between December and February 2019. From among them, 60 people were selected using a convenience sampling method and after matching them, they were assigned to three groups (20 people in each group). The participants of experimental group 1 received 10 sessions of classical CBT and the participants of experimental group 2 received 7 sessions of CFT, but the control group did not receive any training. The Kessler Psychological Distress Scale (K10 and K6; 2002) and World Health Organization Quality of Life (WHOQOL-BREF; 1996) questionnaire were used for data collection. The collected data were analyzed using repeated measures analysis of variance in SPSS software.

Results: The results showed that the effectiveness of both therapies on reducing the psychological distress and increasing the QOL of patients is significant ($P < 0.01$), but the effectiveness of the CFT was greater.

Conclusion: It seems that CFT as a selected treatment can help improve the psychological distress and QOL of patients with psoriasis by increasing kindness to self and others and managing emotions.

Keywords: Quality of Life; Cognitive-Behavioral Therapy; Psychological Distress; Psoriasis

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Introduction

Psoriasis is a skin disease and a nonspecific reaction of the immune system (Chiu, Wang, Chen, Hsu, Tsai, & Tsai, 2018). Psoriasis is a chronic, autoimmune, psychosomatic, and multisystem skin disease (Kim & Lebwohl, 2019). There are five subtypes of psoriasis, namely vulgaris (plaque), guttate, pustular, inverse, and erythrodermic psoriasis. The most common type of psoriasis is plaque psoriasis, which affects approximately 85 to 90% of patients with psoriasis (Barzamini and Hosseinaei, 2019). Psoriasis occurs at all ages and in all races, and its incidence is equal in men and women (Zuccotti et al., 2018). The onset of this disease is at the age of 16 to 22 and 50 to 60 years (Garshick & Kimball, 2015). The course of this disease is unpredictable, with flares and extinctions, and is incurable (Bebars, Al-Sharaky, Gaber, & Afify, 2017). Pain, itching, poor quality of life (QOL), anxiety, and depression are common in these patients (Innamorati et al., 2016). A high prevalence of suicidal ideation and suicide attempts has been reported in patients with psoriasis, especially young people (Singh, Taylor, Kornmehl, & Armstrong, 2017).

Patients with psoriasis experience high levels of neuroticism, including anxiety and depression, decreased tolerance threshold, lack of emotion control, impulsivity and overreaction to any stressors, sadness, and nervousness with the slightest incompatible stimulus due to skin lesions (Kumar, Vats, Sonare, & Kachhawha, 2015). Emotional problems in patients with psoriasis may even lead to suicide (Liang, Cohen, & Ho, 2019). Studies have shown that psychological factors and stressful life events play a major role in the onset, exacerbation, and continuation of this disease (Abedi, Davazdah Emamy, Ehsani, & Jafari, 2017; Innamorati, Quinto, Lester, Iani, raceffa, & Bonifati, 2018). Psychological distress is one of the most common psychological experiences in many diseases (Kwan et al., 2017), especially skin diseases (Orion & Wolf, 2013), because skin diseases can be one of the most painful experiences for people, especially in the area of aesthetics (Chiang, Bundy, Griffiths, Paus, & Harries, 2015). Thus, most patients with skin diseases experience high levels of psychological distress; approximately one-third of patients in dermatology clinics experience some degree of emotional factors such as anxiety and distress (Montgomery, Norman, Messenger, & Thompson, 2016). Furthermore, psychological distress can lead to the progression of psoriasis and even some other skin diseases such as vitiligo and atopic dermatitis (Egeberg et al., 2018).

Although skin diseases are not fatal and do not interfere with daily activities, they affect the QOL like other chronic diseases, especially when the symptoms of skin disease are in the more observable areas of the body such as the head and face (Nyunt, Low, Ismail, Sockalingam, & Min, 2015). Thus, there is an interrelationship between disease and QOL, and physical disorders and the presence of physical symptoms have a direct effect on all aspects of QOL (Exir, Raisi, Mehrabi, & Soltanizadeh, 2021). The effect of psoriasis on the QOL of patients is high even when very little area of the body is involved. Based on previous studies, psychological stress in psoriasis is a major cause of disability in patients that can have a negative impact on their QOL, disease severity, and response to treatment (Fakour, Ehsani, & Mohammadi, 2016). Based on the studies conducted in this regard, it can be concluded that there is a two-way relationship between psoriasis skin disease and decreased QOL and increased psychological distress, so that different degrees of emotional turmoil and psychological distress can be observed in these patients. Furthermore, studies suggest that pharmacological therapies alone have not had a significant effect on the psychiatric symptoms of these patients. Given the role of

psychological factors in the occurrence or persistence of psoriasis, conducting psychological interventions to reduce the symptoms of this disease seems to be necessary (Faridhosseini, Torkamani, Layegh, Nehedi, & Nahidi, 2016).

Cognitive-behavioral therapy (CBT) is one of the approaches that can be used to reduce the deviations and cognitive errors of these patients. Classical CBT is an active, directional, limited, and time-organized approach according to which a person's emotion and behavior are mainly determined by his/her construction of the world (Yousefi, Mohammadi, Azizi, & Shams, 2019). CBT is an approved therapy method for body image dissatisfaction, which is the most accurate and extensive program of cognitive-behavioral techniques studied for various aspects of body image dysfunction. These interventions focus on improving the 4 main areas of body image, including perceptions, cognitions, attitudes, emotions, and behaviors (Astin & Safaei, 2011). Its goal is to improve mental health and QOL in patients (Field, Beeson, & Jones, 2015).

In this regard, Yousefi et al. (2019) conducted a study on 40 depressed patients referred to counseling centers in Sanandaj, Iran, and observed that classical CBT had a significant effect on reducing depression and increasing their QOL.

Compassion-focused therapy (CFT) is another effective psychological intervention for patients with psoriasis. CFT was developed by Gilbert in response to the observation that many people, especially those with high self-shame and self-criticism, had difficulty in creating a self-supportive and kind inner voice when entering traditional therapies (Gilbert, 2018; Translated by Esbati and Feyzi, 2018). Compassion includes skills such as attention to well-being, sensitivity to needs and stresses, sympathy, distress tolerance, empathy, and non-judgment (Gilbert, 2009). Training these skills affects a person's physiological, nervous, and immune systems (Gilbert, 2017). In this perspective, problems and issues are considered as a normal part of life that may arise in the life of any person. Thus, it can be stated that CFT causes different patients, such as psoriasis skin patients, not to define their problems and issues as a negative factor that disrupts the normal process of life, but as a natural part of life. Such a perspective allows the person to become more flexible with his/her illness, to adjust the emotions they have toward the illness to them adaptively, and thus, to reduce psychological anxiety and improve QOL. Tanenbaum, Adams, Gonzalez, Hanes, and Hood (2018) investigated and confirmed the effectiveness of self-compassion training on stress and psychological health. Moreover, Pullmer, Chung, Samson, Balanji, and Zaitsoff (2019), Baker, Caswell, and Eccles (2019), and Reisi, Sharifi, Ghazanfari, and Charami (2020) have shown in their research that the component of compassion and CFT can improve distress tolerance and reduce psychological distress.

According to the research results, it seems that cognitive-behavioral and self-compassion interventions can be effective in reducing psychological distress and improving QOL. However, little research has been conducted on the effectiveness of these psychological interventions in reducing psychological distress and improving QOL in patients with psoriasis. Thus, to fill this research gap and increase the generalizability of the results, the present study was conducted with the aim to determine whether classical CBT and CFT can reduce psychological distress and improve QOL in patients with psoriasis. Investigating these two classical cognitive-behavioral and self-compassion approaches shows that there are differences between these two therapeutic interventions. It was found that CBT does not focus on the emotional dimension, but focuses more on cognition and language, and CFT focuses

more on emotion. The classical cognitive-behavioral perspective begins with cognition and negative thoughts, while CFT begins with the cognition of positive emotions. The cognitive-behavioral perspective accepts issues and problems as they are and tries to correct negative thoughts and attitudes toward them, while the CFT accepts them as a natural phenomenon that is a part of life and that different people face, and has a non-judgmental understanding of problems. Thus, the second question of this study was whether there a significant difference between the effects of classical CBT and CFT on psychological distress and QOL in patients with psoriasis, given the differences between these two psychological approaches.

Methods

The present study was a quasi-experimental research with a pretest-posttest design, follow-up, and a control group. The statistical population of this study included all patients with psoriasis who referred to skin treatment centers in Tehran, Iran, between December and February 2019. From among them, 60 people who met the inclusion criteria were selected using a convenience sampling method, and after matching them in terms of gender, age, level of education, and disease severity, they were assigned to 2 experimental groups and 1 control group (20 in each group). Members of the first experimental group received 10 sessions of classical CBT (Antoni et al., 2007). Members of the the second experimental group received 7 consecutive 90-minute sessions of CFT twice a week based on the Gilbert (2009) plan. The control group did not receive any psychological intervention. Psychological distress and QOL questionnaires were administered to all participants as a pretest, posttest, and follow-up before and after psychological interventions.

The study inclusion criteria were a minimum literacy of of reading and writing, diagnosis of psoriatic skin disease by a specialist, age range of 20-55 years, disease duration of at least 6-12 months, and no history of psychiatric disorders or drug abuse. The study exclusion criteria included unwillingness to continue cooperation in the research, absence from more than 2 sessions in the treatment process, and lack of cooperation in doing assignments and completing questionnaires. At the end of the study, to observe the ethical principles, an intensive course of CFT (due to its greater effectiveness) was performed for the control group.

Kessler Psychological Distress Scale: Kessler et al. developed the Kessler Psychological Distress Scale (K10 and K6) for the diagnosis of mental disorders in the general population. It has been developed in the form of 10 questions and 6 questions and has been used in various studies. To develop this scale, Kessler et al. collected 5000 questions from various sources and classified them. After classifying them, the number of questions was reduced to 45, and then, 32 questions based on existing mental disorders. With the initial administration of the questionnaire via phone and statistical analysis, they extracted the 10-item (K10) and 6-item (K6) versions of this scale. The K10 includes 10 questions that do not target a specific psychological disorder, but generally describe the level of anxiety and depression symptoms that a person has experienced in the past few weeks. The items of the K10 are scored on a scale ranging from 0 (never) to (4) always. Therefore, its maximum total score is 40 (Kessler et al., 2002). In the present study, the K10 was used. Various studies have shown that this questionnaire has good validity and reliability (Furukawa, Kessler, Slade, & Andrews, 2003). Yaghubi (2016) examined the psychometric properties of the K10 and reported its Cronbach's alpha at 0.91. The reliability of this questionnaire in the present study was obtained at 0.84 using Cronbach's alpha measurement method.

The World Health Organization Quality of Life: This questionnaire was developed in 1996 and has 26 questions that assess 4 areas of QOL. These areas include physical health, mental health, life environment, and social relationships (Nejat, Montazeri, Holakouie Naieni, Mohammad, & Majdzadeh, 2006). Each question is scored on a 5-point Likert scale. The first two questions do not belong to any of the areas and assess the general health status and QOL. Therefore, the 4 dimensions of this questionnaire are measured by 24 questions, 7 questions on physical health, 6 questions on mental health, 3 questions on social relationships, and 8 questions on environmental health. Higher scores in each dimension indicate the higher positive attitude of people in that dimension towards life. The score range for the general QOL score is 0-100, in which higher scores indicate better QOL (World Health Organization, 1996). The World Health Organization Quality of Life (WHOQOL-BREF) has been designed and translated into different languages in more than 15 countries. Therefore, it is the same in different cultures. The WHOQOL-BREF in Iran was validated among 1210 people and its Cronbach's alpha was obtained at 0.77 (Nejat et al., 2006). Nasiri (2006) reported the descriptive reliability coefficient and internal consistency (α) in a sample of 302 students of Shiraz University to be 0.87 and 0.84, respectively. Its test-retest reliability coefficient was obtained at 0.67 and the results related to its concurrent validity with the General Health Scale (GHQ) were reported at a satisfactory level. Moreover, investigating the face validity and test-retest reliability of this tool showed that the Persian version of questionnaire (IRQOL) has acceptable validity and reliability (Nasiri, 2006). In this study, the reliability of this questionnaire was obtained at 0.73 using Cronbach's alpha measurement method.

The classical CBT method used in this study is based on the Antoni et al. (2007) approach and consists of 10 sessions as presented in table 1.

The CFT in this study is based on Gilbert's (2009) plan and consists of 7 consecutive 90-minute sessions twice a week. The contents of the CFT sessions are presented in table 2.

The collected data were analyzed using repeated measures analysis of variance (ANOVA) in SPSS software (version 20; IBM Corp., Armonk, NY, USA).

Results

Investigation of the demographic characteristics showed that of the 60 participants in this study, 32 were woman (53.33%) and 28 were men (46.66%). In addition, 16 (26.66%) were single and 44 (73.33%) were married. In terms of education, 22 (36.66%) had pre-diploma education, 20 (33.33%) had a diploma or associate degree, 12 (20%) had a bachelor's degree, and 6 (10%) had a master's or higher levels of education. In terms of age distribution, 14 (23.33%) were in the age range of 20 to 30 years, 28 (46.66%) were in the age range of 31 to 40 years, and 18 (30%) were in the age range of 41 to 50 years. Descriptive statistics of research dependent variables are separately reported for groups and evaluation stages in table 3.

The results of Levene's test for the variables of psychological distress (P = 0.88; F = 0.02) and QOL (P = 0.10; F = 2.85) showed that the assumption of equality of variance was observed. Finally, the results of Box's M test (P = 0.10; F = 1.59; M = 18.93) indicate that the assumption of equality of covariance matrices is valid. Since the assumptions of using ANOVA were found to be valid, to evaluate the effectiveness of classical CBT and CFT on psychological distress and QOL in patients with psoriasis, repeated measures ANOVA was used.

Table 1. Classical cognitive-behavioral therapy (CBT) sessions

Sessions	Content
1	Greeting, introduction, expression of the rules of group therapy, explaining the relationship between mind and body, thinking, feeling, physiologic, behavior (cognitive triangle), holy example, suitcase example, guided imaginative relaxation exercise
2	Negative thoughts and other possible realities, Exercise 1: Identifying negative thoughts, Cognitive distortions Exercise 2: Identifying distortions of logical errors Exercise 3: Identifying logical errors
3	Explaining the advantage of stopping negative thoughts, Exercise 1: Focusing on an object and explaining the details Exercise 2: Mental exercises (countdown) Exercise 3: Reviewing happy and pleasant memories and imaginations Exercise 4: Interesting activities
4	Explaining the Greenberg emotional model and emotional processing techniques Exercise 1: technique of achieving emotions Exercise 2: relaxing writing technique Exercise 3: identifying blind nodes
5	Explaining the logic of muscle relaxation Exercise: Muscle relaxation for 16 muscle groups
6	Gradual muscle relaxation for 8 muscle groups
7	Regular desensitization Exercise: regular visual desensitization, and immersion
8	Dysfunctional assumptions and rules Exercise: Identification of dysfunctional assumptions and rules, allegory of a lake monster, logical analysis
9	Maladaptive schemas and their relationship with dysfunctional assumptions and negative thoughts Exercise: Identifying dysfunctional schemas using the down arrow Injection of thought and practice
10	Perceptual change Exercise 1: Completing the perceptual change sheets Optional cortical inhibition Exercise 2: Optional cortical inhibition

The results presented in table 4 regarding the effectiveness of classical CBT show that the mean scores of psychological distress ($P = 0.07$; $F = 3.53$) and QOL ($P = 0.76$; $F = 0.8$) were not significantly different between experimental group 1 and the control group. However, the results are significant for the interaction effect of time and group on the variables of psychological distress ($P < 0.01$; $F = 30.30$) and QOL ($P < 0.01$; $F = 35.39$). In other words, the mean scores of psychological distress in the posttest and follow-up stages are lower than the scores of the control group and the QOL scores are significantly higher.

Moreover, the results for the main effect of time show that the scores of psychological distress ($P < 0.01$; $F = 175.61$) and QOL ($P < 0.01$; $F = 70.48$) of the classical CBT group had significantly decreased and increased, respectively, in the follow-up stage compared to the pretest stage. The effect sizes of 0.86 and 0.71 indicate that 86% of reduction in psychological distress scores and 71% of the increase in QOL scores in the follow-up stage compared to the pretest are due to classical CBT.

The results of evaluating the effectiveness of CFT (Table 4) show that the mean scores of psychological distress ($P = 0.07$; $F = 3.38$) are not significantly different between the experimental group 2 and the control group. However, the mean QOL scores of the experimental group 2 were significantly higher than the control group ($P = 0.01$; $F = 9.99$). In other words, CFT could significantly increase patients' QOL scores.

Table 2. Compassion focused therapy (CFT) sessions

Sessions	Content
1	Familiarity of the therapist and group members with each other, talking about the goals of the sessions and its general construction, reviewing the expectations from the first session, familiarity with the general principles of CFT and distinguishing compassion from self-regret
2	Explaining compassion: what compassion is and how to overcome its problems, Mindfulness training along with physical examination and breathing exercises, familiarity with compassion-focused brain systems
3	Familiarity with the characteristics of compassionate people, compassion for others, nurturing a feeling of warmth and kindness towards oneself, nurturing the understanding that others also have defects and problems (nurturing a feeling of common senses versus self-destructive feelings. Training to increase warmth and energy, mindfulness, acceptance, wisdom and strength, warmth and non-judgment
4	Encouraging self-knowledge in the participants and encouraging them to examine their personality as compassionate or non-compassionate according to the educational topics, identification and application of compassionate mind training exercises, the value of compassion, empathy and sympathy for oneself and others
5	Teaching styles and methods of expressing compassion (verbal compassion, practical compassion, intermittent compassion, and continuous compassion) and applying these methods in everyday life to parents, friends, and acquaintances
6	Teaching compassion skills to participants in the areas of compassionate attention, compassionate reasoning, compassionate behavior, compassionate imagery, compassionate feeling, and compassionate perception, role playing by the participants in the three existential dimensions of self-criticizing, self-criticized, and self-compassionate using the Gestalt Empty Chair technique, finding the self-criticizing and self-compassionate inner voice during the inner dialogue and its similarity with the dialogue pattern of important people in one's life
7	Filling in the weekly table of critical thoughts, compassionate thoughts and compassionate behavior, finding compassionate colors, places, and music that can be components of compassionate imagery, working on self-compassion fears and barriers of nurturing this trait, teaching compassionate mental imaging techniques, rhythmic relaxing breathing, mindfulness, and writing compassionate letters

The results are significant for the effect of interaction of time and group on the variables of psychological distress ($P < 0.01$; $F = 123.79$) and QOL ($P < 0.01$; $F = 111.36$). In other words, the mean scores of psychological distress in the posttest and follow-up stages are lower than the scores of the control group and the QOL scores are significantly higher.

Table 3. Descriptive statistics of research dependent variables

Dependent variable	Group	Stage	n	Mean	SD
Psychological distress	Control	Pretest	20	12.73	1.27
		Posttest	20	12.20	1.26
		Follow-up	20	12.80	1.20
	Experimental 2	Pretest	20	13.66	1.29
		Posttest	20	11.60	1.18
		Follow-up	20	12.06	1.38
	Experimental 2	Pretest	20	13.33	1.23
		Posttest	20	9.73	1.27
		Follow-up	20	10.33	1.54
QOL	Control	Pretest	20	60.00	12.59
		Posttest	20	60.53	11.70
		Follow-up	20	60.46	11.77
	Experimental 2	Pretest	20	59.86	11.74
		Posttest	20	64.53	13.12
		Follow-up	20	64.80	13.02
	Experimental 2	Pretest	20	58.00	12.36
		Posttest	20	68.40	12.00
		Follow-up	20	67.40	14.94

SD: Standard deviation; QOL: Quality of life

Table 4. Results of repeated measures analysis of variance

Therapy	Dependent variable	Source of effect	SS	df	MS	F	P	ES
Cognitive-behavioral	Psychological distress	Time	170.60	45.10	117.57	1750.61	0.001	0.86
		Time * Group	116.86	1.45	80.54	120.30	0.01	0.81
		Group	211.60	1	211.60	3.53	0.07	0.11
	QOL	Time	25.62	2	12.81	7.48	0.01	0.71
		Time * Group	12.86	2	6.43	35.39	0.01	0.55
		Group	0.40	1	0.040	0.08	0.76	0.003
Self-compassion	Psychological distress	Time	446.06	35.1	329.75	155.08	0.01	0.84
		Time * Group	356.06	35.1	263.22	123.79	0.01	0.81
		Group	291.60	1	291.60	3.83	0.07	0.10
	QOL	Time	68.28	46.1	46.46	160.63	0.01	0.85
		Time * Group	47.02	46.1	32.21	111.36	0.01	0.79
		Group	46.94	1	46.94	99.9	0.01	0.26

SS: Sum of squares; ES: Effect size; QOL: Quality of life; MS: Mean of squar; df: Degree of freedom

Furthermore, the results for the main effect of time show that the scores of psychological distress ($P < 0.01$; $F = 15.05$) and QOL ($P < 0.01$; $F = 160.63$) of the CFT group decreased and increased, respectively, in the follow-up stage compared to the pretest. The effect size of 0.84 and 0.85 indicates that 84% of the reduction in psychological distress scores and 85% of the increase in the QOL scores in the follow-up stage compared to the pretest are due to CFT. However, post hoc tests need to be used to determine the differences between psychological distress and QOL scores are in which of the main time effect stages (pretest-post-test, or pretest-follow-up, or both). The results of the Bonferroni post hoc test for pairwise comparison of means are presented in table 5.

The results of the Bonferroni post hoc test for both classical CBT and CFT indicate that the mean scores of psychological distress, both in the posttest and follow-up stages were significantly lower than the mean scores in the pretest stage. Moreover, the mean scores of QOL both in the posttest and follow-up stages had significantly increased compared to the mean scores in the pretest stage. However, these changes were not significant for the control group scores. To compare the effects of classical CBT and CFT on psychological distress and QOL of patients, multivariate analysis of covariance (MANCOVA) is used. Table 6 shows the results of MANCOVA regarding the comparison of the scores of participants in the classical CBT, CFT, and control groups.

Table 5. Bonferroni post hoc test results for time stages

Variable	Group	Stages	Posttest	Follow-up
Psychological distress	Cognitive-behavioral	Pretest	-3.10*	-2.70*
		Posttest	-	0.40*
	Control	Pretest	-0.03	-0.07
		Posttest	-	0.05
QOL	Cognitive-behavioral	Pretest	1.30*	0.76*
		Posttest	-	-0.53*
	Control	Pretest	0.09	0.12
		Posttest	-	0.05
Psychological distress	Cognitive-behavioral	Pretest	-4.96*	-4.43*
		Posttest	-	0.53*
	Control	Pretest	-0.06	-0.08
		Posttest	-	-0.11
QOL	Cognitive-behavioral	Pretest	2.06*	1.46*
		Posttest	-	-0.60*
	Control	Pretest	0.09	0.11
		Posttest	-	0.07

QOL: Quality of life

Table 6. Bonferroni post hoc test results on the comparison of the mean of the three groups

Variable	Group		Mean difference	P
Psychological distress	Cognitive-behavioral	Self-compassion	-3.74	0.01
		Control	-6.33	0.01
	Self-compassion	Control	-2.58	0.01
QOL	Cognitive-behavioral	Self-compassion	-2.17	0.01
		Control	-4-97	0.01
	Self-compassion	Control	-2.79	0.01

QOL: Quality of life

The results presented in table 6 show that the mean of psychological distress in the CFT group was lower than that in the CBT group at the end of the posttest ($P < 0.01$). Moreover, the mean QOL score in the CFT group was higher than the CBT group and the control group at the end of the posttest ($P < 0.01$). In other words, CFT had the greatest effect on reducing psychological distress and increasing patients' QOL ($P < 0.01$).

Discussion

The present study was an attempt to compare the effects of classical CBT and CFT on psychological distress and QOL in patients with psoriasis. The results showed that classical CBT had a significant effect on reducing psychological distress and improving QOL in patients with psoriasis. These results are in line with those of the studies conducted by Yousefi et al. (2019) and Field et al. (2015), as they showed that classical CBT has a significant effect on reducing depression and increasing QOL in depressed women.

In explaining these results, it can be stated that psoriasis and its symptoms lead to a reduction in active and efficient life in patients by increasing negative thoughts, withdrawal behaviors, and social isolation, and it finally leads to more stress and negative emotions. The low QOL of patients with psoriasis is mostly due to their fear of being rejected rather than their physical characteristics, and site and severity of skin lesions. In fact, patients with psoriasis are concerned about the evaluation of others. They may become socially isolated due to their symptoms and focus on their illness, which in turn can reduce their QOL and increase their psychological distress (Yousefi et al., 2019),

In the process of classical CBT, patients have the opportunity to better understand their thoughts and deal with their emotions more appropriately. In this therapy method, the therapist tries to identify and change both the behaviors and thoughts that cause psychological distress (Nishihara et al., 2019). Thus, it seems that cognitive-behavioral interventions in this study have reduced the psychological distress of patients and improved their QOL through cognitive reconstruction and modification of their thinking style about this illness and its apparent symptoms. The results of the present study also showed the effectiveness of CFT in reducing psychological distress and improving QOL in patients with psoriasis. These results are in line with those of studies conducted by Tanenbaum, Adams, Gonzalez, Hanes, and Hood, (2018), Pullmer et al. (2019), and Reisi et al. (2020) on the effectiveness of CFT in improving distress tolerance and reducing psychological distress.

In explaining these results, it can be stated that self-compassion emphasizes self-acceptance and acceptance of one's experience within the framework of self-kindness and awareness (mindfulness). Self-kindness is self-understanding rather than self-judgment and a kind of support for one's shortcomings and

inadequacies. Acknowledging that all human beings have defects, make mistakes, and are involved in unhealthy behaviors is a characteristic of human common senses. Mindfulness results in a balanced and clear awareness of present experiences and allows the painful aspects of an experience not to be overlooked and not to occupy the mind frequently. Applying these processes reduces internal distress and psychological distress, and improves QOL in patients with psoriasis (Leaviss & Uttley, 2015).

Gilbert and Procter (2006) also believe that compassion increases emotional flexibility since it can neutralize the threat system and activate the care system. Hence, in CFT, patients with psoriasis learn to have an inner compassionate relationship instead of self-blaming, self-condemning, or self-criticizing. This means that they do not avoid or suppress their painful emotions and they realize that many cognitive biases/distortions are biological and innate processes created by genetics and the environment (Gilbert, 2009). In this therapy, patients are encouraged to persuade compassion and practice compassionate behaviors so that they can access healing systems (Leaviss & Uttley, 2015). Furthermore, since self-compassion-focused interventions use educational techniques on the process of regulating the emotion system and its effect on brain hormone levels and its subsequent effect on behavior and lifestyle changes (Pullmer et al., 2019), processes related to emotion and cognition, such as psychological distress are expected to improve after self-compassion training. In fact, patients who undergo CFT can question their vicious cycle of self-criticism and high-level expectations of themselves using mindfulness and problem solving, and with a new and compassionate view of themselves, they can design real and achievable criteria that do not require hardship. Moreover, comparing the effects of classical CBT and CFT in the present study showed that CFT is more effective in reducing psychological distress and improving QOL in patients with psoriasis.

Although classical CBT is effective in treating various disorders, its preventive effects are in question (Finucane & Mercer, 2006; Bundy, Pinder, Bucci, Reeves, Griffiths, & Tarrier, 2013). Furthermore, this approach does not focus on the acceptance of issues and problems (Omidi, Mohammadi, Zargar, Akkasheh, 2014). Thus, it seems that acceptance of psoriasis does not occur in patients in this approach, meaning that negative emotions, inefficient and dysfunctional emotion regulation strategies, and worries remain and the individual does not accept his/her illness, which can affect patients' concerns and QOL. In contrast, in CFT, one seeks to accept the problems and issues of the self and others, and to reduce dysfunctional comparisons between the self and others in order to have effective interpersonal relationships. This approach seeks to reduce suppression and avoidance of inner experience and replace it with hope, self-liking and other-liking, intimacy, and a positive attitude. In many patients with psoriasis, the self-threatening system is overworked, leading to high levels of stress and worry in these patients. In addition, the satisfaction system in these people has a lower level of development, because they have never had the opportunity to change this system. CFT for these people acts like mind physiotherapy. This means that by stimulating the soothing system, it provides the conditions for its transformation, and with the evolution of this system, increases resilience to anxiety and worry (Neff, 2016). Mindfulness is another component that plays a major role in the effectiveness of CFT. The structure of self-compassion in many ways can be a kind of emotion-based coping strategy, since conscious awareness of the emotions requires the lack of avoidance of painful and distressing feelings and closeness along with kindness, and understanding and

feeling human common emotions. In fact, in this model, patients first use their consciousness to recognize their emotional experience, and then, find a compassionate attitude towards their negative emotions.

In addition, teaching bold behavior and meditation increases accuracy, concentration, self-control, and self-awareness and plays a major role in maintaining and promoting self-control. Thus, with increasing of awareness and cognition, the person will gain a better understanding of his/her behavior. This increase in awareness increases the incidence of behavior if appropriate and decreases it if inappropriate (Biaomont et al., 2016). In general, self-compassion includes the three components of self-kindness versus self-judgment, human commonalities versus isolation, and mindfulness versus over-identification. The combination of these three related components is a characteristic of a self-compassionate person (Neff, 2016). The development of self-compassion in patients enables them to have an inner supporter instead of an inner enemy and to calm themselves down and be their theistic (Kou et al., 2018). Finally, it can be concluded that CFT can be used as a selected treatment to reduce psychological distress and improve QOL in patients with psoriasis. However, the present study, like other studies, had some shortcomings and limitations. For example, in this study, some environmental and family factors such as economic and social status of the participants were not examined and controlled. Furthermore, this study was only conducted on patients with psoriasis in Tehran, Iran. Therefore, the generalization of the results to other populations should be treated with caution. Finally, based on the results of this study, it is suggested that mental health professionals and people working in the field of health use CFT as an effective psychological intervention in the form of educational and therapeutic plans to reduce psychological distress and improve QOL in patients.

Conclusion

It seems that CFT as a selected treatment can help improve psychological distress and QOL in patients with psoriasis by increasing kindness to self and others and managing emotions.

Conflict of Interests

Authors have no conflict of interests.

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Promoting Social Relationship and Interpersonal Problems among Women with Major Depressive Disorder: A Social-Communication Skills Training

Zahra Amani[1], Maryam Namvar[2], Marym Javanbakht[3], Rezvaneh Kozegaran[4], Parya Jamali[5]

1 Department of Psychology, Sirjan Branch, Islamic Azad University, Sirjan, Iran
2 Department of Clinical Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
3 Department of Clinical Psychology, Lahijan Branch, Islamic Azad University, Lahijan, Iran
4 Department of Psychology, School of Humanities and Literature, Payame Noor University, South Tehran Branch, Tehran, Iran
5 Department of Clinical Psychology, Science and Research Branch, Islamic Azad University, Tehran, Iran

Corresponding Author: Parya Jamali; ***Department of Clinical Psychology, Science and Research Branch, Islamic Azad University, Tehran, Iran***
Email: paryajamali575757@gmail.com

Quantitative Study

Abstract

Background: The difficulties with social interaction are observed in major depressive disorder (MDD). This study aimed to examine the effect of social-communication skills training on social relationships and interpersonal problems among women with MDD.
Methods: In this semi-experimental study with a pre-test and post-test design and control group, the statistical population of the study was composed of patients suffering from major depression referred to Tehran Psychiatric Institute, School of Behavioral Sciences and Mental Health, Tehran City, Iran, from September 2022 to March 2023. The sample was selected purposefully and randomly divided into the social skills training (SST) group (n = 28) and the control group (n = 29) by tossing. The training protocol was held weekly in 8 1-hour sessions for two months. The tools completed in the pre-test and post-test were Relationship Scales Questionnaire (RSQ) and Barkham et al.'s Inventory of Interpersonal Problems (IIP). The data were analyzed using the multivariate analysis of covariance (MANCOVA) method via SPSS software.
Results: There were significant differences between the groups in terms of social relationships ($F = 26.43$, $P = 0.001$, $\eta = 0.68$) and interpersonal problems ($F = 24.19$, $P = 0.001$, $\eta = 0.63$).
Conclusion: These features seem to persist even in remission, although some may respond to intervention. Further research is required in this area to better understand the functional impact of these findings and how targeted therapy could aid depressed individuals with social interactions.

Keywords: Social relationships; Social problems; Depressive disorder; Social communication

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Introduction

In addition to being commonly seen in inpatient and outpatient mental health treatment settings, major depressive disorder (MDD) also ranks among the leading causes of the global burden of disease (Owusu, Reininghaus, Koppe, Dankwa-Mullan, & Barnighausen, 2021). There is an annual prevalence rate of approximately 10.0% to 12.5% for MDD in primary care populations (Wright et al., 2022). The incidence and prevalence rate of MDD has also grown significantly in Iran (Keshavarz et al., 2022). Based on a systematic review of 56 articles, depressive disorders were found to be prevalent in the Iranian population at a rate of 5.69%-73%, and MDD was indicated to be the most prevalent psychiatric disorder at 12.7% (Radfar, Yavari, Haghighi, & Gharaaghaji Asl, 2022). People with depressive symptoms experiencing self-focused thoughts and feelings are more likely to be perceived as annoying and abrasive by their friends, leading to difficulties in interpersonal relationships (Abraham et al., 2022). In adults, communication with others and social participation require establishing a balance between the cognitive representations of self and others and activate the brain areas involved in the representation of social cognition, including the medial prefrontal cortex and the cingulate cortex (Schwartz-Mette & Rose, 2016). Functional impairment contributes to significant disability and economic burden in MDD (Hutcherson, Seppala, & Gross, 2015). Psychosocial defects include dysfunction in job performance, interpersonal relationships, autonomy, and self-perceived quality of life (QOL) (Dunn, German, Khazanov, Xu, Hollon, & DeRubeis, 2020).

Struck et al. (2021) showed that patients with depression might not show deficits in decoding the affective states of others and in feeling with others. However, depressed individuals – in particular, patients with depression – may feel easily overwhelmed by emotionally tense situations, resulting in empathic distress and avoidant/submissive interpersonal behavior (Knight et al., 2021). This could lead to patients with depression being isolated and bereaved of potential resources of their social environment, such as social support which has been associated with being more likely to achieve complete satisfactory mental health after suffering from depression (Struck, Gartner, Kircher, & Brakemeier, 2021). This can result in a vicious cycle, with low self-worth leading to further social avoidance, in turn reinforcing negative self-perceptions and perpetuating depressive illness (Strand, Hagen, Hjemdal, Kennair, & Solem, 2018). Improving and strengthening ties with the social environment can aid in breaking this cycle, contributing to improvements in depression. Indeed, social support and a sense of belonging are widely recognized protective factors against depression (Filia, Eastwood, Herniman, & Badcock, 2021).

A smaller number of experimental studies have also found that interventions that aim to improve social connectedness have benefits for mental health. For example, people with mental illness who joined recreational and therapy groups that targeted social isolation experienced clinically significant reductions in depression and anxiety symptoms (Rueger, Malecki, Pyun, Aycock, & Coyle, 2016). Therefore, social communication skills can have a beneficial effect to treat depressive symptoms and improve social relationships. Over the years, efforts to treat depression have focused on improving depressive symptoms. However, there is now increasing attention to improving social relationships and interpersonal problems (Saeri, Cruwys, Barlow, Stronge, & Sibley, 2018). The development of non-pharmacological treatments for the treatment of depression and other non-psychotic disorders has been highly studied by researchers. Various therapeutic strategies to improve social relationships and

social functioning in people with depressive disorders include educational and behavioral interventions that target main features of the disease. Well-designed interventions, such as the social-communication skills training program, are manual evidence-based social skills programs developed from autism spectrum disorder (ASD) intervention programs (Filia et al., 2021).

Researchers previously suggested that social withdrawal should be targeted as a treatment for childhood depression. Treatments aimed at improving social skills and cognitive functioning in patients with MDD may also be beneficial (Ota et al., 2020). Thus, interventions that improve social function and optimize coping with late-life psychiatric and medical comorbidities can promote a better QOL and reduce the societal economic burden of depression in life (Rajji, Mamo, Holden, Granholm, & Mulsant, 2022). Both social skills and negative symptoms appear to influence real-world functioning (Lim, Rapisarda, Keefe, & Lee, 2022). The social skills training (SST) was effective in different age ranges, for example, the effectiveness of using this caregiver-assisted, manualized intervention was observed for young adults with ASD (Yang, Zhao, Wu, & Zhang, 2021), adults with ASD (Gantman, Kapp, Orenski, & Laugeson, 2012), and for severe mental illness (Catalan et al., 2022). Despite the psychosocial difficulties common among this sample, little to no evidence-based social skills interventions exist for this population. Based on what was presented before, it is important to help this sample group to have an everyday life. Therefore, the researchers aimed to examine the effect of social-communication skills training on social relationships and interpersonal problems among people with depressive disorder.

Methods

The method of the current research was semi-experimental with a pre-test and post-test design with a control group. The statistical population of the study was composed of patients suffering from major depression referred to medical centers affiliated to Tehran Psychiatric Institute, Tehran Psychiatric Institute, School of Behavioral Sciences and Mental Health, Tehran City, Iran, from September 2022 to March 2023 at. The sample was selected purposefully and randomly divided into the SST group (n = 28) and the control group (n = 29) by tossing. A total of 57 people were obtained by considering a confidence interval (CI) of 0.95 and a power of 80%, taking into account. The criteria for patients entering the research included confirmation of the disease by the center's psychologist and psychiatrist, age ranging between 20 and 40 years, having minimum literacy, lack of brain diseases such as delirium, dementia, and learning disorders, not having speech, hearing disorders, not using medications affecting behavioral and mental status, not having a history of participating in similar research in the last six months, not having secondary problems such as mental illness, blood pressure greater than 160/100, chronic kidney disease, severe heart disease, or any other serious disease, and willingness to participate. Being absent for more than two sessions, administration of electroconvulsive therapy, and substance abuse during the intervention were the exclusion criteria.

Sampling was conducted on morning shifts (from 8 a.m. to 2 p.m.) on working days, so that it lasted for 32 days. 134 patients with MDD were evaluated by the researchers, out of which 98 met the inclusion criteria. Out of 98 eligible patients, 24 were reluctant to attend the SST sessions due to residency problems and 17 withdrew from the study before the beginning of the intervention. Ultimately, a total of 57 patients entered the study and were assigned to two groups of SST and treatment-as-

usual (TAU) using random allocation. Those willing to participate in the research, in one day, were invited to the psychological center (Armaghane Salamiti located in district 3) and the implementation of the study approach was carried out by the clinical specialist of the center. In the pre-test stage in the experimental and control groups, the questionnaires [Relationship Scales Questionnaire (RSQ), Inventory of Interpersonal Problems (IIP)] were completed by women with MDD. It should be noted that the interpersonal sensitivity scale was used in this study to investigate interpersonal problems**.** Moreover, only the avoidance scale was used in the RSQ. The training protocol was held weekly in 8 1-hour sessions for two months. The titles and topics of the educational program presented are described in table 1 (Zargar, Besaknezhad, Akhlaghi Jami, & Zemestani, 2014).

After the training sessions, the post-test was done in the experimental and control groups (Figure 1).

RSQ: It was designed by Griffin and Bartholomew (1994), and includes 30 items for measuring feelings about close relationships. The answer to each item is scored based on a Likert-type scale from 1 (not at all) to 5 (very much). By calculating the means of the items of each style, the score of that style is obtained. By evaluating 2 dimensions of anxiety and avoidance, RSQ examines attachment styles of secure (questions 3, 9, 10, 15, 28), preoccupied (6, 8, 16, 25), dismissing avoidance (2, 6, 19, 22, 28), and fearful avoidance (1, 5, 12, 24). Meanwhile, questions 9, 28, and 6 have reversed grading. Concerning the dimensional perspective of Bartholomew, for determining individuals' attachment styles, the highest score should be considered if necessary. The retest reliability of the questionnaire ranged from 0.54 to 0.78 and the correlation coefficients of the RSQ and Relationships Questionnaire (RQ) ranged from 0.41 to 0.61, respectively (Griffin & Bartholomew, 1994). The exploratory factor analysis (EFA) of RSQ showed 2 different patterns. The Collins and Read 3-factor model showed 40.16% of the total variance, and the Simpson 2-factor model determined 35.36% of the total variance. The Cronbach's alpha coefficients were 0.67 for the 2-factor model and 0.57 for the 3-factor model (Iranian Pehrabad, Mashhadi, Tabibi, & Modares Gharavi, 2016).

IPP: The 32-item IPP is a self-report tool whose items are related to the problems that people normally experience in interpersonal relationships (Barkham, Hardy, & Startup, 1996). As a version of this form by Barkham et al., a short version of the original 127-item form was designed to use this tool in clinical services.

Table 1. Program and implementation steps of social-communication skills training

Sessions	Brief description of the content of the meeting
First	Initial acquaintance and introduction, stating points about communication methods in society, stating goals
Second	Preparation and termination of useful communication, barriers to effective communication, description of the communication model, non-verbal language and its interpretation, physical characteristics, and environmental factors in non-verbal communication
Third	Types of listening, barriers to listening, and mastery of listening skills during relationships
Fourth	Reflecting feelings and meanings, vocal empathy, and giving a firm but flexible answer
Fifth	Types of self-expression, its benefits, and functions, the way to communicate in society, the six stages of self-expression, cultivating the power to say no, teaching correct criticism, and teaching to accept others' criticism
Sixth	Conflict and its types, methods of preventing and restraining personal and group conflicts
Seventh	Participatory problem-solving method and its application, the pitfalls of the problem-solving process
Eighth	Honesty, empathy, and love, design and implementation of a letter of commitment to use social-communication skills

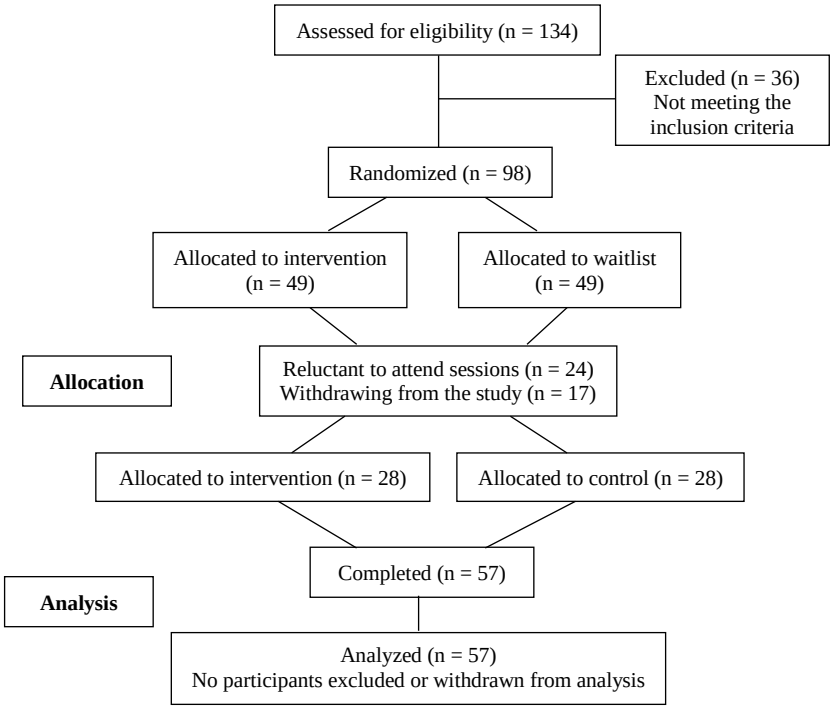

Figure 1. Consolidated Standards of Reporting Trials **(**CONSORT) diagram

This form was obtained based on EFA of the 127-item form and considering the four items that had the highest factor load in each subscale. This scale has eight subscales: people-oriented, boldness, participation with others, support of others, aggressiveness, openness, consideration of others, and dependence on others. These items are scored on a five-point Likert scale from zero (not at all) to five (extremely). The form prepared by Barkham et al. (1996) has high validity and reliability (Barkham et al., 1996). All items of this scale are divided into two general categories. This scale has been validated in Iran by Fath et al. (2013) and the Cronbach's alpha coefficients for the factors of frankness and humanism, openness, consideration of others, aggressiveness, boldness, support, participation, and dependence on others were equal to 0.00, 083, 0.63, 0.60, 0.83, 0.71, 0.63, and 0.82, respectively, for the total scale score (Fath, Azad Fallah, Rasool-zadeh Tabatabaei, & Rahimi, 2013).

The data were analyzed using the multivariate analysis of covariance (MANCOVA) method via SPSS software (version 24, IBM Corporation, Armonk, NY, USA). The linearity of the relationship between each dependent variable and its covariate was tested. Moreover, the significance level of the Kolmogorov-Smirnov test was greater than 0.05; therefore, the assumption of normal distribution of the variables has been met.

Results

Demographic variables were presented in table 2. Moreover, table 3 shows that the mean and standard deviation (SD) of social relationship and interpersonal problems, respectively, modified significantly compared to their post-test scores. The mean age of the women in the experimental and control groups was 35.91 ± 5.25 and 36.26 ± 5.33 years, respectively.

Table 2. Demographic variables

Groups	Age (year) (mean ± SD)	Education [n (%)]		Marital status [n (%)]	
		High school education	College education	Married	Single
Experimental	35.91 ± 5.25	7 (23.33)	8 (26.66)	8 (26.66)	7 (23.33)
Control	36.26 ± 5.33	6 (20.00)	9 (30.00)	9 (30.00)	6 (20.00)
P-value	0.131	0.547		0.541	

SD: Standard deviation

After evaluating MANCOVA, the test results showed a significant difference between variables in experimental and control groups (Wilks' lambda = 0.165, F = 53.29, P ≤ 0.001). In MANCOVA context, two covariance analyses were conducted to determine this difference. In the experimental and control groups, 64% of the variances were explained by the independent variable, based on the calculated effect size.

As indicated by the multivariate results in table 4, there was a significant difference between the groups in terms of social relationship (F = 26.43, P = 0.001, η = 0.68) and interpersonal problems (F = 24.19, P = 0.001, η = 0.63). Moreover, according to the social relationship's largest effect size (0.68), SST intervention had more effect on social relationships.

Discussion

This study aimed to investigate the effect of communication skills training on social relationships and interpersonal problems among people with depressive disorders. The results showed that the communication skills training significantly affected the depressive women's social relationships and interpersonal difficulties. Evidence from numerous studies shows that people with depression suffer from a social impairment which in severe cases, influences their normal work life (Dunn et al., 2020). It is vital to improve the current situation of impaired interpersonal barriers in people with depression and to develop their social skills and abilities. Several of the currently available interventions for social functioning are in line with this finding. Gantman et al. (2012) revealed that treated young adults reported significantly less loneliness and improved social skills knowledge, while caregivers reported significant improvements in young adults' overall social skills, social responsiveness, empathy, and frequency of get-togethers. The results support the effectiveness of using this intervention for young adults with ASD (Gantman et al., 2012). Group-based SST improved social responsiveness in adults with ASD according to a meta-analysis. This narrative review included 18 studies, and the meta-analysis included five randomized controlled trials. SST had large positive effects on social responsiveness (Dubreucq, Haesebaert, Plasse, Dubreucq, & Franck, 2022).

In a study conducted by Triscoli et al. (2019), individuals who were highly depressed also reported having more interpersonal problems.

Table 3. Mean and standard deviation (SD) of the variables in experimental and control groups

Variables	Phases	Experimental (mean ± SD)	Control (mean ± SD)	P-value (between-group)
Social relationship	Pretest	20.43 ± 4.25	17.26 ± 3.16	0.268
	Posttest	21.29 ± 4.31	20.47 ± 4.21	0.001
P-value (within the group)		0.001	0.223	-
Interpersonal problems	Pretest	26.41 ± 5.28	20.33 ± 4.35	0.304
	Posttest	28.42 ± 6.54	33.81 ± 6.27	0.001
P-value (within the group)		0.001	0.243	-

SD: Standard deviation

Table 4. Results of analysis of covariance (ANCOVA) in the multivariate ANCOVA (MANCOVA) context

Dependent variable	Source	SS	df	MS	F	P-value	Eta
Social relationship	Group	1708.31	1	1708.31	26.43	0.001	0.68
Interpersonal problems	Group	4528.43	1	4528.43	24.19	0.001	0.63

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

The severity of depression correlated with the degree of interpersonal problems (Triscoli, Croy, & Sailer, 2019). Cusi et al. (2012) also evaluated the association between symptom severity, social functioning, and social cognitive ability in patients with bipolar disorder (BD). Relative to controls, patients with BD were impaired at discriminating mental states from pictures of eyes and in making complex social judgments. Impaired responding was also associated with reduced psychosocial functioning. These results provide evidence of impaired performance in complex tests of social cognition in patients with BD. Impairments in social cognition may be associated with well-documented declines in the frequency of social interactions and the development of interpersonal relationships found in this patient population (Cusi, MacQueen, & McKinnon, 2012). Unless managed effectively, impaired social communication skills can have a significant negative impact on academic, adaptive, and psychological functioning (Wolstencroft, Kerry, Denyer, Watkins, Mandy, & Skuse, 2021). SST programs must take into account the need to improve both social knowledge (such as social rules and etiquette) and social performance (the behavioral performance of social skills). Whilst there is good evidence that many such interventions are effective in teaching social knowledge (Gates, Kang, & Lerner, 2017), improvements in social performance are not as well documented, and have not been demonstrated convincingly (Wolstencroft et al., 2021).

Psychosocial deficits include impairment in occupational functioning, interpersonal relationships, autonomy, and self-perceived QOL (Knight et al., 2018). It is possible that targeting psychological factors that underlay psychosocial function in MDD may be crucial to promoting more holistic and long-term psychosocial recovery (Knight & Baune, 2017). Recent reviews and empirical studies support the notion that cognitive, emotional, and social-cognitive domains are associated with psychosocial dysfunction, and likely contribute to the onset and maintenance of psychosocial deficits (Cambridge, Knight, Mills, & Baune, 2018; Weightman, Knight, & Baune, 2019). A smaller number of experimental studies have also found that interventions that aim to improve social connectedness have benefits for mental health. For example, people with mental illness who joined recreational and therapy groups that target social isolation experienced clinically significant reductions in depression and anxiety symptoms (Saeri et al., 2018). The research of La Greca et al. (2016) found that the intervention aiming at increasing adolescent communication strategies and interpersonal problem-solving skills was effective in reducing adolescent depression. SST may also benefit children with special needs to alleviate depression (La Greca, Ehrenreich-May, Mufson, & Chan, 2016).

In addition to the strong empirical case for the causal link between social connectedness to mental health, several theoretical frameworks also argue for this relationship. These include models which posit that social relationships fulfill a fundamental psychological need for belonging and, more recently, the social identity approach to health (Saeri et al., 2018). This model states that our social relationships (and in particular, our social group relationships) act as psychological resources that

protect one's health, particularly in times of adversity (Praharso, Tear, & Cruwys, 2017; Seymour-Smith, Cruwys, Haslam, & Brodribb, 2017). Hence, patients should experience psychosocial remediation across many aspects of their lives as cognitive, emotional, and social-cognitive function is improved. It may be helpful to integrate treatment across these domains to foster positive interactions between cognitive, emotional, and social-cognitive functioning, which may not be possible if the deficiencies are addressed in isolation.

Despite the current study's contributions, its limitations warrant attention in future research. First, social economic statuses, such as maternal education and family income, may also influence women's social skills and depression. Therefore, future research should include covariates such as economic status to improve understanding of the relationship between social skills and depression. A second limitation is a self-reported measurement. Study follow-up should be considered in future studies due to a lack of follow-ups.

Conclusion

Our results indicate that communication skills training may have a positive impact on social functioning in severe mental disorders. If replicated, this could have important clinical implications, as effective interventions can be targeted at the treatment of persons with MDD.

Conflict of Interests

Authors have no conflict of interests.

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A Comparison of Body Dysmorphic Disorder in Students with Narcissistic, Histrionic, and Normal Personality Patterns

Masoumeh Ghanbari[1], Azar Kiamarsi[2]

1 MSc in Psychology, Department of Psychology, Ardabil Branch, Islamic Azad University, Ardabil, Iran
2 Assistant Professor, Department of Psychology, Ardabil Branch, Islamic Azad University, Ardabil, Iran

Corresponding Author: Azar Kiamarsi; ***Assistant Professor, Department of Psychology, Ardabil Branch, Islamic Azad University, Ardabil, Iran***
Email: a.kiamarsi@iauardabil.ac.ir

Quantitative Study

Abstract

Background: People with body dysmorphic disorder (BDD) have been hypothesized to have schizoid, narcissistic, and obsessional identity characteristics and to be touchy, independent, perfectionistic, and unreliable. Thus, the present study compared BDD in students with narcissistic, histrionic, and normal personality patterns.

Methods: The research method was causal-comparative and cross-sectional. The statistical population of the study included all the students of Ardabil Azad University in the second semester of the 2014-2015 academic year. Using the random cluster method, 600 students were selected and completed the Body Shape Questionnaire (BSQ-34; Cooper et al., 1987), and the narcissistic and histrionic subscales of the Millon Clinical Multiaxial Inventory-III (MCMI-III). The collected data were analyzed using univariate analysis of variance (ANOVA) in SPSS software.

Results: The results showed that there was a significant difference in BDD score between students with narcissistic, histrionic, and normal personality patterns, and the mean BDD scores in the two groups of students with narcissistic and histrionic personality patterns were higher than that in those with normal personality patterns ($P < 0.001$).

Conclusion: It can be stated that these components are among the important influencing variables in personality patterns, so it is necessary to pay attention to these components in the prevention and successful treatment of the affected people.

Keywords: Body dysmorphic disorders; Narcissism; Histrionic personality disorder; Students

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Introduction

Clinical patterns of personality represent those practical characteristics that implicitly show themselves in different areas of behavior and psychological functioning, and it covers an integrated range of psychological issues that may appear in any functional area under the influence of pathology and reflects a pattern of harmful behaviors (Sperandeo et al., 2019). The prevalence of personality disorders in the general population is between 0.5% and 2.5%, and in the clinical population it accounts for about 10% to 30% of the population; this rate is higher for clinical personality patterns (Gawda & Czubak, 2017).

People with a histrionic personality model need a great deal of attention and praise, and they behave in a dramatic and sociable way to ensure their safety (French & Shrestha, 2021). Seductive behavior is common in such patients, regardless of gender. These patients are thrill-seekers and may get into trouble with the law, abuse drugs, or act recklessly (Sadock, Kaplan, & Sadock, 2007).

People with narcissistic personality models value themselves too much and are self-satisfied, arrogant, and proud, they consider themselves entitled, and are self-centered, and if they do not know how to take part in social interactions in order to achieve their intentions, they can be submissive and obedient (Schalkwijk, Luyten, Ingenhoven, & Dekker, 2021). Narcissism has both positive and negative consequences, and some of its positive consequences include the reduction of depression, extroversion, initial agreeableness, and better performance in groups, and thirst for attention, extreme self-confidence, lack of empathy, aggression, (Papageorgiou, Denovan, & Dagnall, 2019), and social incompatibility are some of the negative consequences of narcissism (Czarna, Zajenkowski, Maciantowicz, & Szymaniak, 2021).

Although the antecedents of personality disorder in childhood are not well understood (De Fruyt & De Clercq, 2014), it has been recognized that factors such as adverse childhood events (Gunay-Oge, Pehlivan, & Isikli, 2020), negative social and environmental influences (Bozzatello, Garbarini, Rocca, & Bellino, 2021), emotional and behavioral disorders such as childhood anxiety, fear, and depression (Jiao et al., 2020), exposure to psychological stress, and personal injuries or deficiencies related to interpersonal relationships and environmental stressors in childhood and adolescence contribute to the development of personality disorders (Bozzatello et al., 2021).

Throughout life, a person internalizes an image of his/her body, and biological, environmental, and psychological factors play a role in the formation of the body image (Ramos, Moreno-Maldonado, Moreno, & Rivera, 2019). Mental health professionals have studied body image and found that some people have a constant preoccupation with their appearance, resulting in body deformity disorders (Quittkat, Hartmann, Dusing, Buhlmann, & Vocks, 2019). The findings show that 48-57% of people with body dysmorphic disorder (BDD) meet the diagnostic criteria of at least 2 types of personality disorders, 26% of them suffer from 3 types, and 4% of them suffer from 4 types of personality disorders. Cluster B and C disorders are more prevalent in these people (12-76%), and cluster A is less prevalent (10-40%) (Wever, Wever, & Constantian, 2020). The findings of Qian et al. (2021) showed that 71% of cosmetic surgery applicants receive a diagnosis of personality disorder. According to the results of previous researches, researchers are interested in the comparison of BDD among students with narcissistic personality patterns, students with dramatic personality patterns, and healthy individuals.

Methods

This study was a causal-comparative, cross-sectional research. The statistical

population of this research included all students of Islamic Azad University, Ardabil branch, Iran, in the second semester of the 2014-2015 academic year (the number of these students was about 12,000 according to the vice president of research). The research sample, according to the prevalence of personality patterns, included 600 university students which were selected through multi-stage cluster sampling method. The method was as follows: from the 4 faculties, 5 fields of study were randomly selected from each field, 1 class was randomly selected from each field of study, and the researcher randomly selected 30 people from each class. Then, the selected students were asked to complete the narcissistic and histrionic subscales of the Millon Clinical Multiaxial Inventory-III (MCMI-III) and the Body Shape Questionnaire (BSQ-34), and 3 groups were selected.

Procedure

For the two groups of narcissistic and histrionic personality patterns, students were selected who had a high score (cutoff score of 11 for the narcissistic personality pattern and cutoff score of 12 for the histrionic personality pattern with one standard deviation above the mean) on the narcissistic or histrionic subscales of the MCMI-III. In addition, the control group consisted of healthy students who had a low score on the narcissistic or histrionic subscale of the MCMI-III. After coordinating with the person in charge of education and classroom affairs, the classes were visited. Before each class, an agreement was made with the relevant professor for the researcher to speak for 20 minutes at the end of the class.

All the students present in the class were given verbal information about the research and assurance that their information would remain confidential (not writing the name and surname). After obtaining the consent of the subjects, the students were asked to complete the questionnaires. This whole process took 1 month. The present study received the permission of the Ethics Committee of Islamic Azad University of Ardabil with the code 34079. All participants provided a written informed consent.

Body Shape Questionnaire: The BSQ-34 was developed by Cooper et al. in 1987. The BSQ-34 measures concerns about body shape and has been used to assess body dissatisfaction (Cooper, Taylor, Cooper, & Fairbum, 1987). Each item is scored on a 6-point Likert scale ranging from1 to 6 [1 (never), 2 (rarely), 3 (sometimes), 4 (often), 5 (very often), and 6 (always)]. The total score of the questionnaire ranges from 34 to 204. A higher score indicates greater dissatisfaction with body shape (Cooper et al., 1987). In Iran, Sadeghi et al. (2023) reported a Cronbach's alpha value of 0.95 and a test-retest of 0.82 for the BSQ-34. The internal consistency of the questionnaire was confirmed by a Cronbach's alpha value of 0.77 in the present study.

To analyze the data, a variety of descriptive statistical techniques were employed such as examining frequency tables, and calculating the mean and standard deviation. Additionally, a univariate analysis of variance (ANOVA) was done using SPSS software (version 23; IBM Corp., Armonk, NY, USA).

Results

In the study, 60.6% of the male students and 39.4% of the females students had a narcissistic personality pattern, while 35.5% of men and 64.5% of women had a histrionic personality model. Moreover, 58.8% of the participants were men, 41.2% were women, 21.2% had narcissistic personality pattern, 32.3% had dramatic personality pattern, and 8.8% were married.

Table 1. Mean and standard deviation of body dysmorphia

Variable	Groups	Mean ± SD
Body dysmorphia	Narcissistic	96.97 ± 40.47
	Histrionic	79.19 ± 26.29
	Normal	52.03 ± 17.80

SD: Standard deviation

Furthermore, 18.2% of the participants had narcissistic personality pattern and 16.1% had histrionic personality pattern, and 20.6% were employed. In addition, 33.3% had narcissistic models, 32.3% had histrionic models, and 38.2% did not have any disorders. The mean age of the students with narcissistic and histrionic personalities, and healthy students was 22.42 ± 3.13 years, 21.58 ± 2.23 years, and 12.22 ± 1.60 years, respectively.

The mean ± SD of body dysmorphia of students with narcissistic and histrionic personality patterns, and healthy students were 96.97 ± 40.47, 79.19 ± 26.29, and 52.03 ± 17.80, respectively (Table 1).

As seen in table 2, Levene's test was not significant. Based on the default results of determining the variances in the above-confirmed variables, this test was not significant for body dysmorphia, so the use of parametric tests is unimpeded.

As seen in table 3, there is a significant difference between body dysmorphia of students with narcissistic, histrionic, and normal personality patterns ($P < 0.001$).

As seen in table 4, the mean body dysmorphia scores of students with narcissistic compared to histrionic, narcissistic compared to normal, and histrionic compared to normal personality patterns are significantly higher.

Discussion

The present study was conducted to compare BDD in students with narcissistic, histrionic, and normal personality patterns**.** The results showed a significant difference in BDD score between the two groups of students with narcissistic and histrionic personality patterns and those with normal personality pattern; the mean BDD scores in the two groups of students with narcissistic and histrionic personality patterns were higher than that of those with normal personality pattern. This finding is consistent with the results of the studies by Loron, Ghaffari, and Poursafargholi (2018), Kucur et al. (2016), and Zojaji, Arshadi, Keshavarz, Mazloum, Golzari, and Khorashadizadeh (2014). BDD, narcissistic personality disorder, and histrionic personality disorders have been reported in many studies as the most common personality disorders in patients seeking cosmetic interventions (Kucur et al., 2016; Zojaji et al., 2014). Loron et al. (2018) demonstrated that narcissistic personality trait was the most common (34.5%) followed by histrionic personality trait (27%), and obsessive personality trait was the least common personality trait (4%) in patients seeking B Botulinum toxin type A (BoNTA) injection. Patients with anxiety disorder had the highest frequency of clinical syndromes (46%) among the participants in this study, somatization had 25.5%, and dysthymia had the lowest frequency (11%). The findings of Gazize and Gharadaghi (2013), Mulkens, Bos, Uleman, Muris, Mayer, and Velthuis (2012) also showed that histrionic personality disorder is more common in people seeking cosmetic procedures than in the general population.

Table 2. Levene's test results

Variable	F	df1	df2	P-value
Body dysmorphia	1.627	2	95	0.225

df: Degree of freedom

Table 3. Results of univariate analysis of variance on body dysmorphia of students

Source of change	SS	MS	F	P-value
Between groups	34357.34	309.68	43.13	0.0001
Within group	83604.78	61.99	91.70	0.0010
Total	117962.12	293.03	21.22	0.0001

SS: Sum of squares; MS: Mean squares

Appearance-induced depression is often accompanied by negative personality traits, including low self-esteem, high self-exclusion, and shame (Graboyes et al., 2020). Those individuals with high levels of depression often choose escapism in response to social demands, since social encounters prompt feelings of conversation anxiety and social avoidance (Pauze et al., 2020). In explanation of these findings, it can be stated that self-concept plays a prominent role in character formation; people with a negative self-concept and extreme use of extreme mechanisms face the increase of the possibility of suffering from personality disorders (Bozzatello et al., 2021).

Psychodynamic theories have suggested that BPD arises from precocious distortions in object relations and characteristic patterns of attachment, thus inducing an intolerance of aloneness, hypersensitivity to environmental stimuli, expectation of detachment and hostility from other, and loss of positive memories of dyadic relationships (Bozzatello et al., 2021). In addition, people with BDD usually seek beautification treatments to solve their body image problems.

They are not aware that their problem is a psychiatric disorder and that mental health treatments are often effective for them (Tomas-Aragones & Marron, 2016). If these people are unsatisfied with cosmetic surgery and are looking for subsequent surgeries, they are most likely suffering from BDD and personality disorders in cluster B or C (Higgins & Wysong, 2018). Moreover, the results showed significant differences in BDD between the groups of students with narcissistic and histrionic personality patterns. The mean BDD scores in narcissistic students were higher than that in histrionic students. Another reason is that being excessively worried about how one looks, especially with their appearance, to the point of having a psychiatric disorder called narcissism, can influence a person's decision to have cosmetic surgery. This shows how psychological factors and personality traits play a role in choosing to have cosmetic surgery (Golshani, Mani, Toubaei, Farnia, Sepehry, Alikhani, 2016). It is believed that these patients' self-esteem relies heavily on their appearance, and when their self-esteem is low, they seek surgery (Al Ghadeer et al., 2021).

The limitation of the present research is that the sample was limited to the students of Ardabil Azad University, which limits the generalizability of the results. It is suggested that in order to generalize the results of this research project, it should be carried out in other groups as well. In the current research, due to the obstacles and the lack of facilities to conduct interviews or use the direct method, a questionnaire was used. It is suggested that clinical interviews be used along with questionnaires in future research to obtain more accurate results.

Table 4. Results of least significant difference multiple comparison test on body dysmorphia of students

Variable	Groups	Narcissistic	Histrionic
Body dysmorphia	Narcissistic	-	17.78*
	Histrionic	-17.78*	-
	Normal	-44.94*	-27.16*

Creating and expanding counseling and psychotherapy centers at the university level to help students with personality patterns, identifying the antecedents of personality patterns in childhood, and adjusting the factors that create and maintain personality patterns are also recommended.

Conclusion

The results of the present study, with the aim of comparing BDD in students with narcissistic, dramatic, and normal personality patterns, showed a significant difference in BDD between students with narcissistic, dramatic, and normal personality patterns. As a result, it can be stated that BDD is one of the important factors effective in narcissistic and dramatic personality patterns, and its management requires detailed planning.

Conflict of Interests

Authors have no conflict of interests.

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Psychometric Properties of the Iranian and German Versions of the Posttraumatic Diagnostic Scale: A Cross-Cultural Study

Zari Ahmadi[1], Farzad Goli[2], Molood Alimirzaie[3], Mehdi Ebrahimi[4], Amrollah Ebrahimi[5]

1 PhD, Health Psychologist, Behavioral Science Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
2 Department for Education, Bioethics and Philosophy of Medicine, Iranian Academy of Medical Sciences, Tehran AND Danesh-e Tandorosti Institute, Isfahan, Iran
3 Isfahan Gastroenterology and Hepatology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
4 Dental Student Research Committee, Department of Orthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran
5 Associate Professor, Department of Health Psychology, School of Medicine AND Behavioral Science Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Corresponding Author: Amrollah Ebrahimi; ***Associate Professor, Department of Health Psychology, School of Medicine AND Behavioral Science Research Center, Isfahan University of Medical Sciences, Isfahan, Iran***
Email: a_ebrahimi@med.mui.ac.ir

Quantitative Study

Abstract

Background: Reliable and valid measurement tools with strong psychometric properties are crucial in the evaluation of individuals experiencing trauma-related distress in both clinical and research contexts. Thus, this study investigated the psychometric properties of the Posttraumatic Diagnostic Scale (PDS) in Iranian and German samples.

Methods: A cross-sectional collaboration was conducted between Isfahan University of Medical Sciences in Iran and Philipp University of Marburg in Germany. The study involved a total of 1196 participants, with 364 participants from Iran and 832 participants from Germany. The participants were selected from the general population as well as individuals with mood/anxiety disorders from 2017 until 2018. The questionnaires used in this study included the Demographic Checklist, Patient Health Questionnaire (PHQ; Kroenke, Spitzer, & Williams, 2002), Screening for Somatoform Disorders-7 (SOMS-7; Rief & Hiller, 2003), and PDS (Foa et al., 1997). Factor analysis, correlations calculation, and diagnostic analysis of the data were conducted using SPSS software and R (4.3.1).

Results: Factor analysis of the PDS did not reveal a factor structure similar to previous research. Convergent validity was demonstrated by significant correlations between PDS scores and related measures. Diagnostic validity was established as the PDS effectively discriminated between individuals with mood/anxiety disorders and healthy participants. Sensitivity, specificity, and accuracy (all of them > 0.6 except for Iranian women = 0.39) revealed how accurately the test categorizes individuals in both populations. In the Iranian sample, AUC was around 70% accuracy in differentiation. The German sample's

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AUC of approximately 80% diagnostic capability between healthy and affected groups. The cutoff scores of men and women were 24 and 27 in the Iranian population, and 9 and 8 in the German population, respectively. Strong internal consistency coefficients (Cronbach's alpha > 0.91) were observed for both Persian and German versions of the PDS, confirming their reliability.

Conclusion: The study underscores the robust psychometric attributes of the Persian and German versions of the PDS, endorsing their reliability, validity, and diagnostic potential. Variations in factor structures across cultural groups emphasize the need for culturally-sensitive psychometric assessments. The PDS emerges as a valuable cross-cultural tool for diagnosing and assessing post-traumatic stress disorder (PTSD), with implications for clinical practice and research in diverse populations.

Keywords: Post-traumatic stress disorder; Cross-cultural comparison; Psychometrics; Diagnostic test

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Introduction

Post-traumatic stress disorder (PTSD) has consequences that can lead to a decrease in quality of life (QOL) and increased utilization of healthcare and social services (Bothe, Jacob, Kroger, & Walker, 2020). In the study by Kessler et al. (2017), 70.4% of participants encountered traumas during their lifetime, with an average exposure of 3.2 traumas per individual. The prevalence of PTSD varies over time and across different countries, depending on social, economic, and population factors (Ribeiro et al., 2013). Despite being a highly common disorder, it is often underdiagnosed (Silva et al., 2019). Among psychiatric disorders, PTSD has the strongest association with somatization, particularly unexplained pain. Despite the existence of numerous articles on somatization related to PTSD, this topic has received less attention in the majority of researches, which have mostly focused on the role of depression and anxiety (Stang, Brandenburg, Lane, Merikangas, Von Korff, & Kessler, 2006).

Common patterns of symptoms and causes are known between fibromyalgia, irritable bowel syndrome, chronic fatigue, and PTSD (Yehuda et al., 2015). Common neurobiological disorders in physical symptoms such as chronic fatigue, irritable bowel syndrome, fibromyalgia, and PTSD are another confirmation of the existence of general perceived stress as a common factor in many complaints (Nilsen et al., 2007). One specialized area related to trauma and PTSD is the field of maxillofacial trauma and orthodontics. Exposure to trauma prior to orthognathic treatment can be considered a risk factor for dental anxiety and PTSD symptoms (Al-Bitar & Al-Ahmad, 2017). PTSD may be associated with various medical conditions such as sleep and breathing disorders, osteoporosis, migraines, and diabetes. Facial pain, headaches, and temporomandibular joint dysfunction maybe diagnosed as initial symptoms in 88% of PTSD patients (Uhac, Kovac, Muhvic-Urek, Kovacevic, Franciskovic, & Simunovic-Soskic, 2006). Enamel and dentin erosion and loss are common findings in these patients. Dry mouth, changes in taste, glossitis, gingivitis, and periodontitis have also been observed in 15% to 25% of patients with PTSD (Tagger-Green, Nemcovsky, Gadoth, Cohen, & Kolerman, 2020). Therefore, there is a bidirectional relationship between complaints of jaw and facial symptoms in patients visiting orthodontic clinics and PTSD symptoms.

The Posttraumatic Diagnostic Scale (PDS) has found extensive application across diverse clinical and research settings; providing a dependable alternative when utilizing a structured clinical interview proves to be impractical. It has also played a crucial role in prospective treatment investigations, contributing to the establishment of cognitive behavioral therapy (CBT) as a viable approach for individuals diagnosed with PTSD (Mccarthy, 2008). Furthermore, the PDS has been increasingly utilized for diagnosing PTSD within the emergency services sector. Therefore, it is necessary to examine the psychometric properties of the instrument in the research process to determine whether the tool possesses sufficient validity and reliability for application in the mentioned contexts.

Previous systematic reviews and meta-analyses have uncovered PTSD prevalence and its impacts on different groups, from veterans to earthquake survivors (Shahmiri et al., 2023; Hosseinnejad et al., 2022), so a screening tool for PTSD is needed. The PDS, a self-report tool (Foa, Cashman, Jaycox, & Perry, 1997), consists of 17 questions about intrusion, avoidance, and hyperarousal symptoms (DSM-IV-TR criteria). Each question rates symptom frequency in the past week on a 4-point Likert scale. The initial version of the scale showed consistency, making it valid for assessing PTSD in survivors (Foa et al., 1997). The reliability and validity of the symptom items in the

PDS were first assessed in a sample of individuals who had encountered various high-impact stressors, spanning from situations specific to a wartime context (33%) to natural disasters (31%), as documented by Foa et al. (1997). These initial psychometric findings have been corroborated in subsequent studies involving different language versions of the PDS, such as Spanish (Novy, Stanley, Averill, & Daza, 2001), Bosnian (Powell & Rosner, 2005), Danish (Fuglsang, Moergeli, & Schnyder, 2004), and Arabic (Norris & Aroian, 2008). The present study was conducted to assess the psychometrics of the PDS in Iranian and German communities.

Methods

This cross-sectional study was performed on a total of 1,196 participants, with 364 individuals from Isfahan Province, Iran (comprising 91 patients diagnosed with anxiety/mood disorders and 273 healthy participants). Additionally, 832 participants from Germany were included in the study, consisting of 741 healthy individuals and 91 individuals with mood and anxiety disorders from 2017 until 2018. The study was approved by the ethics committee with the ethical code of IR.MUI.REC.1394.1.173.

Regarding the sample size for researches examining psychometric properties through factor analysis, Comrey and Lee (2013) suggest that 300 is a 'good' benchmark, while 500 is deemed 'very good'. Consequently, in this study, we employed a simple random sampling approach encompassing both healthy individuals and individuals referred to psychiatric centers. This decision was made based on the aforementioned reference and the consensus reached by both research teams, considering the available resources for data collection. The English tests were translated into Persian by a team of translators and specialists in psychology and psychiatry. They were then back-translated into English. Feedback from an English-speaking team was reviewed by a specialized panel including a psychiatrist, psychologist, and gastroenterology specialist, considering the Iranian culture. The German questionnaire was translated into Persian by a bilingual psychologist and psychiatrist, then back-translated into German. Feedback was collected, and the final Persian version was prepared. Questionnaires were given to 20 participants in booklet form to assess clarity. Simultaneously, 5 clinical psychologists and psychiatrists reviewed the items based on study goals. The feedback provided by experts and participants was discussed. The final revision of the scale, matching the German version's format, was printed in booklet form. The participants used paper or online questionnaires.

Instruments

Demographic checklist: This 28-item tool covers personal, family, social, economic, and medical history. It was created by Iranian and German researchers using focus group.

Patient Health Questionnaire: The 15-item Patient Health Questionnaire (PHQ-15) , PHQ-7, PHQ-9, and PHQ-11 were used to screen physical symptoms over 4 weeks, anxiety, depression, and eating disorders, respectively. The validity and reliability of the PHQ were assessed by (de Vroege, Hoedeman, Nuyen, Sijtsma, & Van Der Feltz-Cornelis, 2012). The PHQ-15 showed strong diagnostic utility, with sensitivity, specificity, and efficiency of 0.81, 0.65, and 0.9 at a cutoff score of 9, respectively. The PHQ-9 demonstrated an internal consistency of 0.85 and test-retest reliability of 0.87 in Chinese students (Kroenke, Spitzer, & Williams, 2002; Zhang et al., 2013).

Screening for Somatoform Symptoms-7: The Screening for Somatoform Symptoms-7 (SOMS-7) assesses somatoform symptoms and their impact on life in the past week. Rief and Hiller (2003) examined its reliability and validity in the diagnosis of

somatoform disorders based on the International Classification of Diseases 10th Revision (ICD-10) and DSM-IV criteria. Its reliability (Cronbach's alpha) was high (0.92 for clinical and 0.94 for healthy samples). The calculated validity of the SOMS-7 (correlation between factor 1 and 2 with PHQ somatic subscale) was 51 and 59, respectively (Ebrahimi et al., 2018).

Posttraumatic Diagnostic Scale: The PDS assesses symptoms resulting from stress and their consequences. The PDS is a self-report tool used extensively in clinical and research settings for screening and evaluation of PTSD. It is consistent with the symptoms of PTSD based on the DSM-IV-TR criteria and provides a measure of PTSD symptoms and severity. It assesses 17 PTSD symptoms experienced over a week. Its internal consistency (internal homogeneity) was found to be 0.92 using Cronbach's alpha, and its test-retest reliability coefficient was 0.74 (Powers, Gillihan, Rosenfield, Jerud, & Foa, 2012).

Statistical analysis: Descriptive statistics were presented using mean and standard deviation. Reliability and internal consistency were assessed using Cronbach's alpha and employing SPSS software (version 23; IBM Corp., Armonk, NY, USA) for analysis. Regarding validity assessment, Pearson correlation coefficients were calculated to examine the association between PDS scores and those of PHQ-15 and SOMS-7. The factor structure was determined through exploratory and confirmatory factor analyses using R (4.3.1). Discriminant analysis was conducted along with ROC curve analysis to assess discriminant validity, sensitivity, and specificity using R (4.3.1). Significance levels less than 0.05 were considered statistically significant.

Results

The study included 1196 participants, 364 from Iran and 832 from Germany. The average age of the Iranian and German participants was, respectively, 31.05 ± 11.45 years, and 30.65 ± 12.13 years. Women comprised 64% of Iranians and 67% of Germans. Table 1 presents demographic characteristics and a comparison between groups. No significant age or gender differences were observed. Marital status contrasted, with Iran having more singles, and Germany having more in relationships. Other marital statuses had no significant differences.

Table 1. Differences in demographic characteristics of Iranian and German participants

Variable	Iran (n = 358)	Germany (n = 781)	Test statistics (P-value)
Age (year) (mean ± SD)	31.05 ± 11.45	30.56 ± 12.132	T = 0.643 (0.520)
Gender [n (%)]			X^2 = 5.195 (0.074)
Female	233 (64)	559 (67.2)	
Male	131 (36)	265 (31.9)	
Educational level [n (%)]			X^2 = 121.073 (< 0.001)
Primary	13 (3.6)	2 (0.2)	Pairwise Z (Iran)
Secondary	9 (2.5)	25 (3)	-
Diploma	89 (24.5)	371 (44.6)	Pairwise Z (Germany)
Associate degree	28 (7.7)	66 (7.9)	-
Bachelor's degree	132 (36.3)	111 (13.3)	Pairwise Z (Iran)
Master's degree	81 (22.3)	248 (29.8)	Pairwise Z (Germany)
Marital status [n (%)]			X^2 = 68.024 (< 0.001)
Single	189(51.9)	381(45.8)	Pairwise Z (Iran)
In a relationship	30(8.2)	242(29.1)	Pairwise Z (Germany)
Married	107(29.4)	154(18.5)	Pairwise Z (Iran)
Divorced	8 (2.2)	28 (3.4)	-
Separated	4 (1.1)	12 (1.4)	-
Widowed	3 (0.8)	10 (1.2)	-
Single independent from family	4 (1.1)	4 (0.5)	-

SD: Standard deviation

Education showed variations, with Iran having more elementary and undergraduate degrees, and Germany having more diploma and master's degrees. Other education levels showed no significant disparities.

Validity

Structural Validity: Exploratory factor analysis in the German sample revealed 2 factors. The first factor (Reexperiencing/Avoidance) explained 24.5% of variance, and both factors combined explained 46.6% of variance. In the Iranian sample, 3 factors emerged, explaining 50.41% of variance. Factor loadings, eigenvalues, and reliability indices are presented in table 2.

A meta-analysis (Yufik & Simms, 2010) of the structural analysis of the PDS scale indicated that 2 four-factor models (King, Leskin, King, & Weathers, 1998; Simms, Watson, & Doebbeling, 2002) have been predominantly used in most studies (Yufik & Simms, 2010); therefore, the four-factor model was fitted to the data using exploratory factor analysis and varimax rotation, and the results are presented in table 3. Item 8 in both the German and Iranian samples does not have a factor loading above 0.4 in any factor, and item 10 also has significant factor loading in 3 factors in the Iranian population. Table 3 shows that the arrangement of items in the factors is not exactly the same as either of the two models of King et al. (1998) and Simms et al. (2002).

Fit indices for the DSM–IV–TR-based, King et al. (1998), and Simms et al. (2002) models for the Iranian sample are CFI = 0.881, 0.918, and 0.888 (P < 0.95), RMSEA = 0.090, 0.076, and 0.088 (P > 0.06), and SRMR = 0.065, 0.058, and 0.063 (P < 0.08), and for the German sample are CFI = 0.898, 0.919, and 0.929 (P < 0.95), RMSEA = 0.084, 0.076, and 0.071(P > 0.06), SRMR = 0.052, 0.047, and 0.047(P < 0.08), respectively. Only the SRMR is suitable for all three models in both Iranian and German communities. The other fit indices do not meet the criteria of Hu and Bentler (1999), and in the German community, the fit indices are somewhat close to the appropriate model-fit cut point (Hu & Bentler, 1999). After removing items 8 and 10, the model fit was re-evaluated, but none reached acceptable thresholds.

Table 2. Explanatory factor analysis with 3 factors in Iranian and German populations

Items	Iran			Germany		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
1	0.709	0.287	0.213	0.756	0.304	0.055
2	0.605	0.275	0.121	0.498	0.123	0.182
3	0.616	0.220	0.198	0.632	0.155	0.148
4	0.778	0.189	0.196	0.779	0.317	0.122
5	0.591	0.247	0.216	0.650	0.268	0.278
6	0.556	0.130	0.159	0.513	0.291	0.260
7	0.531	0.118	0.238	0.501	0.267	0.187
8	0.404	0.208	0.046	-	-	-
9	0.437	0.136	0.420	0.475	0.409	0.168
10	0.343	0.327	0.546	0.297	0.578	0.178
11	0.262	0.327	0.848	0.282	0.648	0.258
12	0.287	0.440	0.543	0.239	0.715	0.112
13	0.246	0.560	0.229	0.277	0.602	0.240
14	0.209	0.624	0.318	0.182	0.495	0.329
15	0.189	0.716	0.284	0.262	0.600	0.296
16	0.220	0.731	0.130	0.294	0.390	0.668
17	0.249	0.553	0.086	0.275	0.382	0.697
Eigenvalue	7.223	1.656	1.105	7.300	1.460	0.943
Total variance explained	0.218	0.386	0.504	22.21	41.95	51.81
Alpha based on DSM model	0.852	0.814	0.829	0.841	0.817	0.837
Omega based on DSM model	0.890	0.885	0.883	0.938	0.942	0.943

Table 3. Explanatory factor analysis with four factors in Iranian and German populations

Items	Iran				Germany			
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 1	Factor 2	Factor 3	Factor 4
1	0.705				0.731			
2	0.660				0.513			
3	0.543				0.635			
4	0.716				0.768			
5	0.540				0.648			
6		0.948			0.498			
7		0.403			0.479			
8								
9	0.474		0.442		0.455	0.414		
10			0.565			0.639		
11			0.834			0.621		
12			0.547	0.439		0.471	0.503	
13				0.561			0.630	
14				0.628			0.479	
15				0.719			0.741	
16				0.727				0.700
17				0.550				0.656
Eigenvalue	7.223	1.656	1.105	0.905	7.485	1.451	0.964	0.848
Total variance explained	0.178	0.346	0.465	0.552	0.204	0.33	0.437	0.527
Alpha k model	0.852	0.692	0.793	0.829	0.841	0.704	0.777	0.837
Omega k model	0.904	0.778	0.907	0.892	0.956	0.912	0.957	0.954
Alpha s model	0.852	0.692	0.853	0.724	0.841	0.704	0.854	0.826
Omega s model	0.899	0.773	0.924	0.790	0.958	0.912	0.972	0.952

Unlike the study by Hearn, Ceschi, Brillon, Furst, and Van der Linden (2012), these models did not fit well with the data.

Convergent Validity: The scale's correlation with the SOMS-7, PHQ was assessed. Significant correlations (1% level) were found in both Iranian and German samples, confirming validity. The correlation of the PDS scores with PDS life function, PHQ-15, PHQ-9, PHQ-7, and SOMS7 in the Iranian sample was equal to -0.577, 0.451, 0.680, 0.584, and 0.508 and in German sample was -0.579, 0.443, 0.702, 0.641, and 0.599, respectively.

The discrimination coefficient is one of the psychometric properties of the items, and a value close to 0 indicates inadequate discrimination. A higher coefficient illustrates the item is more accurate distinction between low and high scores. Item 8 in the German sample lacks discrimination, but other items were effective in distinguishing. Removing individual items did not significantly enhance Cronbach's alpha, indicating acceptable internal consistency within the scale.

Diagnostic Validity: The scores of two groups of normal and people who had a definite diagnosis of emotional disorders (mood and anxiety) were analyzed separately for Iranian and German samples. After deleting the missing data, the Iranian sample included 112 (37.2%) men and 189 (62.8%) women, with 219 (72.8%) categorized as healthy and 82 (27.2%) with mood and anxiety disorders. The German sample included 198 (33.4%) men and 395 (66.6%) women, with 525 (88.5%) classified as healthy and 68 (11.5%) with mood and anxiety disorders. The cutoff point package in R established gender-specific cutoff points for the Iranian and German samples. Iranian men and women had a cutoff score of 24 and 27, respectively, and German men and women had a cutoff score of 9 and8, respectively. In the Iranian sample, sensitivity, specificity, accuracy, and AUC was 0.615, 0.872, 0.812, and 0.759 for men, and 0.393, 0.872, 0.730, and 0.682 for women, respectively.

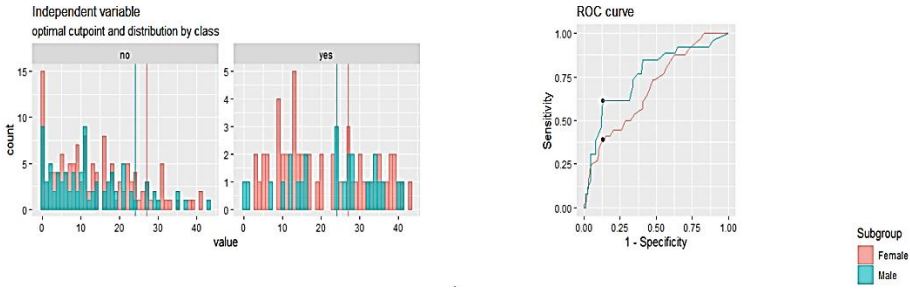

Figure 1. ROC curve for the Iranian sample

In the German sample, sensitivity, specificity, accuracy, and AUC was 0.645, 0.886, 0.848, and 0.796 for men, and 0.622, 0.872, 0.848, and 0.796 for women, respectively. These metrics reveal how accurately the test categorizes individuals in both populations. Higher values suggest better test performance.

The ROC curve for the Iranian sample and the distribution plot of scores categorized by healthy and affected individuals with the optimal cutoff point can be observed in figure 1.

Figure 2 shows the ROC curve for the German sample.

Reliability

The scale showed strong internal consistency with Cronbach's alpha of 0.918 for the German sample and 0.914 for the Iranian sample. Omega coefficients were also used for assessment, with values above 0.7 indicating good consistency (McDonald, 1999). The reliability coefficients for each factor are presented in tables 2 and 3.

Discussion

In this study, we aimed to examine the reliability and validity of the PDS in Iranian and German populations. The comparison of internal consistency between the Persian and German versions of the PDS yielded robust internal consistency coefficients. Specifically, the Iranian and German population exhibited excellent internal consistency coefficients. These findings align with the internal consistency reported by Foa et al. (1997) and (Griesel, Wessa, and Flor (2006) further affirming the high reliability of both the Iranian and German versions of the scale.

Factor analysis in the German sample extracted 2 underlying factors that account for 46.4% of the variance. The first factor is "Reexperiencing/Avoidance," and the second factor is "Emotional Numbing/Hyperarousal, Hypervigilance/Exaggerated Startle Response." In the Iranian population, exploratory factor analysis revealed 3 underlying factors that explain 50.41% of the variance.

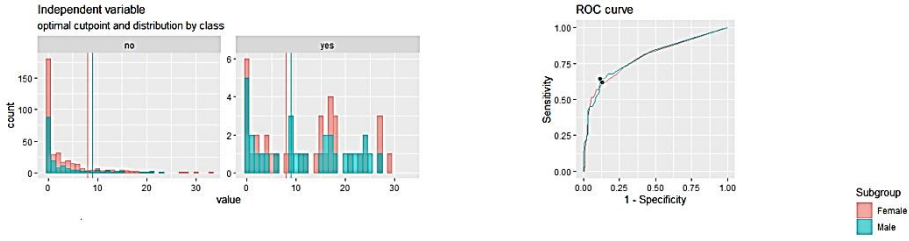

Figure 2. ROC curve for the German sample

Items 13 to 17 in the Iranian sample are grouped into 1 factor representing hyperarousal syndrome according to the DSM-IV-TR criteria. Items 9 (Interest) and 12 (Hope) load on more than 1 factor with a factor loading greater than 0.4. In the German sample, item 8 (dissociative amnesia) does not significantly load on any factor. Furthermore, examining the diagnostic coefficient of the items shows that item 8 is not a suitable item for distinguishing between low and high levels of PTSD symptoms in the German sample. The research by Griesel et al. (2006) demonstrated that item 8 does not differentiate well between PTSD patients and trauma survivors without PTSD. Psychometric issues regarding item 8 were also reported in the study by King et al. (1998). Merckelbach, Dekkers, Wessel, and Roefs (2003) suggested that the content of item 8 may represent dissociative amnesia, which may not be a key feature in diagnosing PTSD. The scale items in the German population have a more appropriate diagnostic coefficient compared to the Iranian population, meaning they can effectively differentiate between groups with low and high levels of symptoms.

The meta-analysis of the structural analysis of the PDS scale conducted by Yufik and Simms (2010) highlighted 2 prevailing four-factor models (King et al., 1998; Simms et al., 2002). However, our study's fit indices for the DSM-IV-TR three-factor model and the 2 four-factor models did not substantiate factor structures identified in previous researches in Iranian and German populations. Intriguingly, Hearn et al (2012) observed satisfactory fit indices for these models in the context of the French version of the PDS. It is worth noting that Foa et al. (1997) did not report the factor structure of PTDS, while Buckley, Blanchard, and Hickling (1998)questioned the validity of the three-factor structure. Moreover, the analysis of the PDS factor structure in a German sample by Griesel et al. (2006) diverged from the DSM-IV-TR framework, encompassing reexperiencing and active avoidance symptoms, emotional numbness and hyperarousal symptoms, and a third factor featuring only 2 items (exaggerated startle response and hypervigilance). Notably, item 13 (sleep problems) exhibited similar loadings across all 3 factors.

The significant correlation of PDS scale with patient health questionnaire (PHQ-13, PHQ-7, PHQ-9) is 0.68, 0.58, 0.45 for Iranian society and 0.7, 0.64 and 0.44 for the German community (PHQ-13, PHQ-7, and PHQ-9). These correlations with the PHQ-13, PHQ-7, and PHQ-9 were 0.68, 0.58, and 0.45 for the Iranian population, and 0.70, 0.64, and 0.44 for the German population, respectively, underscoring the satisfactory concurrent validity of the PDS scale. A similar pattern emerged in the correlations of the PDS scale with the SOMS-7 in the Iranian and German populations, indicating concurrent validity.

Interestingly, the translation of the PDS-5 into German, as well as its psychometric evaluation, revealed significant correlations with the PHQ-9 (rho = 0.81) and the PHQ-15 (rho = 0.65) (Wittmann et al., 2021). Similarly, the assessment of the convergent validity of the Bangla PCL-5 demonstrated a significant positive correlation with the PHQ-9 ($r = 0.69$; $p < 0.001$) (Islam et al., 2022).

The PDS effectively distinguished anxious depressive patients from healthy individuals in both communities. The cutoffs for men and women were 24 and 27 in the Iranian population, and 9 and 8 in the German population, respectively. Sensitivity was, respectively, 0.62 and 0.39 for men and women in the Iranian population and 0.64 for both men and women in the German population. Specificity was around 0.87 for Iranian men and women, 0.85 for Germans. This suggests the Iranian version might be less effective for female patients, while German metrics are robust. Griesel et al. (2006) reported a sensitivity of 0.64 and specificity of

0.75, whereas Foa et al. (1997) reported a sensitivity of 0.89 and specificity of 0.62.

In the present study, there was no opportunity to retest the participants for the purpose of assessing the test-retest reliability; therefore, the questionnaire's stability over time was not investigated. It is recommended that in future researches, provisions be made for retesting participants in order to calculate the test-retest reliability of this scale.

Conclusion

In summary, our study highlights the strong psychometric properties of the Persian and German versions of the PDS in their respective communities. With reliable factorial structure and discriminant validity, these versions are valuable for PTSD screening, diagnosis, and clinical management.

Conflict of Interests

Authors have no conflict of interests.

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Structural Equation Model of Bulimia Nervosa Based on Mindfulness and Anxiety Sensitivity in Obese Women: The Mediating Role of Body Image and Psychosomatic Symptoms

Shohreh Mortezaei Shemirani[1], Ali Talaei[2], Golnaz Ranjbar[3], Elham Taheri[4]

1 PhD, Department of Health Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran
2 Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
3 Assistant Professor, Department of Nutrition, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
4 PhD, Department of Clinical Psychology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Corresponding Author: Ali Talaei; ***Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran***
Email: talaeia@mums.ac.ir

Quantitative Study

Abstract

Background: Today, obesity is considered one of the most important and common problems in the field of world health, found to have a significant coexistence with many physical diseases and mental problems. The present study aimed to explain the model of bulimia nervosa based on the components of mindfulness and anxiety sensitivity with the mediating role of body image and psychosomatic symptoms in obese women.

Methods: The statistical population in this research included all patients diagnosed with obesity in the treatment centers of Tehran, Iran, in 2021. The research sample included 384 women diagnosed with obesity followed by removing the distorted questionnaires leading to 357 statistically analyzed samples. The questionnaires used in this research were the Five Facet Mindfulness Questionnaire (FFMQ), the psychosomatic disorders questionnaire, the self-body questionnaire, the Anxiety Sensitivity Index-Revised (ASI-R), and the Binge Eating Scale (BES), which were completed by the subjects following the principles of ethics in the research. The findings were statistically analyzed using path analysis and descriptive and inferential indicators. Data analysis was done using the SPSS software, AMOS software, and other appropriate tests.

Results: The model had a favorable fit in terms of statistics, and it was also found that psychosomatic symptoms as a mediating variable could not have provided a significant explanation for the prediction paths of bulimia nervosa based on anxiety sensitivity and component mindfulness ($P < 0.01$).

Conclusion: In the treatment of obese people with bulimia nervosa, paying attention to psychological and emotional indicators can be of great importance.

Keywords: Bulimia nervosa; Mindfulness; Anxiety; Body image; Psychosomatic; Obesity

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Introduction

Eating disorders are one of the worrisome factors in public health, whose rates have been increasing rapidly since the 1970s (Hoek & van Hoeken, 2003). The most common eating disorders seen in women are anorexia nervosa and bulimia nervosa (Wood, 2004). It is estimated that disrupted overeating using self-reporting occurs in approximately 30% of treatment-seeking obese individuals, although when diagnosed by examining specialists it seems that the prevalence rate will decrease to 10%-15% (Stancard, 2002). Obese people may be afflicted by any type of mental disorder and various chaoses in life can be attributed to their obesity (Mousavian, Moradi, Mirzaei, Shidfar, Mahmoudi Kahrizi, & Taheri, 2010). It is believed that women who are obese and overweight suffer from depression and severe anxiety because of their obesity and body deformity (Eagleton, 2011).

One of the important components related to stress and anxiety in obese people is anxiety sensitivity (Fergus et al., 2018). Anxiety sensitivity is a construct of individual differences in which a person fears physical symptoms associated with anxiety arousal (increased heart rate, shortness of breath, dizziness) coming from the belief that these symptoms potentially lead to social, cognitive, and physical consequences (Hearon, Quatromoni, Mascoop, & Otto, 2014). It is believed that even the fear that others will observe the symptoms of anxiety causes social anxiety to intensify (Carleton, Collimore, & Asmundson, 2010). Currently, many clinical psychologists use mindfulness as a very effective non-pharmacological tool to reduce stress and anxiety. Accordingly, it has been determined that mindfulness can be used in the therapy of many physical, psychological, and mental problems, chronic pains, and stress with a tremendous effect. Numerous kinds of research have shown the effectiveness of mindfulness-based interventions on binge eating (Miller et al., 2021; Kristeller & Wolever, 2014; Katterman, Kleinman, Hood, Nackers, & Corsica, 2014). Researchers believe that at high levels of mindfulness and acceptance, people notice their psychological arousals (feelings and thoughts) without making any attempt to avoid or control them, which consequently reduces the impact of these thoughts and feelings on their behavioral performance (Noorian et al., 2014).

One of the aspects of body image is dissatisfaction with the negative evaluation of body size, shape, and weight which refers to the individual's mentalities regarding the difference between the real body and the ideal body (Eagleton, 2011; Quoted from Sabiston, Pila, Vani, & Thogersen-Ntoumani, 2019). Considering that stress factors can lead to a decrease in the level of mental health of people and the occurrence of disorders (Pitron, Alsmith, de Vignemont, 2018), it can be assumed that psychosomatic disorder is also one of the consequences of not controlling these conditions. In fact, in addition to what is expected in psychosomatic disorders in which the problems arise from neurological and biochemical disturbances, the role of psychological distress affecting the physiological function of the body should be also taken seriously into consideration (Gatchel, Baum, & Lang, 2021). However, any type of physical illness resulting from this disorder has a psychological and emotional background and also these disorders include interactions between the mind and the body in which the brain affects a person's consciousness indicating the existence of a serious problem in the body (Desai, Kale, Shah, & Rana, 2018). Moreover, some mental or brain mechanisms lead to minor or undetectable changes in the nervous system resulting in these diseases (Mahmoudi & Malekshahi Far, 2012).

According to the above, it seems that there is some kind of chain of connection between emotional stressors and the cognitive system of people in obese individuals.

As obesity has been noticed as a disorder in the modern world with high prevalence, it is necessary to investigate the antecedents of this disorder in detail. Therefore, the purpose of this research is to explain obesity based on anxiety sensitivity and mindfulness components with an emphasis on the mediating role of body image and psychosomatic symptoms in obese women.

Methods

The method of the current research was descriptive and correlational. The statistical population in this research included all patients diagnosed with obesity in the treatment centers of Tehran, Iran, in 2021. Among the patients who met the study criteria and could participate in the study, 384 women diagnosed with obesity and in the age group of 15 to 30 years were selected based on the targeted sampling. The inclusion criteria consisted of receiving a diagnosis of bulimia nervosa by a nutritionist, a diagnosis of obesity based on body mass index (BMI) (≥ 30) according to expert opinion, having a minimum age of 18 years and a maximum age of 30 years, no drug addiction, lack of pregnancy, and lack of physical diseases such as malignant tumors or cancer that interfere with the research process. The exclusion criteria also included the following: diagnosis of acute personality disorders and mood and anxiety disorders such as depression and obsession, which are assessed using clinical interviews and the Symptom Checklist-90 (SCL-90) questionnaire in the screening process, unwillingness to complete questionnaires, and getting pregnant. Sample members completed bulimia nervosa questionnaires, component scale mindfulness, anxiety sensitivity questionnaire, body image scale, and psychosomatic symptoms questionnaire. Of course, for those who could not complete the questionnaire for any reason, the questionnaire was completed by the researcher himself.

Five Facet Mindfulness Questionnaire (FFMQ): FFMQ has been made by Baer et al. (2006) to examine multiple dimensions of mindfulness. This scale has 39 questions and is on a Likert scale from 1 (never) to 5 (always). This questionnaire has 5 subscales, which include being non-reactive, describing, observing, acting on alertness, and being non-judgmental. The validity and reliability of this scale have been investigated in studies (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). In addition, this scale has been investigated in Iran by Sajjadian, Neshat Doost, Molvi, & Maroufi (2007). The results of their study showed that the reliability of the crumb scales of this questionnaire was reported between 0.55 and 0.83 using Cronbach's alpha and 0.80 for its total score. In addition to that, in this questionnaire, there is a relationship between personality traits, psychological well-being, emotional intelligence, depression, life satisfaction, etc., which indicates the validity of the questionnaire (Sajadian, et al, 2007).

Questionnaire of psychosomatic disorders: To measure psychosomatic symptoms, the questionnaire of psychosomatic symptoms was used in a non-clinical setting. This is a self-report questionnaire which measures the intensity of psychosomatic symptoms experienced by the individual; it has 20 items that are answered on a 5-point Likert scale. The internal reliability of this questionnaire in different studies and with different samples has been mentioned between 0.70 and 0.93 (, 2000). In Iran, the reliability using Cronbach's alpha method was 0.89 and its factorial validity has been reported as suitable (Babamiri, Zoheri, Nisi, Arshadi, & Shahroie, 2015).

Self-Body Questionnaire: This questionnaire is a 46-item scale used by Cash et al. (1987) to evaluate the imagination of the body. The final form of this test was prepared in 1997. This scale has 6 evaluation subscales including attention to

appearance, assessment of fitness, the tendency to fit, preoccupation with excess weight, and satisfaction with body areas. This test is graded according to a 5-point Likert scale. Cash (2016) examined the internal consistency and validity of this scale revealing that based on Cronbach's alpha coefficient, the range from 0.83 to 0.92 indicates the favorable validity of this scale. In the same manner, in Iran, the internal consistency coefficients using the retest method indicate the desired reliability of this scale (Parizadeh, Hasan Abadi, Mashhadi, & Taghizadeh Kermani, 2011).

Anxiety Sensitivity Index-Revised (ASI-R): This scale has been designed by Taylor and Cox in 1998 to assess the degree of fear of anxiety symptoms and consequences. This tool is a 36-item self-report scale. The answer options for each question are very little, little, medium, much, and very much which, based on the Likert scale, are numbered from 0 to 4, respectively. The ASI-R is a four-factor order structure. These factors are: 1) fear of respiratory symptoms, 2) fear of anxiety reactions visible in public, 3) fear of cardiovascular symptoms, and 4) fear of cognitive disinhibition. In the study of internal homogeneity of this scale, Taylor and Cox have reported alpha coefficients between 0.83 and 0.94. In general, studies show that the ASI-R has good validity and reliability (Moradi Menesh, 2016). The validity of this index was calculated based on the three methods of internal similarity, resampling, and classification, which for the whole scale were 0.93, 0.95, and 0.95, respectively. Moreover, the validity coefficients of the subscales based on the methods of internal consistency, retesting, and classification were calculated ranging between 0.82 and 0.91, 0.92 and 0.96, and 0.76 and 0.90, respectively. Validity of the revised index was carried out through simultaneous implementation with the "revised list of 90-syndrome anxiety sensitivity questionnaire" which resulted in a correlation coefficient of 0.56. Correlation coefficients between subscales of the ASI-R with the total score were satisfactory and varied between 0.74 and 0.88. The correlation between the subscales varied also between 0.40 to 0.68 (Moradi Menesh, 2016).

Binge Eating Scale (BES): The scale was designed by Gormally et al. (1982) to measure the severity of overeating in obese people. This scale consists of 16 items and its articles consist of three or four sentences. Subjects are asked to choose a sentence that describes them best. Items are graded from zero to three, and the total score varies from zero to 46. A score of 16 indicates the presence of binge eating disorder (BED) and a score higher than that indicates the severity of binge eating. English, Portuguese, and Italian versions of this scale have satisfactory validity, sensitivity coefficient, and psychometric properties. A study of psychometric properties (Mottabi, Molodi, Dejkam, and Omidvar) investigated the Iranian version of the BES. They reported the validity of this scale as 0.72 using the retest method. They also obtained Cronbach's alpha coefficient of 0.85.

Ethical considerations including coordinating and obtaining permission to enter the environment, explaining the purpose of the research and the method of completing the questionnaires, participants' right to participate in the study or refuse, assuring participants of confidentiality of personal information, and obtaining informed consent to participate in the research were all well done. Data analysis was done using the SPSS software (version 22, IBM Corporation, Armonk, NY, USA), AMOS software, and other appropriate tests.

Results

The purpose of this research was to explain obesity based on anxiety sensitivity and mindfulness components, emphasizing the mediating role of body image and

psychosomatic symptoms in obese women. In this section, descriptive and inferential findings are presented separately.

82 (23%) subjects had mild obesity, 151 (42%) had severe obesity, 76 (21%) had difficult obesity, and 48 (14%) ones had super obesity. As it is shown, four levels of obesity were investigated. It is well indicated that a higher percentage of the sample members were afflicted with severe obesity while a smaller percentage suffered from hyper-obesity. In terms of employment status, 106 (30%) were freelancers, 157 (44%) were governmental employees, and 94 (26%) were housewives. The results indicated that a large part of the research sample had a governmental job and a smaller percentage were housewives.

The highlighted boxes in table 1 indicate the non-significance of the correlation of that subscale with the corresponding component. Fitness of the proposed model is based on the chi-square (χ^2) index, comparative fit index (CFI), goodness of fit index (GFI), adjusted GFI (AGFI), and root mean square error of approximation (RMSEA). The results of structural equations were as follows: $\chi^2 = 78.047$, χ^2/degree of freedom (df) = 1.773, RMSEA = 0.047, GFI = 0.924, AGFI = 0.918, CFI = 0.908 (P = 0.001). The χ^2/df is less than 2.5 and the RMSEA value is close to zero. Besides, the values of GFI, AGFI, and CFI are close to 1.

Table 2 shows the amount of direct, indirect, and total effects of each structure compared to the variables defined in the path. In this regard, the direct and indirect effects have been investigated, and according to the highlighted items indicating the paths that could not be considered statistically significant, it was found that psychosomatic symptoms in total did not have many paths to explain predictor variables as statistically significant paths and body image also as the title of a mediating variable did not show a significant path for only two subscales.

Table 1. Correlation of variables and subscales included in the research model (Part I)

Variables	1	2	3	4	5
Body image	1				
Being non-reactive	0.25**	1			
Description	0.28**	0.21**	1		
Observation	0.45**	0.22**	0.27**	1	
Act with awareness	0.11*	0.32**	0.23**	0.27**	1
Non-judgmental	0.29**	0.22**	0.32**	0.32**	0.22**
Mindfulness total score	0.41**	0.72**	0.86**	0.85**	0.80**
Psychosomatic disorders	-0.43**	-0.26**	-0.33**	-0.28**	-0.34**
Fear of respiratory symptoms	-0.35**	0.17*	-0.42**	-0.34**	-0.41**
Fear of public reactions	-0.26**	-0.29**	-0.26**	-0.48**	-0.19*
Cardiovascular symptoms	-0.43**	-0.35**	-0.53**	-0.25**	-0.27**
Fear of cognitive disinhibition	-0.14*	-0.24**	-0.15*	-0.33**	-0.11*

Table 1. Correlation of variables and subscales included in the research model (Part II)

Variables	6	7	8	9	10	11	12
Body image							
Being non-reactive							
Description							
Observation							
Act with awareness							
Non-judgmental	1						
Mindfulness total score	0.81**	1					
Psychosomatic disorders	-0.24**	-0.33**	1				
Fear of respiratory symptoms	-0.36**	-0.44**	0.34**	1			
Fear of public reactions	-0.35**	-0.34**	0.46**	0.37**	1		
Cardiovascular symptoms	-0.29**	-0.45**	0.26**	0.81**	0.85**	1	
Fear of cognitive disinhibition	-0.35**	-0.18*	0.33**	0.82**	0.85**	0.86**	1

Table 2. Direct, indirect, and total effects for explaining the model

Variable	Direct effect	Indirect effect	P-value
Being unresponsive to body image	0.238	0.128	0.123
Description of body image	0.547	0.395	< 0.001
Observing body image	0.381	0.235	0.021
Practicing body image awareness	0.324	0.262	0.014
Being non-judgmental about body image	0.387	0.239	0.011
Fear of respiratory signs of body image	0.310	0.238	0.035
Fear of public reactions to body image	0.417	0.284	0.020
Fear of cardiovascular symptoms of body image	0.439	0.373	0.017
Fear of cognitive disinhibition of body image	0.299	0.185	0.138
Being unresponsive to psychosomatic symptoms	0.288	0.204	0.112
Description of psychosomatic symptoms	0.160	0.091	0.176
Observing psychosomatic symptoms	0.247	0.181	0.067
Practicing awareness of psychosomatic symptoms	0.132	0.054	0.037
Being non-judgmental about psychosomatic symptoms	0.241	0.185	0.048
Fear of respiratory symptoms of psychosomatic symptoms	o.128	0.123	0.095
Fear of public reactions to psychosomatic symptoms	0.161	0.106	0.108
Fear of cardiovascular symptoms of psychosomatic symptoms	0.236	0.197	0.043
Fear of cognitive disinhibition of psychosomatic symptoms	0.181	0.099	0.124
Being unresponsive to bulimia nervosa	0.256		0.041
Description of bulimia nervosa	0.260		0.038
Observing bulimia nervosa	0.248		0.032
Practicing alertness to bulimia nervosa	0.264		0.041
Being non-judgmental about bulimia	0.244		0.049
Fear of respiratory symptoms of bulimia	0.296		0.010
Fear of public reactions to bulimia	0.288		0.025
Fear of cardiovascular symptoms of bulimia	0.262		0.027
Fear of cognitive disinhibition of bulimia nervosa	0.273		0.011
Body image to bulimia nervosa	0.327		< 0.001
Psychosomatic symptoms of bulimia nervosa	0.231		0.024

Discussion

The purpose of this research was to explain obesity based on anxiety sensitivity and mindfulness components, emphasizing the mediating role of body image and psychosomatic symptoms in obese women. The results obtained from the data analysis showed that, in general, the researcher's model had a good statistical fit and it was also found that body image and psychosomatic symptoms were significant explanations to predict overeating in obese women, but in detail and based on anxiety sensitivity components and mindfulness subscales, psychosomatic symptoms could not be a significant mediator for predicting pathways of bulimia nervosa.

In explaining this finding, it can be said that what is significant in the mechanism of the effect of stress is that as a result of experiencing stress and the disruption of the cognitive balance, we witness the occurrence of some psychological and physiological reactions in people, which can be seen as both cognitive/emotional as well as behavioral/physiological problems. In other words, when experiencing stress, the human body is ready for quick action by releasing hormones that increase the state of care and concentration (Parsaei, 2013); meanwhile, if the source of stress is not eliminated, the remaining stress hormones in the body will make the person at risk of a wide range of physical diseases such as obesity, gastrointestinal disorders, cardiovascular disorders, skin problems, and psychological disorders such as anxiety attacks and depression (Koolhaas et al., 2011). It is well known that in times of stress, some people unconsciously and automatically look for ways to get rid of it, in which

the first behavior is usually eating. Based on the stimulus-oriented model, psychological pressure is considered an external factor by which and based on the mental capacities and the level of sensitivity towards the sources of anxiety, people can cope and stand against a certain amount of mental pressure (Hernigou, Koulischer, & Maes, 2017). Hence, the person's coping with stress, regarding the individual's situation and abilities, includes confrontations based on the projection of emotions and the reduction of negative emotions through activities such as overeating (Parsaei, 2013). In other words, in people suffering from eating disorders and any problems related to obesity and overweight, the way of coping with psychological pressure in an incompatible way and as opposed to solving conflicts can lead to the aggravation of disorder symptoms, especially in the field of eating disorders (Romero-Martinez & Moya-Albiol, 2017). Mason et al. (2018), Paszynska et al. (2020), and Moreno-Encinas et al. (2020) also reported similar results. Persons who show high anxiety sensitivity experience more psychological disturbance due to the existence of anxiety backgrounds, which can cause interpersonal conflicts and ultimately problems in social relations (Gerhart, Baker, Hoerger, & Ronan, 2014; McEvoy, Burgess, Page, Nathan, & Fursland, 2013). Moreover, knowing all these, people with BED have serious weaknesses in expressing and regulating their emotions, which affects the formation and continuation of their disorder (Whiteside, Chen, Neighbors, Hunter, Lo, & Larimer, 2007). These people often take refuge in overeating for short-term relief from their painful emotions (Aldao, Nolen-Hoeksema, & Schweizer, 2010).

Conclusion

One of the limitations of this research is the presence of disturbing variables such as the marital status and employment of the sample. Besides, the limitation of this research to the city of Tehran requires caution in generalizing the results to other cities. Researchers interested in the field of BED are suggested to investigate the role of metacognitive variables and antecedent factors such as defense mechanisms and personality traits. The results of this research can be beneficial in developing intervention protocols for the treatment of obesity.

Conflict of Interests

Authors have no conflict of interests.

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The Effectiveness of Acceptance and Commitment Therapy on Depression and Mental Health of Patients with Migraine

Saeedeh Falahi-Zarandi[1], Mozhgan Ebrahimi[2], Pooran Tavakoli-Torghi[3], Khadijeh Afarazandeh[4], Negin Khayat-Hesari[5]

1 Department of Psychology, Zarand Branch, Islamic Azad University, Zarand, Iran
2 Department of Psychology, Lahijan Branch, Islamic Azad University, Lahijan, Iran
3 Department of Psychology, Central Tehran Branch, School of Welfare, Islamic Azad University, Iran
4 Department of Psychology, Payame Noor University, Bushehr, Iran
5 Department of Psychology, Payame Noor University, South Tehran Branch, Tehran, Iran

Corresponding Author: Negin Khayat-Hesari; ***Department of Psychology, Payame Noor University, South Tehran Branch, Tehran, Iran***
Email: dr.hesaripharm@gmail.com

Quantitative Study

Abstract

Background: In patients with migraine, depression is associated with decreased mental health. However, behavioral interventions have rarely been investigated. The present study examines the effectiveness of acceptance and commitment therapy (ACT) on depression and mental health of patients with migraine.

Methods: The study was experimental, with a pre-test, a post-test, and a control group. The statistical population of this research was all people having migraine who visited Mehr and Tabib clinics in Tehran, Iran, from October to November 2022. In this study, 30 eligible patients were selected and invited to take part purposefully. Researchers randomly divided the participants into two groups: ACT according to the protocol of Timmerby et al. (n = 15) and a control group (n = 15). Eight 90-minute weekly counseling sessions were provided to the experimental group, while the control group received no intervention. Beck Depression Inventory-Second Edition (BDI-II) and the General Health Questionnaire (GHQ) were administered. SPSS software conducted a multivariate analysis of covariance (MANCOVA).

Results: The results of ACT intervention had a positive and significant effect on depression ($P < 0.001$, $F = 28.49$, $\eta^2 = 0.496$) and mental health ($P < 0.001$, $F = 33.26$, $\eta^2 = 0.543$) in patients with migraine. The highest effect size ($\eta^2 = 0.54$) was associated with mental health, which shows that 54% of the variance in the mental health variable between the experimental and control groups was because of the ACT.

Conclusion: ACT reduced depression and increased mental health in patients with migraine. Therefore, ACT is recommended for these patients to improve their mental health and quality of life (QOL).

Keywords: Acceptance and commitment therapy; Depression; Mental health; Migraine; Depression

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Introduction

Migraine headache is one of the most common neurological disorders. In addition to being the second most disabling disease in the world, it affects about 10% of the world's population, with an exceptionally high prevalence among women, students, and urban residents (Woldeamanue & Cowan, 2017). There are enormous social and economic ramifications associated with migraine. The disease affects around a billion people around the world. The Global Burden of Diseases (GBD) 2019 report states that it is the most common reason for job incapacity among young women and the second most common cause of disability globally (Stovner, Hagen, Linde, & Steiner, 2022). This illness has significantly impacted work productivity and quality of life (QOL) in recent years, necessitating significant healthcare investment (Kim, Chu, Yu, Dell'Agnello, Han, & Cho, 2021). Although new research indicates a connection between migraine and several comorbidities, it is still unknown how coexisting disorders affect the development and progression of migraine (Vernieri et al., 2021). The most often reported migraine-related comorbidities are sleep difficulties, depression, and anxiety (Caponnetto et al., 2021). In addition to the pain and disability associated with migraine, patients with migraine are at an elevated risk for psychiatric disorders mainly. Depression is three times more prevalent in migraine sufferers than in the general population, and this percentage is considerably more significant in patients with migraine who visit a clinic (Dindo et al., 2020).

Lastly, a Taiwanese study found that over 78% of migraineurs had comorbid mental health issues, including more than half (57%) who suffered from anxiety or depression (Vernieri et al., 2021). Migraines are more challenging to treat because they are associated with psychological illnesses like depression. Migraine sufferers exhibit a wide range of varying levels of function, with some functioning normally, whereas others are severely disabled, with social, emotional, and occupational restrictions (Lin, Klatt, McCracken, & Baumeister, 2018). Depression and mental health in patients with migraine are of significant importance because these problems are common and result in greater disability and overall worse prognosis than migraine alone (Barlow, Bullis, Comer, & Ametaj, 2013). Despite the high prevalence and deleterious impact, mental health problems are often underdiagnosed and undertreated in patients with migraine due to poor recognition of distress, lack of evidence to guide interventions, and a dearth of behavioral treatments that are appealing to a population that does not see itself as needing mental health care (Stovner et al., 2022). This represents a missed opportunity, as depression and low mental health are modifiable problems (Caponnetto et al., 2021). Psychological interventions have a long history of successfully managing patients suffering from mental health and medical conditions (Almarzooqi, Chilcot, & McCracken, 2017).

In migraineurs, there is a lack of effective therapeutic strategies that target depression and anxiety directly. Acceptance and commitment therapy (ACT) is a behavioral intervention that effectively treats chronic pain, depression, anxiety, and an increasing number of other psychiatric and medical diseases (Dimidjian, Arch, Schneider, Desormeau, Felder, & Segal, 2016). Recently, a new type of ACT has been developed to treat migraines (Dindo, Weinrib, & Marchman, 2019) that targets a limited set of experiential processes to promote cognitive flexibility, or the ability to engage with the present moment (Gloster & Karekla, 2020). These processes develop the dominant ACT approach with methods that focus on how people can answer migraine with flexibility, placing the focus on enhancing daily functioning (Dimidjian et al., 2016). Prior research has shown that ACT processes modulate the effects of

therapy on functioning, life satisfaction, and psychological distress in people with chronic pain (Stovner et al., 2022; Lin et al., 2018). Cross-sectional research on migraineurs shows that more pain acceptance and values-based behavior are linked to lower levels of depression, headache-related impairment, interference, and catastrophizing (Almarzooqi et al., 2017; Foote, Hamer, Roland, Landy, & Smitherman, 2016). Importantly, when used as a quick intervention, ACT has had fruitful results (Dindo et al., 2019). In one short, uncontrolled pilot study, individuals with co-occurring depression and migraine were randomized to either a one-day ACT therapy or treatment as usual (TAU).

In the ACT arm, 77% of patients reported remission from depression, compared to just 8% of those in the TAU arm, which is promising (Dindo et al., 2020). Based on ACT, the intervention focused on behavioral avoidance and encouraged participation in values-based living, processes linked to sadness and impairment in patients with chronic pain, including migraineurs (Hayes, Strosahl, & Wilson, 2011). The new and creative "1-day workshop" approach promotes the ability to continue treatment and follow treatment orders, the lack of which is often the biggest obstacle to continuing effective mental health services. For those not specifically seeking professional mental health care, presenting the therapy as a "workshop" was also more appropriate (Dindo et al., 2020). Based on this promising research, we conducted a randomized controlled study to assess the efficacy of ACT-based group therapy on depression and mental health in a group of patients with co-occurring major depressive disorder (MDD) and migraine. The control group was considered to control for treatment elements (such as therapist attention, waiting for improvement, and group support) that provide competing explanations for the effectiveness of ACT-based group therapy. With the use of this approach, we were able to evaluate the effectiveness of an ACT-based group therapy.

Methods

The current research was a quasi-experimental study with a pretest-posttest and control group design. The statistical population of this research was all people suffering from migraine who visited Mehr and Tabib clinics in Tehran, Iran, from October to November 2022. Based on the result of the previous study with a mean difference of 8 and standard deviation (SD) of 2.40, power of 0.8, probability of type I error as 0.05, and attrition rate of 10%, a total of 30 samples were calculated (Lin et al., 2018).

Inclusion criteria were: age between 18 and 70 years, obtaining a score of 2 or more on the ID Migraine test – a widely used 3-item screening tool with high positive predictive value for the presence of migraines (Lipton & Spelke, 2003), reporting 4-12 migraine days over the previous month, no history of brain injury, the diagnosis of "major depression", either a single episode or recurrent depression, according to the International Classification of Diseases, 10th Revision (ICD-10), established by a psychiatrist and verified by the Mini International Neuropsychiatric Interview (MINI) (Timmerby, Austin, Ussing, Bech, & Csillag, 2016), and no history of schizophrenia, bipolar disorder, or current substance abuse. Exclusion criteria were: a severe suicidal or psychotic disorder, a suicide attempt or severe non-suicidal self-injury that required hospitalization within three months of admission, failure to attend more than two sessions in therapeutic interventions, and reluctance to continue treatment. First, the researchers referred to two clinics, Mehr and Tabib, in Tehran from October to

November 2022. Researchers took eligible participants' informed consent. In this study, 30 eligible patients were selected and invited to participate purposefully. Moreover, the assignment of individuals to experimental and control groups was done randomly. Each participant received an envelope containing a number, and a randomly selected identifier to determine whether they were in the experimental (n = 15) or control (n = 15) group (Moloudi, Arian, Mahdavi, Madah, & Roghaeeh Taghipour, 2022).

Beck Depression Inventory-Second Edition (BDI-II): The BDI-II, a self-reporting tool, is used to evaluate depressive disorders. The list consists of 21 statements describing various types of depression (Beck, Steer, & Brown, 1996). Compared to its first version, the changed version (BDI-II) is more adaptable to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and covers all elements of depressive disorders. Like the first edition, the second one consists of 21 items with four response choices indicating depression. The items are scaled from zero to 3, which makes a comprehensive range of 0-63. As far as no depression is concerned, the inventory does not predict a cut-off point. The cut-off points suggested for this inventory are scores of 0-13, indicating minor depression, 14-19 suggesting mild depression, 20-28 showing moderate depression, and the score range of 29 to 63, which demonstrates severe depression. Cronbach's alpha was 0.86, and the internal consistency coefficient was 0.92 among the United States (US) people (Beck et al., 1996) and 0.91 and 0.94 among Iranian people, respectively (Moloudi et al., 2022).

The General Health Questionnaire (GHQ): The GHQ is frequently used to gauge one's mental state, particularly for identifying emotional problems like distress. This questionnaire was created by Goldberg and Hillier (1979). This questionnaire consists of 28 questions, four components of physical symptoms (questions 1 to 7), anxiety and sleep disorder (questions 8 to 14), physical perception disorder (questions 15 to 21), and depression (questions 22 to 28). In each part of the scale, a score of 6 and above and a total score of 22 and above indicate pathological symptoms. At first, a raw score is obtained for each subscale, and then it is converted to a standard score between 0 and 100. A higher score indicates a higher QOL (Goldberg & Hillier, 1979). The reliability coefficients of the questionnaire range from 0.78 to 0.95 (Goldberg & Bridges 1988). In Iran, Palahang et al. (1996) and Yaghobi and Hormozi (2010) reported the reliability coefficients as 0.91 and 0.88 for anxiety and depression, respectively.

Procedure

The treatment goals and the working method were explained to the people of the experimental group, and the time and place of the treatment sessions were coordinated over the phone. Then, they were asked to fill out the BDI-II and the GHQ. To protect patient data privacy, researchers assured them their data would be kept confidential. Then the ACT group treatment was performed in 8 sessions once a week for 90 minutes. In table 1, a summary of the content of the meetings according to the protocol of Timmerby et al. (2016) is stated. The control group did not receive psychological training during these two months. Researchers answered participants' questions and alleviated any concerns they might have had throughout the procedure.

Two psychologists implemented the ACT component with extensive training in ACT. A manual was developed for the treatment, and all workshop administrations followed the protocol closely.

Table 1. Summary of the meetings of acceptance and commitment therapy (ACT) approach

Sessions	Contents
1	Introduction: creating a relationship based on collaboration, checking the basic concepts of treatment and goals, completing the questionnaire
2	Options for learning to live despite the presence of illness: teaching the mental model of "if-then" and control methods, explaining the relationship between "pain, mood, and function"
3	Learning to live with an illness: description of the concepts of acceptance, cognitive dissonance, self-observation as context, weakening of self-concept and self-expression as an observer of values, task
4	Values: practicing mindfulness, reviewing assignments, discussing values and obstacles in the way of discovering the practical values of life, and presenting assignments
5	Action: reviewing the task, dealing with the concept of cognitive dissonance, action planning, mindfulness and self-observation, committed action, presenting the task
6	Commitment: practicing mindfulness, reviewing homework, committing to actions and values despite obstacles, submitting homework
7	Reviewing the experiences of the previous session, reviewing assignments, applying mindfulness techniques, and observing inner experiences as a process
8	Reviewing the experiences of the previous meeting, topics of commitment, prevention of relapse

The workshop included training in acceptance and values-based committed action. The acceptance portion emphasized new ways of managing troubling thoughts, feelings, and pain sensations (e.g., learning how to recognize and develop cognitive distance from unhelpful thoughts such as "I cannot take this pain anymore" or "I am not good enough") and learning how to face experiences that cannot be changed willingly, while promoting effective and committed actions to achieve life goals. Training in values-based committed action involves teaching patients how to recognize ineffective patterns of behavior and habits, explore and set life goals and those related to health, and promote effective and committed actions to achieve these goals despite the urge to do otherwise. This study met all the standards of ethical behavior in research. The Ethics Committee of the Islamic Azad University of Tehran (IR.IAU.KHUISF.REC.1400.098) approved the study.

This research used SPSS software (version 20, IBM Corporation, Armonk, NY, USA) to analyze the multivariate analysis of covariance (MANCOVA) method to determine the significance of the difference between the scores of the test and the control groups in the dependent variables of depression and mental health. The linearity of the relationship between each dependent variable and its covariate was tested.

Results

The subjects were 18 women and 12 men who were randomly assigned to two control and experimental groups**.** The mean age of the subjects was 37.20 ± 1.77 and 37.91 ± 1.95 years in the experimental and control groups, respectively. The age difference between the two groups was insignificant according to an independent t-test (P = 0.064) (Table 2).

The linear significance level of the relationship between the pre-test and the post-test of depression (r = 0.78) and mental health (r = 0.71) was obtained (all correlation coefficients are significant at the P < 0.05 level). According to the Kolmogorov-Smirnov test, the assumption of normality of the distribution of the variables is more significant than 0.05; therefore, this assumption has been met. P-value less than 0.05 was considered as statistical significance. Levene's test was insignificant in the depression variable (F = 0.66, P = 0.24) and mental health (F = 0.81, P = 0.19).

Table 2. Mean and standard deviation (SD) of variables in experimental and control groups

Variable	Groups	Statistical index	Mean ± SD
Depression	Pre-test	Control	56.18 ± 7.02
		Experimental	55.31 ± 7.93
	Post-test	Control	55.39 ± 6.71
		Experimental	41.24 ± 5.29
Mental health	Pre-test	Control	59.61 ± 7.67
		Experimental	58.34 ± 8.52
	Post-test	Control	60.83 ± 8.03
		Experimental	75.91 ± 8.20

SD: Standard deviation

Considering dependent variables, table 3 shows a significant difference between the test and control groups at a $P \leq 0.001$. As a result, at least one of the dependent variables differs significantly between the two groups (depression and mental health). In MANCOVA's text, two covariance analyses were conducted to determine this difference. In the experimental and control groups, 51% of the variances were explained by the independent variable based on the calculated effect size. A test with a statistical power of 1.00 rejects the null hypothesis with 100% power.

According to the findings of table 4, ACT had a favorable and substantial impact on depression ($P < 0.001$, $F = 28.49$) and mental health ($P < 0.001$, $F = 33.26$) in people living with migraine. In addition, it can be seen that the most significant effect size was related to the mental health variable (0.543), which shows that 54% of the total variances of the experimental and control groups in the mental health variable were caused by the effect of the independent variable and the smallest effect size was related to the depression (0.496), which shows that 49% of the total variances of the experimental and control groups in the depression variable of the patients with migraine caused by the effect of the independent variable.

Discussion

The purpose of the present study was to determine the effectiveness of ACT on depression and mental health of patients with migraine. The results show that depression and mental health differ significantly between the experimental and control groups. The results of many studies (Alonso-Fernandez, Lopez-Lopez, Losada, Gonzalez, & Wetherell, 2016; Grau, Sripada, Ganoczy, Weinstein, & Pfeiffer, 2023; Han, Wilroy, & Yuen, 2023; Wang, Chen, Liu, & Wu, 2022) align with this study findings. Alonso-Fernandez et al. (2016) investigated the effectiveness of ACT treatment for older adults with chronic pain and depression. The results of their studies showed that an ACT treatment could help older adults with chronic pain and depression to improve their emotional well-being and functional ability. The underlying assumptions of ACT for pain are based on the concepts of universal suffering, promotion of acceptance attitudes, reduction of efforts to struggle with pain, identification of valued life directions, and the commitment to act by personal values to improve role function and activity levels, regardless of pain severity (Almarzooqi et al., 2017).

Table 3. Results of multivariate analysis of covariance (MANCOVA) on variables

Test statistics	Value	F	df	df error	P-value	Effect size
Pillai's trace	0.752	46.12	2	28	0.001	0.513
Wilks' lambda	0.361	46.12	2	28	0.001	0.513
Hotelling's trace	7.930	46.12	2	28	0.001	0.513
Roy's largest root	8.270	46.12	2	28	0.001	0.513

df: Degree of freedom

Table 4. Results of analysis of covariance (ANCOVA) in the multivariate ANCOVA (MANCOVA) context

Dependent variable	SS	df	MS	F	P-value	Effect size
Depression	3216.34	1	3216.34	28.49	0.001	0.496
Mental health	1983.48	1	1983.48	33.26	0.001	0.543

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

ACT has received increased empirical support for several mental and physical health problems, including chronic pain (Dimidjian et al., 2016). Instead of attempting to control or change sources of discomfort, studies suggest that the process of acceptance of chronic pain is associated with better emotional, physical, and social outcomes, less disability, better pain tolerance, and a decrease in the use of health resources (Alonso-Fernandez et al., 2016). The findings of Alonso-Fernandez et al. (2016) showed a significant increase in acceptance of chronic pain between before and after treatment for participants in the ACT group, while no significant difference was found for the control group. Considering that acceptance of pain has been associated positively with less depression and with higher levels of physical functioning and pain tolerance, these results are encouraging.

Grau et al. (2023) in their research found that ACT-based group therapy treatment was effective in improving depression and psychological inflexibility. Psychological inflexibility has decreased more in ACT than in traditional cognitive behavioral therapy (CBT) treatments while also covarying with depression symptom reduction (Dindo et al., 2020). Psychological flexibility is also typically viewed as the most critical metric (and mechanism) of change in ACT, as ACT emphasizes the importance of expanding the focus of treatment beyond symptom reduction and evaluating change in the six core processes of change, all of which fall under the overall umbrella of psychological flexibility. Thus, in practice, clinicians are trained to focus on increasing psychological flexibility rather than directly attempting to decrease symptoms of depression (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). This study of ACT-based group therapy reduced depression and increased mental health in patients with chronic pain. These findings are consistent with Han et al. (2023) and Wang et al. (2022) studies. ACT is only to improve psychological flexibility, not committed to solving the symptoms of the disease but has the abilities such as acceptance of the status quo, letting patients see negative thoughts in the mind of the border, being better aware of the current situation, reducing depression, and improving mental health (Han et al., 2023). This treatment can face the pain, solve the symptoms that are caused by negative emotions, relieve negative emotions, and improve the clinical purpose of adverse symptoms (Wang et al., 2022).

In explaining these findings, ACT emphasizes accepting as many mental experiences as possible, relating to the present moment, and participating in activities that align with personal values (Dindo et al., 2020). Acceptance is the critical process in the effectiveness of this type of treatment. The main structure of ACT is psychological flexibility, which means the ability to perform practical actions in line with individual values despite problems and sufferings such as chronic pain (Wang et al., 2022). It can also be said that emotional control strategies, performing behavioral commitment exercises, clarifying values, techniques identifying behaviors based on values along with metaphors, the concept of cognitive dissonance, and acceptance all lead to the reduction of depression symptoms and improvement of mental health (Faryabi, Rafieepoor, hajializade, & Khodaverdian, 2020). In general, ACT teaches people how to let go of inhibiting thoughts, get rid of disturbing

thoughts, strengthen the observing self instead of the conceptualized self, and accept events instead of controlling them (Gloster & Karekla, 2020).

This study was limited in scope by the high age dispersion of the participants and the self-reported nature of the measure, which may have led to response bias. Thirdly, the sample was taken from only two hospitals in Tehran. This may limit the generalizability of the findings to patients with migraine presenting at other hospitals from other regions or cities. It is suggested that in future studies, this approach should be implemented on demographically homogenous groups and the effectiveness of these studies should be compared, so that the treatment groups can be separated demographically for better benefit from the approach.

Conclusion

The present study showed that ACT had a favorable effect on reducing depression and increasing the mental health of people living with migraine. Group support and treatment strategies are promising and practical approaches to dealing with this patient population. It also highlights the significant impact of group support and education in providing re-moralization, as well as the additional benefit that can be attained from learning the ACT. This study is an essential milestone from an applied perspective because it provides psychologists with a detailed intervention program that can be replicated, adapted, and implemented in a wide range of chronic diseases.

Conflict of Interests

Authors have no conflict of interests.

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The Effects of Cognitive Behavioral Therapy on the Lifestyle of Breast Cancer Patients

Davronova Mahfuza Isroilovna[1], Haady Abdilnibi Altememy[2], Abeer Mhussan Jabbar[3], Mutni A. Majeed[4], Hamad Jandari Jumaa[5], Sadeq Sahib Sadeq[6], Israa Abed Jawad[7], Mahmood Jumaa Saud[8], Sara Kareem Obaid[9]

1 Associate Professor, Samarkand State University named after Sharof Rashidov, Samarkand, Uzbekistan
2 College Of Islamic Sciences, The Islamic University of Najaf, Najaf, Iraq
3 College of Nursing, National University of Science and Technology, Dhi Qar, Iraq
4 College of Nursing, Al-Esraa University, Baghdad, Iraq
5 Department of Nursing, Al-Hadba University College, Mosul, Iraq
6 Department of Medical Laboratories, College of Health and Medical Technology, Sawa University, Almuthana, Iraq
7 Department of Education, Al-Nisour University College, Baghdad, Iraq
8 Al-Hadi University College, Baghdad, Iraq
9 Babil Education Directorate, Ministry of Education, Babil, Iraq

Corresponding Author: Davronova Mahfuza Isroilovna; ***Associate Professor, Samarkand State University named after Sharof Rashidov, Samarkand, Uzbekistan***
Email: mahfuzadavronova172@gmail.com

Quantitative Study

Abstract

Background: Patients with breast neoplasms are exposed to various physical and psychological injuries. Improving these patients' lifestyles can improve their condition. The present research investigated the effects of cognitive behavioral therapy (CBT) on the lifestyle of breast cancer patients.

Methods: The current semi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population comprised 308 breast cancer patients referred to the Teaching Hospital of Maternity and Childhood in Al-Ramadi, Iraq, in 2022. Using simple random sampling, 80 women were selected and divided into experimental and control groups (40 patients per group). The Health Promoting Lifestyle Profile (HPLP; Walker et al., 1987) was used for data collection. The collected data were analyzed using analysis of covariance (ANCOVA) in SPSS software. The statistical significance level was 0.05.

Results: The findings indicate that CBT was effective on lifestyle variables ($F = 70.01$; $P < 0.001$) in breast cancer patients. Moreover, the results of a one-way ANCOVA demonstrated that the lifestyle subscales, including health responsibility ($F = 4.73$; $P < 0.001$), nutrition ($F = 9.14$; $P < 0.001$), physical activity ($F = 13.64$; $P < 0.001$), stress management ($F = 7.05$; $P < 0.001$), interpersonal relationships ($F = 12.42$; $P < 0.001$), and spiritual growth ($F = 5.63$; $P < 0.001$), increased significantly.

Conclusion: It can be concluded that CBT improved lifestyle and its subscales

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in breast cancer patients. Therefore, special attention should be paid to these patients' lifestyles, and psychological interventions such as CBT can be effective in this regard.

Keywords: Breast neoplasms; Cognitive behavioral therapy; Lifestyle

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Introduction

Cancer is one of the most pressing medical issues of the present day, and breast cancer is the most common cancer (Addison et al., 2022). Although the prevalence of breast cancer has increased in recent years, screening, early diagnosis, and various treatments have reduced patient mortality. Breast cancer has become a chronic disease, with complications affecting and reducing a person's quality of life (QOL) (Thanoun, Al-Zubaidi, Obaid, Zwain, Al Salami, & Abdulhasan, 2023).

Because breast cancer attacks the female identity, it has a severe psychological effect on patients (Zhang et al., 2023). The diagnosis of this disease and the stages of its treatment have a wide range of consequences on the physical, psychological, family, social, and economic dimensions (Farzanegan, Derakhshan, Hashemi-Jazi, Hemmati, & Azizi, 2022). Breast cancer is one of the cancers that can be prevented or diagnosed early, and by providing specific solutions, it is possible to reduce the problem and provide effective treatment to increase survival, reduce the rate of death, and improve patients' QOL (Kwak, Jacobs, Haggett, Jimenez, & Peppercorn, 2020).

Patients with breast cancer face physical and emotional challenges caused by the disease, surgery, radiation therapy, chemotherapy, hormone therapy, and family, social, and professional issues (Tao et al., 2023). Long treatment periods, frequent hospitalizations, chemotherapy side effects, and cancer awareness can all affect the body and mind of cancer patients. Breast cancer alters a person's life and causes numerous physical, psychological, social, economic, and family issues (Maccora et al., 2022). It increases sufferers' feelings of dependency, decreases their self-confidence, and increases their vulnerability, confusion, pain, physical symptoms, and disturbed thoughts. It also disrupts daily functions, social activities, and mental peace by introducing new roles and causing patients to become dependent on others and unable to participate in their usual social activities. These issues, as well as prolonged hospitalizations, frequent doctor visits, various treatments, complications, and high treatment costs, point to the need for patients to change their lifestyles (Xu, Xue, Li, Qiao, Redding, & Ouyang, 2023).

Mental disorders in breast cancer affect treatment decision-making and adherence, cause dysfunction, and reduce QOL. These disorders can cause symptom control issues and difficulty in making treatment decisions (Ren et al., 2019). It generates a great deal of them. Women with breast cancer face a variety of stressors, including the stress of informing family members of the illness and the stress of knowing that life will change dramatically (Rosendahl et al., 2023). Women with breast cancer must adapt to various stressors, including diagnosis of a life-threatening disease, difficult and distressing treatments, and physical disfigurement as surgical aftereffects, ongoing physical limitations, and the threat of disease recurrence. Anxiety and depressive symptoms have always been associated with the numerous challenging aspects of the cancer experience that cause concern for patients (Ardizzone, Bavetta, Garo, Santangelo, Bongiorno, & Bono, 2022).

Psychological treatments can be used to reduce or tolerate disease conditions (Starling et al., 2022). Various psychological interventions have been proposed for the management, control, or alteration of the behavioral and psychological complications caused by breast cancer (Tran, Hickey, Saunders, Ramage, & Cohen, 2021). Moreover, cognitive behavioral therapy (CBT) has been reported to have a significant effect on these patients. CBT focuses on replacing defective cognitions with efficient cognitions. The primary goal of CBT is to assist the patient in making positive changes in his/her life (Lai, Chen, Lu, & Huang, 2021).

CBT is founded on the fundamental link between thinking, feeling, and behavior. Reliable researchers can help people rebuild their thoughts to deal with mental stress using this method (Zeichner, Zeichner, Gogineni, Shatil, & Ioachimescu, 2017). The patient is persuaded in CBT to notice the dependence between his/her adverse thoughts and his/her emotions of depression as hypotheses and to use the behaviors that result from his/her negative reviews as a test to evaluate the validity or correctness of the hypotheses. CBT is effective for patients with mental problems (Van Driel, Stuursma, Schroevers, Mourits, & de Bock, 2019). CBT emphasizes the provision of the opportunity for new adaptive learning and alteration of the environment outside of the clinical space (Entwistle, 2019).

Lifestyle includes all behaviors under a person's control or effects on a person's health risks (Akkol-Solakoglu, Hevey, & Richards, 2021). Today, most health-related issues (such as cancer types) are linked to lifestyle changes. Given the numerous studies that show a link between people's lifestyles and cancer, the need to emphasize lifestyle modification as an essential factor in determining the prognosis and complications of this disease is evident and justifiable (Charalampopoulou, Bacopoulou, Syrigos, Filopoulos, Chrousos, & Darviri, 2020). Although a healthy lifestyle should be instilled in children, there is always time to change your ways and develop healthy habits. The provision of information about lifestyle changes to patients necessitates the use of appropriate patient education methods. The effectiveness of health education programs relies heavily on applying a suitable educational theory. One of the most comprehensive and relevant theories for studying behavior is CBT (Lukas et al., 2022).

Psychological interventions have a moderating effect on patient's psychological problems, and their use has grown in popularity in recent years. Given the adverse effects of cancer on various appearances of a cancer patient's life and the global increase in breast cancer, it appears necessary to investigate effective psychological interventions in this field. The present research investigated the effects of CBT on the lifestyle of breast cancer patients.

Methods

The current semi-experimental research was conducted with a pretest-posttest design and a control group. The statistical population consisted of all women with breast cancer referred to the Teaching Hospital of Maternity and Childhood in Al-Ramadi, Iraq, in 2022 (n = 308). In the current research, 80 women were chosen through simple random sampling and divided into experimental and control groups. The inclusion criteria were women aged 20 to 60 years, at least 3 months since cancer diagnosis and progression, no concurrent psychological treatment, no use of psychiatric drugs, and limited reading and writing literacy. The exclusion criteria included refusal to participate in the study, missing more than 2 sessions, and refusing to complete the questionnaires. To comply with ethical requirements, the confidentiality principle was adhered to.

Patients in the control group received routine care. In contrast, women in the experimental group received 8 weekly, 90-minute sessions of CBT intervention (MENOS 1 protocol). A description of the sessions is provided in table 1. Women in the control group received no intervention, but CBT was offered to them after the study concluded. The Health Promoting Lifestyle Profile (HPLP) was used for data collection in pretest and posttest stages. The HPLP (Walker, Sechrist, & Pender, 1987) contains 54 items scored on a 4-point scale.

Table 1. Description of cognitive behavioral therapy intervention sessions

Session	Description
1	Getting to know the members of the group, introducing the treatment plan and goals, and carrying out the pretest
2	Defining and explaining lifestyle, its subscales, and how it affects breast cancer
3	Explaining the physical and psychological consequences of lifestyle and the benefits of lifestyle improvement in breast cancer patients
4	Explaining of their previous lifestyle and the lifestyle they experienced while undergoing treatment for breast cancer by patients, and sharing experiences
5	Describing patients' negative spontaneous thoughts about lifestyle and lifestyle promotion during breast cancer treatment
6	Asking patients in the group to represent their adverse automatic thoughts pending their breast cancer experience and assigning homework to determine the content and amount of negative spontaneous thoughts
7	Instructing patients on how to recognize negative spontaneous thoughts and how to improve other lifestyle subscales
8	Teaching patients methods for dealing with a bad lifestyle, feasible responses to thoughts and actions, and how to change a destructive lifestyle, and conducting the posttest

The HPLP assesses health-promoting behaviors across the 6 dimensions of health responsibility (13 questions), nutrition (having a food pattern and choosing food; 8 questions), physical activity (having a regular exercise pattern; 8 questions), stress management (identifying sources of stress and stress management measures; 6 questions), interpersonal relationships (maintaining relationships with a sense of closeness; 8 questions), and spiritual growth (having a sense of self-actualization; 11 questions). The content validity of the HPLP was 0.76 in the current study, and its reliability, according to Cronbach's alpha method, was 0.81.

The collected data were analyzed using the independent t-test and analysis of covariance (ANCOVA) in SPSS software (version 21; IBM Corp., Armonk, NY, USA). The statistical significance level was equal to 0.05.

Results

Table 2 presents the demographic variables of the women in the two groups. As can be seen in table 2, 60 women (75%) were over 40 years of age, and the mean age of women in the experimental and control groups was 51.86 ± 6.59 years, and 53.17 ± 6.78 years, respectively. Moreover, 70 (87.5%) women were married, 51 (63.8%) had a secondary education, 57 (71.3%) were unemployed, and 59 (73.8%) lived in an urban area. The findings showed no significant difference in the demographic variables between the two groups ($P > 0.05$).

To obtain data, women of both groups completed the questionnaire in two stages: pretest and posttest. The mean score of lifestyle and its subscales are presented in table 3.

Table 2. Demographic variables of the study groups

Variable		Experimental group [n (%)]	Control group [n (%)]	P-value
Age (year)	< 40	11 (27.5)	9 (22.5)	0.14
	> 40	29 (72.5)	31 (77.5)	
Marital status	Married	33 (82.5)	37 (92.5)	0.23
	Single	7 (17.5)	3 (7.5)	
Education	Secondary	23 (57.5)	28 (70)	0.47
	College	17 (42.5)	12 (30)	
Occupation	Employed	13 (32.5)	10 (25)	0.52
	Unemployed	27 (67.5)	30 (75)	
Area of residence	Urban	33 (82.5)	26 (65)	0.19
	Rural	7 (17.5)	14 (35)	

Table 3. Mean and standard deviation (SD) of lifestyle and its subscales in two stages

Variable	Stage	Experimental group (mean ± SD)	Control group (mean ± SD)	P-value
Health responsibility	Pre-test	35.23 ± 6.39	35.74 ± 6.25	0.271
	Post-test	42.16 ± 7.24	36.27 ± 6.63	<0.001
Nutrition	Pre-test	18.53 ± 3.27	18.24 ± 3.12	0.394
	Post-test	21.89 ± 3.61	18.06 ± 3.24	<0.001
Physical activity	Pre-test	19.27 ± 2.81	19.84 ± 3.46	0.126
	Post-test	23.08 ± 3.96	20.34 ± 3.78	<0.001
Stress management	Pre-test	13.42 ± 3.15	13.36 ± 2.94	0.527
	Post-test	18.72 ± 2.63	13.04 ± 3.11	<0.001
Interpersonal relationships	Pre-test	22.58 ± 2.38	22.24 ± 2.19	0.604
	Post-test	27.51 ± 2.73	22.52 ± 2.48	<0.001
Spiritual growth	Pre-test	28.73 ± 3.46	28.52 ± 3.39	0.218
	Post-test	35.28 ± 3.86	29.07 ± 3.65	<0.001
Lifestyle	Pre-test	137.76 ± 14.76	137.94 ± 14.92	0.329
	Post-test	168.64 ± 16.53	139.30 ± 15.38	<0.001

SD: Standard deviation

Table 3 shows no statistically significant difference between the experimental and control groups in terms of the values of the lifestyle variable and its subscales in the pretest stage ($P > 0.05$). The difference between the groups regarding lifestyle and its subscales was significant in the posttest stage ($P < 0.001$). Table 3 indicates that the minimum of the control group's pretest and posttest results have changed ($P > 0.050$). The experimental group's scores increased in the posttest stage, resulting in a significant difference for both stages ($P < 0.001$). As a result, CBT has improved the lifestyle of breast cancer patients.

The assumption of normal distribution was tested using the Kolmogorov-Smirnov test, and this assumption Was validated ($P > 0.05$). After completing the investigations, it was discovered that the scores' distribution was normal ($P > 0.05$). Furthermore, Levene's test indicated the homogeneity of lifestyle variances ($F = 1.63$; $P = 0.29$). The Box's M test results indicated the homogeneity of the variance–covariance matrix ($F = 1.87$; $P = 0.14$). Table 4 displays the ANCOVA results in the examination of the effect of CBT on the lifestyle variable.

As can be seen in table 4, CBT has improved the lifestyle variable. Table 5 shows the results of a one-way ANCOVA used to investigate the values of the lifestyle subscales between the experimental and control groups.

The results presented in table 5 illustrate that the provision of the independent variable (intervention based on CBT) yielded a significant difference in the lifestyle subscales ($P < 0.001$). In breast cancer patients, CBT significantly improved the mean scores of the lifestyle subscales when the intervening variable (pretest) was controlled.

Discussion

The present research investigated the effects of CBT on the lifestyle of breast cancer patients.

Table 4. Analysis of covariance findings for the effect of cognitive behavioral therapy on the lifestyle variable

Source of variation	SS	df	MS	F	P-value
Pretest	146.38	1	146.38	14.97	< 0.001
Group	684.74	1	684.74	70.01	< 0.001
Error	567.19	58	9.78		

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

Table 5. One-way analysis of covariance findings for the effect of cognitive behavioral therapy on lifestyle subscales

Source of variation	Variable	SS	df	MS	F	P-value
Dependent variable	Health responsibility	14.53	1	14.53	4.73	< 0.001
	Nutrition	28.05	1	28.05	9.14	< 0.001
	Physical activity	41.87	1	41.87	13.64	< 0.001
	Stress management	21.64	1	21.64	7.05	< 0.001
	Interpersonal relationships	38.12	1	38.12	12.42	< 0.001
	Spiritual growth	17.29	1	17.29	5.63	< 0.001

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

The findings displayed that CBT effects lifestyle and its subscales in breast cancer patients, causing them to increase. The results of the present study are consistent with that of the previous research by Duijts et al. (2012), Kwak et al. (2020) and Lukas et al. (2022), but not with that of the study by Qiu et al. (2013).

The natural processes of language affect people's experiences and result in the negative evaluation of various aspects of knowledge. When people reflect on their lives, they significantly increase their anxiety capacity by citing existing flaws as evidence of worthlessness or worry (Mann et al., 2012). An ability that causes patients to avoid experience can lead to increased anxiety and the adoption of harmful health behaviors. People cannot differentiate between the world that is verbally conceptualized and the world that is directly experienced. In such a state, and by the content of one's self-concept, a person feels a great deal of anxiety (Mefferd, Nichols, Pakiz, & Rock, 2007).

Improper lifestyle is one of the risk factors for chronic diseases such as breast cancer. Today, the outstanding reason for death is correlated with incorrect lifestyle practices such as smoking, inactivity, and inappropriate eating habits. As a result, improper lifestyles reduce patients' QOL (Mewes et al., 2015). Today, people are concerned with improving their QOL and attempting to improve their well-being while reducing the effects of diseases through healthcare services and modern treatment methods. Although drug therapy is at the forefront of treatment and has a positive effect on the health of women with breast cancer, it cannot change the patients' negative feelings about their disease. CBT strategies include the implementation of psychological interventions with a focus on correcting attributional styles and challenging or irrational beliefs, relaxation, problem-solving skill training, guided mental imagery, and coping skills training. This not only mitigates the negative emotional consequences of chronic diseases, but also helps to increase adherence to treatment recommendations (Matthews, Schmiege, Cook, Berger, & Aloia, 2012).

To explain these findings, it can be stated that CBT exposes people cognitively to the successful experiences of their peers with breast cancer. It also provides them with successful experiences by exposing them to appropriate role models who have acted successfully. Additionally, they are allowed to be persuaded verbally by the group leader and peers that they can succeed (Ghahari et al., 2017). Furthermore, CBT regulates the physiological arousal level of women with breast cancer through stress management exercises and assignments, effective stress management strategies, and a relaxing and hopeful environment. CBT is thought to be effective in most mental disorders and medical disorders with severe psychological consequences because group members see how they interact with society, which increases their insight and insight. Simultaneously, they gain new skills for communicating with others, meet new people, feel empowered, and their self-confidence grows (Zeichner et al., 2017).

Another beneficial aspect of CBT for breast cancer patients is teaching them how to identify spontaneous thoughts and cognitive distortions and replace negative thoughts with positive ones (Maccora et al., 2022). Another goal of this type of intervention that helps improve these patients' lifestyles is identifying factors (Tran et al., 2021). CBT significantly reduces stress, indicating that it effectively reduces mental disorders. Addressing the cognitive-behavioral components of cancer, which necessitates patients' ability to adapt and reduce stress, is regarded as a basic need. Women with breast cancer mostly experience mental and cognitive stress (Duijts, Oldenburg, van, & Aaronson, 2009). CBT teaches people how to use techniques related to experiencing the present moment to temporarily free themselves from it. In addition, they develop the mindset of accepting all matters (pleasant and unpleasant) without judgment. Adopting such a plan is especially beneficial for a cancer patient experiencing painful emotions like hopelessness, helplessness, and sadness (Atema et al., 2016).

CBT has the potential to improve lifestyle and QOL. When patients learn cognitive behavioral skills and practice them in stressful situations, they realize that they can make decisions, control their life events, and take effective action to achieve their desired results. It also encourages them to challenge existing conditions and solve problems creatively and problem-oriented, resulting in inner satisfaction, increasing happiness, psychological well-being, and self-efficacy (Lai et al., 2021). Moreover, it leads to a sense of fulfillment, self-belief, warm social relationships, and an improvement in QOL.

Women with breast cancer have a different lifestyle than healthy people, and lifestyle is a significant factor in psychological stress. Considering these findings, healthcare providers should emphasize the role of lifestyle in disease occurrence and control in health education programs, and patients should be encouraged to change their unhealthy behaviors while receiving regular screenings (Ren et al., 2019). Although lifestyle modification intervention plans have been used successfully in many ways to reduce mental stress, non-pharmacological treatments are required to increase the effectiveness of conventional methods.

One of the present study's limitations is the need for more follow-up. As a result, it is suggested that future studies implement a follow-up stage to check the stability and continuity of the effect of CBT over time. Another limitation of the present research is that it only used one psychological intervention method and did not compare it to others. As a result, in future studies, other intervention methods should be used and the results be compared to the current research results.

Conclusion

The findings of the current study indicated that using CBT improved lifestyle and its subscales, including health responsibility, nutrition, physical activity, stress management, interpersonal relationships, and spiritual growth, in breast cancer patients. Considering the significant effects of CBT, this therapy can be used as a suitable alternative or complementary treatment.

Conflict of Interests

Authors have no conflict of interests.

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A Comparison of Individual and Group Motivational Interviewing in the Improvement of Medication Adherence in Prostate Cancer

Jie Yang[1], Mahmood Hasen Shuhata Alubiady[2], Oras Kadhim[3], Munthir Abdulwahid Abdulhussain[4], Ghanem Hussain Tawfik[5], Zaid Hilal Abed Alqiraishi[6], Moatasem Al-Salih[7], Israa Abed Jawad[8]

1 Faculty of Fine and Applied Arts, Khon Kaen University, Thailand
2 Department of Pharmacy, Al-Hadi University College, Baghdad, Iraq
3 Department of Pharmacy, Al-Manara College for Medical Sciences, Maysan, Iraq
4 Department of Pharmacy, Mazaya University College, Iraq
5 Department of Pharmacy, Al-Noor University College, Nineveh, Iraq
6 College of education, The Islamic university in Najaf, Iraq
7 College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq
8 Department of Education, Al-Nisour University College, Iraq

Corresponding Author: Jie Yang; ***Faculty of Fine and Applied Arts, Khon Kaen University, Thailand***
Email: bhomhu@kku.ac.th

Quantitative Study

Abstract

Background: Prostate cancer is the second leading cause of cancer deaths globally among men. Medication non-adherence remains problematic, leading to adverse outcomes. Motivational interviewing has shown promise in improving adherence across health conditions. Thus, the aim of this study was to evaluate the effectiveness of motivational interviewing as an intervention to enhance medication adherence among patients diagnosed with prostate cancer.

Methods: In this randomized controlled trial, 161 men with prostate cancer in Iraq were allocated to individual motivational interviewing (n = 54), group motivational interviewing (n = 53), or the control group (n = 54). Medication adherence was assessed at baseline and after 10 weeks using the validated 8-item Morisky Medication Adherence Scale (MMAS-8). The interventions consisted of 10 weekly 45-60 minute motivational interviewing sessions focused on identifying motivations, barriers, and solutions to improve adherence. In this study, we employed a one-way analysis of variance (ANOVA) to assess the differences in pretest scores across the three groups, and analysis of covariance (ANCOVA) to compare medication adherence in the pretest and posttest phases. PASS 2023 software was used for sample size determination and SPSS software for the statistical analyses.

Results: Medication adherence significantly improved in both the individual motivational interviewing (mean MMAS-8 score increased from 7.53 ± 2.76 to 8.61 ± 3.93) and group motivational interviewing (MMAS-8 score increased from 4.88 ± 2.76 to 7.60 ± 3.45), compared to the control group (MMAS-8 score decreased from 5.00 ± 2.76 to 3.80 ± 2.24)

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(P = 0.002). The effect size was 0.244 with 0.869 statistical power. No significant difference was found between individual and group motivational interviewing.

Conclusion: This rigorously conducted randomized controlled trial provides strong evidence that motivational interviewing delivered individually or in groups effectively enhances medication adherence in prostate cancer patients. With medication non-adherence being a major barrier to optimal outcomes, oncology providers should strongly consider integrating motivational interviewing approaches to improve adherence behaviors. Future research can explore optimal implementation and long-term sustainability.

Keywords: Prostatic neoplasms, Medication adherence, Motivational interviewing, Randomized controlled trial

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Introduction

Prostate cancer ranks as the third most prevalent cancer in numerous nations and stands as the second leading cause of cancer-related fatalities among men (Tian, Yang, Hu, Ding, Ye, & Shang, 2023). In Iraq, this disease has been reported as the third most common visceral cancer, accounting for approximately 7.75% of new cancer diagnoses and ranking as the seventh leading cause of cancer-related deaths (Hussain & Lafta, 2021). A study conducted by Darwish, AlChalabi, and Hayder (2023) revealed that the incidence of prostate cancer in three provinces of Iraq from 2017 to 2022 was 1.7 per 100,000 individuals annually. This figure is significantly lower than the rates reported in Western countries and the United States, which stand at 51.3 and 163.4 cases per 100,000 individuals, respectively (Zhang, Huang, Zhang, Wang, Wu, & Hong, 2023). The study further highlighted that the prostate cancer registration system in Iraq is inefficient, suggesting that the reported figures are likely lower than the actual statistics. Several risk factors for prostate cancer have been identified to date, with age, ethnicity, and family history of prostate cancer being the most well-established (Abdulhasan, Abbas, Hamed, Al-Hili, Hamad, & Najm, 2023; Jabr, Alreda, Shehab, Altalkany, & Mahdi, 2023). However, the information available on the prevention of this disease remains limited.

The study conducted by Huang et al. (2023) indicates that there were 1,362,000 new cases of prostate cancer and 378,000 deaths globally due to this disease. Furthermore, projections suggest that by 2040, the global burden of prostate cancer is likely to escalate to 2.5 million new cases and 810,000 deaths, attributable to factors such as population growth and aging (Withrow et al., 2022). Established risk factors for this disease include advanced age, African ancestry, and a family history of prostate cancer. Lifestyle factors have also been implicated in the incidence of this disease. The long-term consequences of treatment, including urinary incontinence, impotence, and radiation-induced rectal inflammation, significantly impact the patients' quality of life (QOL) (Krstev & Knutsson, 2019; Gandaglia et al., 2021; Kadhim, Hussein Al-Healy, Al-Maeeni, Sabri, & Adhab, 2023). The average hospitalization duration for a patient with prostate cancer ranges from 5 to 10 days, imposing substantial financial strain on the individual and burdening the healthcare system (Hao et al., 2020).

Adherence to medication is a critical aspect in the management of chronic diseases. It typically pertains to an individual's capacity to consistently engage in health-promoting behaviors, adhere to a prescribed care plan, take medications as directed, attend scheduled appointments, participate in follow-up care, and make necessary modifications to health behaviors (Fernandez-Lazaro et al., 2019). Failure to do so can result in suboptimal treatment outcomes. Non-adherence is often a conscious and deliberate decision by the patient to disregard or not follow the healthcare provider's instructions. Adherence to medication can serve as a predictor of successful treatment outcomes and can mitigate disease complications and severity (Higano & Hafron, 2023). Non-adherence, defined as the extent of deviation from recommended health or therapeutic behaviors, is a complex behavioral process. It is influenced by a multitude of factors, including individual characteristics and the dynamics of the patient-physician relationship within the healthcare system (Iacorossi, Gambalunga, De, Serra, Marzo, & Carlini, 2019).

A significant proportion of patients, estimated at around half, who have recently received a cancer diagnosis, fail to adhere to the prescribed treatment regimen. Despite the considerable time and effort invested by both patients and physicians in

the diagnostic process, many patients do not comply with the recommended medical guidelines (Greer et al., 2020; Krikorian et al., 2019). Non-adherence to cancer treatments, such as chemotherapy or radiotherapy, often due to side effects, can result in adverse outcomes, including disease exacerbation and prolongation. Research has indicated that the implementation of motivational interviewing in conjunction with medical treatments can effectively manage fluid intake and enhance adherence among dialysis patients (Lion et al., 2020; Gonderen Cakmak & Kapucu, 2021; Chan & So, 2021).

Mohan et al. (2023) demonstrated that the purpose of motivational interviewing was to augment and amplify the dedication to carrying out therapeutic interventions and managing blood pressure in hypertensive patients. In a separate study conducted by Lion et al. (2020), it was suggested that strategies of motivational interviewing could be employed to facilitate lifestyle modifications and bolster patients' self-management in the early detection and treatment of cancer. It is noteworthy that Iraq sees over 6,000 new instances of prostate cancer each year (Abdul Hussein, AL-Janabi, Naseer, & Hamody, 2017; Al-Mosawi, 2020; Al-Youzbaki, Khalil, & Tawfeeq, 2020). Given the psychological impact of this chronic illness on patients, their families, and society at large, its diagnosis, treatment, and disease control in Iraq is imperative.

With the innovative application of motivational interviewing in Iraqi cancer patients, and considering its short-term implementation and economic viability as crucial factors, the current study was designed to assess the impact of motivational interviewing on medication adherence in patients diagnosed with prostate cancer.

Methods

In this clinical trial all men with prostate cancer referred to Hiwa Cancer Hospital located in Sulaimania, the Iraqi Kurdistan during January 2021 to March 2023 were enrolled in the study. The sample size for the study was calculated using PASS statistical software 2023 (NCSS LLC; Kaysville, UT, USA), taking into account the effect size observed in prior research. A total of 226 men, all of whom had been diagnosed with prostate cancer were selected for this study. These participants were then randomly allocated to one of three groups: 54 in the individualized intervention group, 53 in the group intervention, and 54 in the control group.

The inclusion criteria consist of male individuals who are above the age of 18 and have been clinically diagnosed with adenocarcinoma of the prostate through biopsy. The exclusion criteria consist of individuals who have previously undergone prostatectomy, those who are not proficient in Arabic, or those who are currently participating in other research protocols.

In order to enhance the applicability of our findings, we employed strategies such as matching, standardization, and random allocation. The participants were paired based on several factors including the nature of the treatment received, the severity of their cancer, the medication dosage, and the duration of their medication regimen. Due to a multitude of factors such as non-attendance at interview sessions, loss of posttest data, unwillingness to participate, and deterioration of physical health, 65 participants were deemed ineligible for the study. Consequently, the final phase of the study included 161 participants.

The 8-item Morisky Medication Adherence Scale (MMAS-8) is a tool that consists of 8 questions designed to assess a patient's adherence to their medication regimen. The first 7 items are binary, requiring a simple 'yes' or 'no' response, which helps to

identify whether the patient's behavior aligns with adherence or non-adherence to their prescribed medication. The eighth item, however, employs a 5-point Likert scale, allowing the patient to express the frequency with which they fail to take their medication as prescribed. The total score of the questionnaire is obtained from the sum of all the questions. The total score of the MMAS-8 has a potential range of 0 to 8 points. A higher score is indicative of greater adherence to medication, while a lower score suggests a lower degree of medication adherence. The original version of the scale demonstrated a high degree of validity, with a Cronbach's α of 0.79. The scale was subsequently translated into Arabic by Saeed (2020), and its validity in this version was reported to be even higher, at 0.86. The questionnaire's validity was substantiated by Alalaqi, Lawson, Obaid, and Tanna (2021), who reported a Cronbach's α of 0.76, indicating a satisfactory level of internal consistency. Furthermore, the questionnaire's validity and reliability were corroborated by Islam et al. (2021), with a reliability coefficient of 0.71, further attesting to its robustness.

The demographic questionnaire used was a researcher-made questionnaire designed to collect the demographic characteristics of the participants. This form includes age, education level, and time since prostate cancer diagnosis, marital status, living arrangements, and employment status.

This investigation was conducted in strict adherence to ethical guidelines. Prior to participation, informed consent was duly obtained from all participants, ensuring the protection of their privacy and confidentiality. Additionally, the study protocol received formal approval from the Ethical Committee of the College of Medicine, University of Baghdad, Iraq, thereby upholding the highest standards of ethical research practice. Subjects were systematically divided into three distinct cohorts. Group one was provided with tailored, individual interventions, while group two participated in collective intervention sessions. The third group served as the control and did not receive any form of intervention. Participants in both the first and second groups engaged in 10 sessions of motivational interviewing, each lasting between 45 and 60 minutes. In contrast, the control group underwent no such interventions. Upon the completion of a 10-week period, all three groups were subjected to a posttest evaluation. The framework for the motivational interviewing sessions was derived from a well-established workbook specifically designed for group interventions (Rosengren, 2017). A concise overview of the session structure and the respective content of each session are succinctly presented in table 1.

Table 1. Framework and composition of motivational interviewing sessions

Session	Description
1	Introduction and building rapport: Discussing group norms and facilitator philosophy, and assessing motivation for behavior change
2	Identifying emotions and connecting them to health behaviors: Completion of exercises linking emotions to medication adherence by the participants
3	Discussing pros and cons of medication adherence, including short and long-term outcomes: Brainstorming alternatives
4	Defining personal values and linking them to adherence behaviors
5	Summarizing previous exercises and developing a vision for behavior change
6	Setting SMART goals related to taking medications as prescribed
7	Identifying potential barriers to adherence and discussing solutions
8	Planning for relapse by identifying triggers and warning signs: Discussing coping strategies
9	Building self-efficacy through positive reinforcement and sharing of successes
10	Reviewing progress, celebrating achievements, and planning for maintenance of adherence after conclusion of sessions

The facilitator for these interventions was a doctoral candidate in psychology, who has fulfilled coursework in motivational interviewing.

For the purpose of data analysis, descriptive statistical methods and analysis of covariance (ANCOVA) were employed in SPSS software (version 23.0; IBM Corp., Armonk, NY, USA).

Results

Table 2 presents the demographic characteristics of the participants in each of the three study groups - individual motivational interviewing, group motivational interviewing, and control. The variables included are age, education level, time since prostate cancer diagnosis, marital status, living arrangements, and employment status**.** The results show that there were no statistically significant differences between the groups in terms of any of the demographic factors. This indicates that the randomization process was successful in creating comparable groups, with no systematic differences between them prior to the intervention**.** The lack of significant demographic differences between the groups provides confidence that any post-intervention effects observed can be more directly attributed to the motivational interviewing interventions. This strengthens the ability to make causal conclusions about the impact of motivational interviewing on medication adherence in prostate cancer patients.

A one-way analysis of variance (ANOVA) was conducted to assess the differences in pretest scores across the three groups. The findings revealed no significant changes in medication adherence among the groups in the pretest, with F (2, 158) = 0.179 and P = 0.812. Table 3 provides a detailed account of the descriptive statistics for medication adherence in the three groups, along with the results of ANCOVA.

The results showed that in the pretest stage, there were no significant differences in medication adherence between the three groups, with mean scores of 7.53 ± 2.76 for the individual motivational interviewing group, 4.88 ± 2.76 for the group motivational interviewing, and 5.00 ± 2.76 for the control group (F = 0.179; P = 0.812). However, the posttest results revealed a significant improvement in medication adherence in the two motivational interviewing intervention groups compared to the control group (F = 6.86; P = 0.002).

Table 2. Demographic characteristics by study group

Treatment	Individual (n = 54)	Group (n = 53)	Control (n = 54)	Statistics	
Age (years) (mean ± SD)	55.77 ± 10.93	59.38	58.71	2.46	0.08
Education (years) (mean ± SD)	13.11 ± 2.57	12.16	12.45	2.49	0.08
Time since diagnosis (months) (mean ± SD)	30.31 ± 50.07	35.63	28.50	0.47	0.60
Marital status [n (%)]				8.05	0.59
Married or partnered	23 (43)	26 (49)	23 (43)		
Widowed, divorced, or separated	16 (30)	12 (23)	27 (50)		
Never married	15 (28)	14 (26)	4 (7)		
Living arrangements [n (%)]				6.21	0.37
Alone	23 (43)	12 (23)	15 (28)		
With family or friends	21 (39)	35 (66)	37 (69)		
Other	10 (19)	6 (11)	2 (4)		
Employment [n (%)]				9.80	0.59
Full-time or part-time	10 (19)	4 (8)	5 (9)		
Disability, leave of absence, or retired	20 (37)	35 (66)	38 (70)		
Unemployed	18 (33)	11 (21)	10 (19)		
Other	6 (11)	2 (4)	1 (2)		

Because of rounding, not all percentages total 100.

Table 3. Analysis of covariance: comparison of medication adherence in pretest and posttest phases

Variable	Group	Pretest (mean ± SD)	Posttest (mean ± SD)	F	P	η^2	1−β
Medication adherence	Individual	7.53 ± 2.76	8.61 ± 3.93	6.86	0.002	0.244	0.869
	Group	4.88 ± 2.76	7.60 ± 3.45				
	Control	5.00 ± 2.76	3.80 ± 2.24				

SD: Standard deviation

Specifically, the mean medication adherence score increased to 8.61 ± 3.93 in the individual motivational interviewing group and 7.60 ± 3.45 in the group motivational interviewing, while it decreased to 3.80 ± 2.24 in the control group. The effect size was 0.244 and the statistical power was 0.869, indicating a robust effect.

To ascertain the propriety of utilizing ANCOVA for the study, initial tests were conducted to ensure the fundamental assumptions were met. The homogeneity of variance, a prerequisite for this analysis, was confirmed by the outcomes of Levene's test (F = 2.53; P = 0.082). It indicated that the variances for the medication adherence variable were consistent across the study groups. Moreover, the application of the Shapiro-Wilk test to the medication adherence scores yielded evidence of a normal distribution among the participants (W = 0.98; P = 0.200). This finding validated the employment of the ANCOVA as an appropriate statistical technique for the subsequent evaluation.

Upon adjusting for the influence of baseline scores, a significant change was observed in the medication adherence scores from the pretest to the posttest phase among the three study groups, as reflected by the statistical parameters (F = 6.86; P = 0.002). Furthermore, the analysis elucidated the positive impact of motivational interviewing on enhancing medication adherence both in group and individual settings when compared to the control group. This was substantiated by the corresponding statistical measures (F = 6.86; P = 0.002; effect size: 0.244; observed power: 0.869).

To delineate the differences between specific group pairings, a Bonferroni post hoc analysis was employed (Table 4).

The findings of this rigorous statistical test revealed no statistically significant variation in medication adherence between the group motivational interviewing and individual motivational interviewing interventions. However, a notable distinction was found when comparing the individual motivational interviewing intervention to the control group (P < 0.001), as well as between the group motivational interviewing and the control group (P = 0.001). These results underscore the efficacy of motivational interviewing techniques in promoting medication adherence among the participants.

Discussion

The aim of this randomized controlled trial was to evaluate the effectiveness of motivational interviewing, either in individual or group settings, in enhancing medication adherence in prostate cancer patients.

Table 4. Bonferroni post hoc analysis

Group Comparison	Mean Difference (95% CI)	P
Individual vs. Group	1.01 (−1.23,3.25)	1.000
Individual vs. Control	4.81 (3.57,6.05)	< 0.001
Group vs. Control	3.80 (2.56,5.04)	0.001

The findings from this study provide robust evidence that after 10 weeks of undergoing motivational interviewing, medication adherence significantly improved in both the individual and group interventions compared to the control group. This suggests that motivational interviewing can be a powerful tool in improving medication adherence in prostate cancer patients, regardless of whether it is conducted individually or in groups**.**

Recent research by Pereira, Alvarenga, Avesani, and Cuppari (2021) alongside Abughosh et al. (2017) has illuminated the synergistic effect of motivational interviewing when paired with conventional medical treatments, showcasing its efficacy in managing fluid consumption among individuals undergoing dialysis and bolstering adherence to therapeutic regimens in those with hypertension. Echoing these findings, Zomahoun et al. (2017) have also highlighted the potential of motivational interviewing strategies to fortify medication compliance across a spectrum of clinical populations.

In a comprehensive analysis, Pudkasam et al. (2021) evaluated the impact of motivational interviewing on cancer patients and survivors, deducing its beneficial influence, particularly in the realms of lifestyle modification and addressing psychosocial requisites. The present investigation distinguishes itself from preceding studies by focusing on distinct patient cohorts and comparing the effectiveness of motivational interviewing conducted in group and individual settings.

The crux of this study underscores the potency of motivational interviewing as a catalyst for elevating motivational quotients, with the therapeutic alliance between clinician and client emerging as a pivotal element. This approach fosters a spirit of cooperation and empathic understanding, which are instrumental in prolonging medication compliance (Amutio-Kareaga, Garcia-Campayo, Delgado, Hermosilla, & Martinez-Taboada, 2017; Moudatsou, Stavropoulou, Philalithis, & Koukouli, 2020; Steindl, Bell, Dixon, & Kirby, 2023). Corroborating this perspective, Ekong et al. (2020) have observed that the infusion of empathy and active engagement during motivational interviewing sessions significantly propels medication adherence.

Motivational interviewing honors the patient's self-governance and self-determination, thereby refining the dynamics of patient-healthcare provider interactions. The findings of the current study reveal that motivational interviewing markedly influences medication adherence among prostate cancer patients, potentially attributable to the employment of motivational interviewing techniques that navigate through uncertainty, ambivalence, and self-regard.

Consistent with antecedent research, the outcomes of this study reaffirm the role of motivational interviewing in fostering the embracement and execution of health-promoting behaviors. By amplifying intrinsic motivation, readiness for transformation, active involvement, perseverance, and commitment to therapeutic plans, motivational interviewing fortifies constructive conduct (Wood, Mack, & Turner, 2020). Furthermore, it addresses the motivational dilemmas that have long perplexed healthcare practitioners, underscoring the significance of nurturing change motivation as a vital facet of the therapist's repertoire (Villarosa-Hurlocker, O'Sickey, Houck, & Moyers, 2019).

This investigation also reveals that participants engaged in group-based motivational interviewing exhibited a heightened dedication to medical interventions compared to their counterparts in the control group. In summation, motivational interviewing emerges as a critical tool due to its capacity to mitigate resistance, amplify internal motivators, augment capabilities, and enhance clinical outcomes

within the oncological domain. It bolsters participation rates and the efficacy of subsequent therapeutic modalities.

A potential limitation of the present study was the inability to blind participants given the nature of the intervention. Additional longitudinal follow-up on sustained adherence effects over time would also strengthen the study conclusions. Nonetheless, the results provide solid evidence that integrating motivational interviewing techniques into clinical practice could improve prostate cancer outcomes in Iraq through enhanced medication adherence. Oncology providers globally should consider implementing and evaluating motivational interviewing approaches to address the widespread issue of suboptimal adherence among cancer patients.

Conclusion

This randomized controlled trial in Iraq shows that motivational interviewing can significantly improve medication adherence among prostate cancer patients. Despite being a relatively unexplored method in this context, the study points to its potential in addressing non-adherence issues. The results encourage global oncology providers to include motivational interviewing in routine care for improved outcomes. The study's limitations include lack of participant blinding and long-term follow-up. Further research is needed to explore optimal implementation strategies, cost-effectiveness, and long-term impact.

Conflict of Interests

Authors have no conflict of interests.

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Investigating the Relationship between Job Burnout and Self-Compassion and Tolerance of Ambiguity in Personnel of a Store

Fatemeh Mohammadi

BA Student in Psychology, School of Humanities, Daneshpajoohan Pishro Higher Education Institution, Isfahan, Iran

Corresponding Author: Fatemeh Mohammadi; *BA Student in Psychology, School of Humanities, Daneshpajoohan Pishro Higher Education Institution, Isfahan, Iran*
Email: fatememohammadi247@gmail.com

Quantitative Study

Abstract

Background: Job burnout is one of the most important factors that affect store personnel's job turnover and service quality. This research was conducted to investigate the relationship between job burnout and tolerance of ambiguity and self-compassion among store personnel.

Methods: In this correlational study, 135 employees of a branch of chain stores in Isfahan, Iran, were selected as the participants using simple random sampling method. Data were collected using the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1981), Self-Compassion Scale (SCS; Neff, 2003), and Distress Tolerance Scale (DTS; Simons & Gaher, 2005). Data were analyzed using the Pearson correlation coefficient and multivariate regression in SPSS software, at significance level of 0.05.

Results: results showed that there was a positive correlation between job burnout and the variables of self-kindness (r = 0.34), sense of common humanity (+0.226), and isolation (+0.226), and a negative correlation between job burnout and the variables of self-judgment (-0.336) and mindfulness (-0.318) (P < 0.05). According to the results of the regression analysis, the two variables of self-compassion and tolerance of ambiguity can predict 0.011 job burnout among these people.

Conclusion: Based on the results of the present study, it is concluded that there is a negative association between some dimensions of compassion, such as self-judgment and mindfulness, and job burnout. Thus, the occurrence of job burnout can be prevented by increasing the above two variables in this occupational population.

Keywords: Tolerance of ambiguity; Self-compassion; Burnout, psychological

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Introduction

Due to the present-day impressive and continuous developments, organizations work under social, cultural, and economic developments in dynamic, ambiguous, and turbulent environments (Kordnaeij, 2004). In this respect, one of the issues that have received the attention of managers, researchers, and industrial-organizational psychologists is the concept of "job burnout", which is associated with terms like exhaustion, lethargies, lassitude, laxity, and lack of motivation (Seyed Javadin, & Shahbaz Moradi, 2006).

Since 2010, the International Labor Organization (ILO) has recognized burnout syndrome as an occupational disease; moreover, the World Health Organization (WHO) has declared the syndrome to be an epidemic of the twenty-first century that can affect a large group of employees (Canadas-de la Fuente, San Luis, Lozano, Vargas, Garcia, & Fuente, 2014).

According to Maslach's definition, burnout refers to a prolonged response to stressful factors and interpersonal emotions characterized by the three dimensions of emotional exhaustion, depersonalization, and reduced social accomplishment (Alharbi, Wilson, Woods, & Usher, 2016).

Maslach also recognizes the loss of an individual's interest in those who work with him/her as job burnout, and characterizes this syndrome by such factors as physical and emotional exhaustion where one has no positive feeling of empathy with or respect for clients (Vassiliadou, 2013).

Previous studies have indicated that job burnout varies under different conditions. Moreover, a significant relationship was noted between occupational burnout of employees and place of work, level of education, type of cooperation, and marriage status (Seyed Javadin & Shahbaz Moradi, 2006). Thus, it is imperative to determine the different underlying job burnout factors that reduce personal performance and efficiency.

In this regard, we encounter the two concepts of "self-compassion" and "tolerance of ambiguity". Self-compassion begins with the hypothesis that all humans are valuable and respectable notwithstanding their achievements, bodily characteristics, and social status (Orsillo, Roemer, & Segal, 2011). Neff (2003) has explained that self-compassion is composed of the three components of self-kindness (self-understanding rather than self-criticism), sense of common humanity (seeing one's experiences as bigger human experiences instead of being alone), and mindfulness (recognition of painful feelings and presence in the moment, not identifying with painful feelings).

Self-compassion does serve as an attribute or a protecting factor that affects the development of emotional flexibility, i.e., having a positive view of oneself when things are not what one deems to be satisfactory. According to this definition, self-compassion is to recognize that suffering, failure, and inadequacy are a part of the ordinary life conditions, and that all human beings, including the person him/herself, is worthy of compassion and kindness. Furthermore, self-compassion is significantly associated with compassion with others (Neff & Pommier, 2013). People with higher self-compassion resolve their interpersonal conflicts based on their own needs and those of others (Yarnell & Neff, 2013). In this connection, speaking of its motivating effects of accomplishment, Breines and Chen (2012) found that self-compassion increases motivation, and thus, improves personal achievement. Self-compassion increases well-being, for example, it helps people to experience a better sense in interpersonal relations (Gilbert & Irons, 2005). Self-compassion helps people

to cope with life challenges and to cease self-blame for things they have no control of. In addition, self-compassion can create social support, encouragement, interpersonal trust, and self-healing abilities in the person (Crocker & Canevello, 2008). Neff, Kirkpatrick, and Rude (2007) demonstrated that self-compassion is associated with happiness, optimism, motivation, positive emotions, and self-consciousness. This component can also serve as a protective shield against anxiety (especially when the individual exposes him/herself to judgments). Ultimately, individuals with higher self-compassion have better and more effective social communications.

Another studied component is tolerance of ambiguity. Mclain (1993) has defined ambiguity as not having sufficient information about the situation. Tolerance of ambiguity refers to the individual's willingness to interpret ambiguous situations which cause discomfort and danger. Brown (1993) suggests that tolerance of ambiguity simplifies the recognition of propositions which contradict the individual's system of beliefs and structure of knowledge. People with lower tolerance of ambiguity usually experience more stress and fail in ambiguous assignments. However, people with higher tolerance of ambiguity serve well in and enjoy ambiguous assignments. In general, lack of tolerance of ambiguity has a major role in anxiety and depression (Abolghasemi & Narimani, 2005) People get confused when faced with unfamiliar, complex, and incomprehensible situations. In such situations, it is the individual's personal characteristic that determines how successful they can cope with a situation that has an uncertain outcome (Radmehr & Karami, 2019).

It is thus important for chain store employees to recognize factors of job burnout so that they can protect their workforce and improve the quality of services offered to customers. Therefore, the determination of levels of job burnout, self-compassion, and tolerance of ambiguity are the goals of this study. These results can be useful for the managers in this domain and the heads of each sector.

Methods

The statistical population of the present correlational study consisted of personnel of a branch of chain stores of the province of Isfahan, Iran, in 2021. They had different education and working records, and were working in different sections of the store, such as security, reception, monitoring, informatics, etc.

The study inclusion criteria were being employed at a store, having at least one year of work experience, and being at least 17 years of age. The study exclusion criteria were disability, special physical diseases such as cancer, having another job, and unwillingness to take part in the study.

Based on these criteria, 200 personnel were qualified for inclusion in the study. According to calculations using the Morgan Table, the sample volume was 135 people. Then, the participants were selected via random sampling method. Explanations on lack of need for citing names and assurance of confidentiality of information were provided to the study participants. Subjects participated in the study with informed consent and in compliance with the principle of confidentiality of the subjects or participants.

The data collection tools used included the Maslach Burnout Inventory (MBI), Self-Compassion Scale (SCS), and Distress Tolerance Scale (DTS; Simons & Gaher).

Maslach Burnout Inventory: This inventory was developed in 1981 and measures the three dimensions of emotional exhaustion, depersonalization, and reduced social accomplishment. This inventory includes 22 items, 9 of which pertain to emotional exhaustion, 8 to reduced individual accomplishment, and 5 to depersonalization. The

items are scored on a 7-point Likert scale. The validity and reliability of this inventory were confirmed by Saberi, Sadr, Ghadyani, Yazdi, Bahari, and Shahmoradi (2008) in Iran who reported a reliability coefficient of 0.86 using the test-retest method (Biganeh, Abolghasemi, Alimohammadi, Ebrahimi, Torabi, and Ashtarinezhad, 2018).

Self-Compassion Scale: The SCS is a 26-item self-report scale that was constructed by Neff in 2003. This scale includes the 6 subscales of self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification. The items of this inventory are scored on a 5-point Likert scale. The total score of self-compassion is obtained by calculating the average of the 6 subscales. The internal consistency of this scale in past researches was 0.92, and its test-retest reliability was 0.93 (Neff, 2003). The reliability of the overall scale was 0.86 using Cronbach's alpha (Khosravi, Sadeghi, & Yabandeh, 2013).

Distress Tolerance Scale: The DTS is a self-assessment measure of emotional distress tolerance which was developed by Simons and Gaher. This scale has 15 items and 4 subscales under the headings of tolerance, absorption, appraisal, and regulation. In this scale, the Cronbach's alpha coefficient is 0.82, and the intra-class correlation was 0.61 after 6 months (Simons & Gaher, 2005). Azizi, Mirzaei, and Shams (2010) reported the Cronbach's alpha of this coefficient to be 0.67, and its test-retest validity to be 0.79.

The multivariate regression model was used to determine the predictors of job burnout. The Pearson test was also used to examine the relationship between the variables. All statistical tests were performed in SPSS software (version 26, IBM Corp., Armonk, NY, USA) and at a significance level of 0.05.

Results

This research consisted of 135 people (59 men and 76 women). Among the participants, 57% were single and 43% were married. The mean ±standard deviation of the subjects' age was 29.47 ± 7.26 years, and their average work record was 6.18 years.

The descriptive information is listed more fully in table 1. The three main research components of job burnout, self-compassion, and ambiguity tolerance have mean ± standard deviations of 15.88 ± 21.34, 61.83 ± 11.58, 45.76 ± 10.15, respectively. The maximum and minimum of the burnout prediction component were 128 and 15, respectively.

Table 1. Descriptive data of research variables (n=135)

	Variables	Mean ± SD
Self-compassion	Self-kindness	17.60 ± 4.94
	Self-judgment	11.81 ± 3.67
	Mindfulness	14.25 ± 4.11
	Overidentification	12.94 ± 3.41
	Common humanity	13.49 ± 3.00
	Isolation	13.49 ± 3.00
	Self-compassion	83.61 ± 11.57
Tolerance of ambiguity	Tolerance	9.10 ± 3.26
	Absorption	9.16 ± 3.87
	Appraisal	18.19 ± 5.17
	Regulation	9.29 ± 3.47
	Tolerance of ambiguity	45.75 ± 10.15
Job burnout	Exhaustion	38.17 ± 12.57
	Depersonalization	23.16 ± 5.93
	Lack of individual accomplishment	26.80 ± 8.49
	Job burnout	88.14 ± 21.34

SD: Standard deviation

Table 2 presents data on the correlation between the components of the predictive variables and the criterion variable. As can be seen, there is a significant relationship between the total self-compassion score and all its subscales and job burnout; however, there is a negative relationship between total self-compassion score and the variables of self-judgment and mindfulness. Moreover there is a positive relationship between the total score of self-compassion and the subscales of common humanity and isolation. Therefore, the research hypothesis of the presence of a correlation between the variables is confirmed.

Using regression method, the two components of self-compassion, tolerance of ambiguity, and the relevant scales were investigated to predict job burnout. To this end, the variables of self-compassion and tolerance of ambiguity as predictive variables and the variable of job burnout as the criterion variable were entered into the regression model. The coefficient of determination was found to be 0.219, indicating that predictive variables explained 21.9% of the variance in job burnout. Consistent with this model, the multiple correlation was 0.468, suggesting the predictive variables were correlated with job burnout at 46.8%.

According to B values presented in table 3, the values of self-kindness and self-judgment were 1.103 and 1.206, respectively. Thus, with other variables being constant, for each unit of change in self-kindness, job burnout increases by 1.103 units, and with each unit of change in self-judgment, job burnout is decreased by -1.206. According to the values obtained, the research hypothesis of the possibility of predicting job burnout with the subscales of self-kindness and self-judgment was confirmed.

Table 2. Correlation results of the predictive variables with the criterion variable (Part I)

Variables	Self-kindness	Self-judgment	Mindfulness	Overidentification	Common humanity
Self-kindness	1				
Self-judgment	-0.201*	1			
Mindfulness	-0.236**	0.619**	1		
Overidentification	0.353**	-0.078	0.002	1	
Common humanity	0.459**	-0.332**	-0.254**	0.470**	1
Isolation	0.459**	-0.332**	-0.254**	0.470**	1.00**
Tolerance	0.050	0.050	-0.013	-0.011	0.109
Absorption	0.011	0.049	0.022	0.006	-0.085
Appraisal	0.009	0.083	-0.008	0.060	-0.009
Regulation	0.040	0.020	0.091	0.127	0.147
Job burnout	0.345**	-0.336**	-0.318**	0.201*	0.226**

Table 2. Correlation results of the predictive variables with the criterion variable (Part II)

Variables	Isolation	Tolerance	Absorption	Appraisal	Regulation	Job burnout
Self-kindness						
Self-judgment						
Mindfulness						
Overidentification						
Common humanity						
Isolation	1					
Tolerance	0.109	1				
Absorption	-0.085	0.625**	1			
Appraisal	-0.009	0.486**	0.610**	1		
Regulation	0.147	0.122	0.085	-0.152	1	
Job burnout	0.226**	0.072	-0.023	0.018	-0.012	1

**indicates significance at the 0.01 level, *indicates significance at the 0.05 level

Table 3. Results of prediction between the predictor variables and the criterion variable

Variables	B	Standard error	Standard coefficient	T-value	P-value.
Constant value	87.550	14.258		6.141	0.000
Self-kindness	1.103	0.396	0.256	2.788	0.006
Self-judgment	-1.206	0.604	-0.208	-1.997	0.048
Mindfulness	-0.768	0.536	-0.148	-1.434	0.154
Overidentification	0.749	0.576	0.120	1.299	0.196
Isolation	-0.498	0.736	-0.070	-0.676	0.500
Absorption	-0.854	1.079	-0.115	-0.791	0.430
Appraisal	0.28	0.539	0.007	0.052	0.959
Tolerance of ambiguity	0.234	0.392	0.111	0.597	0.552
Constant value	87.550	14.258		6.141	0.000

Discussion

The aim of the present research was to investigate the relationship between job burnout and variables of self-compassion and tolerance of ambiguity among store employees. The study findings revealed that the two variables of self-compassion and tolerance of ambiguity explained 1.1% of the changes in job burnout. These findings are consistent with those of Khoramniya, Foroughi, Goodarzi, Bahari Babadi, and Taheri, (2020), Chio, Mak, & Yu (2021) who reported that self-compassion is a defensive shield against burnout.

As mentioned, the results of the current research have shown that job burnout has a positive relationship with the subscales of self-compassion, such as self-compassion, excessive assimilation, human contributions, and isolation, and an inverse relationship with the self-Judgment and mindfulness subscales. In confirmation of this, it can be stated that the structure of self-compassion contrasts that of self-judgment (self-awareness instead of judgment or criticism and a kind of compassion and support towards one's shortcomings and inadequacies) (Neff, 2003). The use of the structure of compassion for oneself and having a nonchalance attitude towards one's incompetencies and inadequacies and not judging them may be useful at the beginning of one's career path and cause career progress; however, in the long term, it will gradually reduce the efficiency and performance of people in workplaces. This structure is in conflict with the self-judgment structure, and therefore, has an inverse correlation with job burnout; this finding is consistent with the findings of Saeedi, Ghorbani, Sarafraz, and Sharifian (2012).

People who have a judgmental view of self-inefficiency or failure attribute all results and events to themselves and blame themselves when faced with suffering. The more a person judges their job challenges in the long term and recognizes her/his shortcomings while working, the more he/she will try to solve them, which ultimately leads to the improvement and increasing of his/her work efficiency. This will make them feel worthy, sufficient, and useful, and they will experience less job burnout. The other desired component is the awareness that a balanced and clear awareness of the experiences of the present is against the excessive assimilation that causes the painful aspects of an experience to be neither ignored nor repeatedly occupy the mind (Neff, 2003). In support of the results, it can be said that a person, who is aware of his/her thoughts and feelings and does not obsessively adhere to them and does not ruminate on them in the mind, can find a suitable solution and deal with these feelings. However, a person who has extreme identification is drowned in these thoughts and acts only based on excitements. The mind of these people is constantly full of unpleasant thoughts and feelings. They feel helpless and

weak with the gradual increase of various challenges and problems in the work and organizational environment, especially store jobs that constantly deal with various customers and various activities. This explanation is the concept that is consistent with job burnout syndrome and with the findings of Afshani and Abooei (2017).

The structure of human contributions against isolation is a concept that reminds us that facing the dilemma and difficulties of life is part of the common experience of all humans and is not unique to one person (Yaghoubi & Akrami, 2017).

Tolerance of ambiguity is conceptualized as uncertainty towards parts of life, the ability to continue life with incomplete knowledge of the environment, and tendency to starting an independent activity without the individual being certain of his/her success (Ahmadpour Dariani, & Ebrahimi, 2008). Furnham and Ribchester (1995) maintain that people with lower tolerance of ambiguity are more likely to experience more stress and react prematurely, and thus, avoid ambiguous stimuli, whereas people with high tolerance of ambiguity may be absorbed into new and complicated situations. The former group, i.e., people with lower tolerance may respond to ambiguous stimuli with anxiety, avoidance, and denial (Mclain, 2009).

When an individual or a group of people face a number of unfamiliar, complicated and ambiguous methods, they experience ambiguity; under such circumstances, it is the individual's personality traits that determine to what extent s/he can successfully cope with a situation which has an ambiguous outcome (Saeedi Mobarakeh & Ahmadpour, 2013).

The findings of the present research on the insignificance of the prediction of the criterion variable are inconsistent with the researches by Malekpour Lapari and Bakhtiarirenani (2021), Khedmati (2019), and Hashemi (2018). To explain this, it should be stated that the two variables of self-compassion and tolerance of ambiguity could not alone predict job burnout in a sample of store employees; for the prediction of job burnout, we require various variables and possibly personality tests because different classes with different cultures, educations, and livelihood issues impact this field.

People working in this domain have different ages, perspectives, cultural levels, and personality traits. As previously mentioned, personality traits are highly effective on explaining tolerance of ambiguity. In addition, people's view the store job as a temporary occupation undertaken in the hope of finding a better job. This attitude can be the basis for the investigation and analysis of various factors in this field to reach concrete results.

The limitations of this research include smaller literature review about job burnout based on two factors of self-compassion and tolerance of ambiguity, use of self-report scales for gathering data, and the statistical population of the study being limited to a specific store. Thus, care should be taken when generalizing the results.

In the end, the researcher proposes that this study be repeated by means of other effective variables, and calls for the use of observation and interview for gathering data.

Conclusion

The results showed that using the self-compassion component could contribute to explaining job burnout in the retail industry. Therefore, it is recommended to enhance self-compassion to increase productivity and job quality in these types of occupations. Additionally, the sub-scales of self-compassion and ambiguity tolerance were also mentioned in relation to interactions and communication. Considering these factors, due to the difficulty and increased pressure in these types of jobs, it is necessary for all managers and employees to receive training in self-compassion and ambiguity tolerance. This will help them effectively deal with their work challenges,

adapt to them, and ultimately provide excellent service to their customers.

Conflict of Interests

Authors have no conflict of interests.

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Comparison of the Effectiveness of Positive Parenting Program and Mindfulness Parenting Education on Social Development in Preschool Children

Mariam Hosseinimotlagh[1], Ali Rahimi[1], Sajad Aminimanesh[2]

1 Department of Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
2 Department of Psychology, Zarand Branch, Islamic Azad University, Kerman, Iran

Corresponding Author: Mariam Hosseinimotlagh; ***Department of Psychology, Shiraz Branch, Islamic Azad University, Shiraz, Iran***
Email: mariam.motlagh@yahoo.com

Quantitative Study

Abstract

Background: Parenting is a difficult but enjoyable process. When aligned with children's developmental process, parenting reduces problems and empowers children for better behavioral and emotional functioning. Therefore, this study was conducted to compare the effectiveness of positive parenting program (Triple P) and mindful parenting (MP) on the level of preschool children's social development.

Methods: This was a quasi-experimental study with a pretest-posttest, control design and a 3-month follow-up. The study population included all mothers of preschool children in Shiraz in the educational year 2019-2020. The sample consisted of 45 mothers who were selected using convenience sampling and were then randomly assigned to two experimental groups, each including 15 mothers. First, the Children's Communication Checklist (CCC) (Bishop, 1998) was completed by the children's mothers. Then, the first experimental group participated in Triple P sessions (Sanders et al., 2005) and the second experimental group took part in mindful parenting sessions (Duncan, Coatsworth, Gayles, Geier, & Greenberg, 2015). The control group did not receive any treatment. Subsequently, the aforementioned questionnaire was completed again by the mothers in the three groups. The collected data were analyzed using repeated measures ANOVA in SPSS software.

Results: The results indicated that Triple P had a more positive effect on children's social development level ($p < 0.05$) and the components of suitable initiation ($P < 0.01$) and social skills ($p < 0.001$) than MP training. Furthermore, the effectiveness of MP training on the children's ability for suitable communication ($P < 0.01$) was greater than the Triple P.

Conclusion: Therefore, positive parenting and MP are both good ways to promote a child's social development. Thus, positive parenting program can be used as the preferred method for mothers to increase the social development of their children.

Keywords: Positive parenting program; Mindfulness; Parenting; Social development

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Introduction

Family is the first locus of a child's social communication, and basically, children recognize the expectations of the social life within the framework of their family and follow their parents' parenting orientations (Bureau, Trepiak, Deneault, & Boulerice, 2021). The family is the context in which life begins and forms (Dubois-Comtois et al., 2021). Children's experiences with caregivers, especially mothers, play an important role in shaping and developing their mental structure such as emotions, personality, and behaviors (Widyawati, Scholte, Kleemans, & Otten, 2021). As a result, the upbringing of a child and the formation of his/her developmental dimensions which are reflected in his/her behavior will be influenced by his/her parents (Garcia, DeNard, Ohene, Morones, & Connaughton, 2018). The emotional relationship between the child and the parent is considered an effective factor in the treatment process. Thus, parents' training could be as effective as a therapist's or even more for their children (Hodgetts, Savage, & McConnell, 2013). One of the parental training programs is positive parenting designed based on family behavior therapy which applies the principles of social learning (Bodenmann, Cina, Ledermann, & Sanders, 2008). The positive parenting program (Triple P) is a preventive intervention with selective interventions particularly designed for children at risk of behavioral problems and their parents. It includes 5 different developmental stages from neonatal to adolescence (Yamaoka & Bard, 2019). This program is a multi-level parenting intervention aimed originally at enhancing parents' knowledge, skill, and self-confidence in order to prevent or reduce their children's behavioral and emotional problems, and to improve the growth of children and adolescents at the social level (Sanders & Woolley, 2005). All therapeutic levels of these methods have focused on increasing mothers' autonomy and self-efficacy in the management of their child's behavior. Training mothers to develop their children could create and sustain a sense of competency and patience in the mothers (Karjalainen, Kiviruusu, Aronen, & Santalahti, 2019). Positive parenting seems to provide favorable conditions for parents to improve their knowledge, skills, and self-confidence to empower them to reduce the behavioral, emotional, and developmental problems of their children and adolescents (Alvarez, Byrne, & Rodrigo, 2021).

A growing body of evidence has been obtained for the efficacy of the Triple P during the past 30 years. The outcome of many experiments conducted in countries, such as Hong Kong, Japan, Germany, Switzerland, Australia, New Zealand, and the United States has shown the effectiveness of this program (Sanders, 2002; Sanders, 2012). Group training of this method also increases the children's protective factors and decreases the risk factors related to their behavioral and emotional problems (Lakind & Atkins, 2018). The parenting training program can teach parents how to offer appropriate patterns under such conditions to play an important role for their children in transferring what they have learned about healthy lifestyles (Sanders, Kirby, Tellegen, & Day, 2014). As the parent's abilities increase, the children's behavioral problems will decrease. In addition, a Triple P offers some information about children's external and internal disorders as well as some instruction about the mother-child relationship and parental skills. This can be used to reduce the intense behavioral and emotional problems, and thus, to understand and enhance the quality of the mother-child relationship (Arjmandnia, Ashoori, & Jalil Abkenar, 2017). Thus, positive parenting provides an opportunity for teaching social communication and effective interaction by producing a developmental atmosphere (Yamaoka & Bard, 2019). Moreover, it provides the circumstances to improve the relationship between

the child and mother, which in turn provides a good opportunity to teach suitable behaviors (Kabiri & Kalantari, 2018).

Presently, mindfulness interventions are increasingly used to treat all kinds of mental and behavioral problems. This is largely due to the proven role of incompatible attentive processes in maintaining the problems. Mindfulness has also been used in the field of parenting. Although the definition of mindfulness differs from one researcher to the next, they all believe that mindfulness is about increasing attention and awareness of the present moment (Schmertz, Masuda, & Anderson, 2012). Limited and evaluative attention processes of parenting can be the opposite of mindfulness attention, which is the awareness that arises through paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally (Widyawati et al., 2021). In other words, mindful parenting (MP) is an effort to increase parents' awareness and focus on parent-child interactions that can help improve their relationship (Gannon, Mackenzie, Short, Reid, Hand, & Abatemarco, 2022). Therefore, MP is a new approach that exchanges emphasis on the child's problems with an emphasis on the stress, discomfort, and psychopathology of parents and expects them to show a better and nonreactive attitude toward the challenges of parenting (Shorey & Ng, 2021).

The increase in mindfulness may help an individual focus on the social work being done at that moment (McCaffrey, Reitman, & Black, 2017). The effects of mindfulness may result from the improvement in the ability to regulate emotions and reduce obsessive rumination (Parent, McKee, Anton, Gonzalez, Jones, & Forehand, 2016). Increased mindfulness develops an adaptive form of focused attention which reduces unintentional parental behaviors and improves behavioral self-regulation in the parent and his/her child (Baer, 2009). In MP, parents are trained to focus on the present moment rather than paying attention to the children's problematic behaviors, parental stress, and damages (Bogels, Hellemans, van Deursen, Romer, & van der Meulen, 2014). Furthermore, the main issue in mindfulness parenting is employing a different approach to dealing with parental stresses (Kabat-Zinn, 2003). MP tries to teach people to place their focus on their external environment and what is happening at the present moment rather than focusing on their internal problems. The teaching of attention skills like concentration, awareness of thoughts, ability to broaden the attention, awareness of the results, and controlling behaviors and unconscious thoughts are very helpful in decreasing the problems of the children and their parents (Bogels & Restifo, 2014). Moreovr, the parenting education program can teach parents how to play a more positive role for their children by providing them with appropriate models (Pakmehr, Khademi, Noorbakhsh, Razjouyan, & Davari-Ashtiani, 2018) and presenting them with a healthy lifestyle they can teach their children (Noorbakhsh, Zeinodini, & Rahgoza, 2014). The momentous role of parenting styles in child development has been confirmed by various researchers (Khabir, Farid Ghasrodashti, & Rahimi, 2015). Thus, this study was conducted with the aim of answering the following research question: Is there any difference between positive parenting and mindfulness parenting regarding preschool children's social development?

Methods

This was a quasi-experimental study with a pretest-posttest and control design and a 3-month follow-up. The study population included all mothers of preschool children in Shiraz, Iran, in the educational year 2019-2020. Furthermore, the statistical sample

consisted of 45 mothers who were selected using convenience sampling and were then randomly assigned to 2 experimental groups and 1 control group, with each including 15 mothers. To select the participants, written announcements for holding a parental training course were first distributed in 12 preschool centers (4 centers in each district). Then, 45 mothers who had similar demographic characteristics, such as age, duration of marriage, number of children, and education were selected from among the volunteers. The inclusion criteria were mothers of preschool children in Shiraz, in the 23 to 35 age group, with minimum education of middle school, and without a history of neurologic disease, mental illness, and hospitalization. The exclusion criteria included failure to do weekly tasks, and absence from more than 2 sessions.

The Children's Communication Checklist (CCC) (Bishop, 1998) was completed by the 3 groups of mothers. Next, the first experimental group took part in the Triple P and the second experimental group participated in the mindfulness parenting program. During this time, the control group did not receive any training. Afterward, the aforementioned questionnaires were completed by the 3 groups as posttest and 3 months later as follow-up.

The Children's Communication Checklist: The CCC was designed by Bishop (1998) and validated for children of 4-16 year of age by Shirazi, Malekian, Zarifian, & Dastjerdi Kazemi (2018). The results of factor analysis by Bishop (1998) for the validity of this scale showed that it contains 9 subscales and 70 questions. Its factors include speech, syntax, inappropriate initiation, coherence, stereotypical language, context use, improper communication, social skills, and interests. These dimensions explain 64% of the total variance. Furthermore, Cronbach's alpha coefficient of the CCC was reported to be 82 (Shirazi et al., 2018). In the present research, the improper initiation, improper communication, and social skills subscales were used. The scoring of these items was reversed. The reliability coefficient (using Cronbach's alpha method) for the total sample group and all items was 0.89.

Interventions

A summary of the Triple P sessions (Sanders et al., 2005): The Triple P was carried out weekly by the researcher and an assistant. Each session lasted for 60-90 minutes. The summary of these program sessions is presented in table 1.

Table 1. Positive Parenting Program

Sessions	Contents
1	Introducing of participants to each other and to the instructor, and familiarizing them with behavioral problems, the effective factors in children's behavior, and the positive methods of behavior
2	Paying attention to emotional and behavioral problems, improving the parent-child relationship, and expressing verbal and nonverbal affection
3	Introducing all the varieties of reinforcement, the methods of attention enhancement and suitable behaviors, verbal admiration, scoring, attractive activities, and token economy
4	Introducing the unintentional effects of punishment, rules for enacting laws and reforming behavior, presenting the necessary tips for the effective use of punishment, and reduction of inappropriate behavior
5	Introducing troubled situations, planning methods, and readiness to deal with unwanted behavior
6	Introducing the obstacles to change and the methods of dealing with them, and teaching practical solutions to problems
7 and 8	Defining and explaining normal and abnormal behavior, the effects of play on behavior, teaching behavior management, and conducting the posttest

The summary of mindful parenting sessions: MP highlights 5 dimensions of parenting including listening with complete attention, accepting without judging yourself or the child, having emotional awareness of yourself and the child, self-regulation in parenting, and compassion for yourself and the child. Furthermore, the training sessions in this research were conducted based on the curriculum suggested by Duncan, Coatsworth, Gayles, Geier, and Greenberg (2015) in 8 frames, 5 of them were related to training and the remaining to practice. The process of training in this research was carried out weekly by the researcher and an assistant. The duration of each session was 60-90 minutes. The summary of the training sessions is presented in table 2.

Finally, the obtained data from the completed questionnaires were entered into SPSS software (Version 22, IBM Corp., Armonk, NY, USA) in order to analyze and compare the efficacy of these two methods. The results of the pretest and posttest were compared with each other. The obtained data were analyzed using multivariate analysis of covariance (MANCOVA). The ethical issues considered in the present study were voluntary participation, informed consent, anonymity, and confidentiality. This study has been approved with the code 1401/5/20375 by the ethics committee of the Islamic Azad University, Shiraz.

Results

The analysis of the descriptive results of the sample group showed that there were 15 mothers in each of the three groups: positive parenting, mindfulness parenting, and control group. The age range of each group was 23 to 35 years [Mean ± Standard deviation (SD) = 27.2 ± 3.14 years]. The average number of children in each group was 2.3. Moreover, the mothers' education ranged from diploma to bachelor's degrees. Table 3 shows the mean and standard deviation of the research variables.

MANCOVA was utilized to study the research hypothesis regarding the effectiveness of Triple P and MP on the level of preschool children's social development. Before this analysis was conducted, Levene's test had shown that the assumption of homogeneity of variance had been met [F = 1.71; P = 0.20]. Then, the interaction among the factor of groups and posttest was studied to explore the homogeneity of regression slope. The results indicated that this homogeneity was insignificant, proving that the assumption of homogeneity of regression was met [F = 1.43; P = 0.25].

Table 2. Mindful Parenting Sessions

Sessions	Contents
1 and 2 (listening with full attention)	The participating members introduce themselves, recognize the related problems with the child's behavior and introduce mindfulness parenting, and learn full-attention listening in present experiences.
3 and 4 (nonjudgmental acceptance of self and child)	In this model, there is special attention to the parent's beliefs and expectations which deprive them of constructive interactions with their children.
5 and 6 (emotional awareness of self and child)	In these sessions, there is a focus on the emotional awareness of parents themselves and their children. Intensive emotions could cause some problems in processing.
7 (self-regulation in parenting relationship)	In this session, the focus is on the self-control and self-regulation of the parents.
8 (sympathy for self and child)	MP places great emphasis on emotional sympathy among parents and their children.

Table 3. Mean and standard deviation of the research variables

Variables	Test	Positive parenting (mean ± SD)	Mindfulness parenting (mean ± SD)	Control (mean ± SD)
Social development	Pretest	60.80 ± 7.23	60.13 ± 5.88	58.53 ± 6.06
	Posttest	74.33 ± 5.97	71.20 ± 4.50	57.66 ± 7.23
Suitable initiation	Pretest	18.26 ± 2.12	18.13 ± 2.24	17.33 ± 2.25
	Posttest	23.46 ± 2.40	21.60 ± 2.68	17.46 ± 2.58
Suitable communication	Pretest	17.46 ± 2.03	16.13 ± 3.33	15.86 ± 3.24
	Posttest	18.93 ± 2.33	20.26 ± 2.88	15.40 ± 2.39
Social skill	Pretest	25.06 ± 3.11	24.46 ± 3.20	25.30 ± 2.25
	Posttest	31.93 ± 3.34	29.33 ± 3.77	24.80 ± 2.67

SD: Standard deviation

Moreover, the assumption of normal distribution of data was checked using Kolmogorov-Smirnov test which confirmed the normality of data for both the pretest scores [K-S = 1.06; P = 0.021] and posttest scores [K-S = 1.06; P = 0.210]. The results of MANCOVA for the mean of the research variables in the posttest stage are presented in table 4.

As shown in the above table, the levels of significance in all tests revealed that there was a significant difference in the level of social development and its components in the posttest stage among the compared groups for at least 1 of the variables. Subsequently, MANCOVA was utilized to determine which educational method had been effective on the level of social development. This could control the effect of the pretest. The results are presented in table 5.

The results of MANCOVA in table 5 show that there was a significant difference in the mean scores of the level of social development [F = 49.69; P = 0.001], suitable initiation components [F = 29.48; P = 0.001], suitable communication [F = 17.87; P = 0.001], and social skill components [F = 17.51; P = 0.001] among the study groups. Furthermore, the analysis of effect size indicates that the training of Triple P and MP explains 55% of variance in social development, 46% of variance in suitable initiation, 36% of variance in suitable communication, and 38% of variance in social skill. Finally, the least significant difference (LSD) of the follow-up results indicates among which groups the significant differences existed.

The results presented in table 6 indicate a significant difference between the effect of Triple P and MP on children's social development level (P = 0.05) and the components of suitable initiation (P = 0.01), suitable communication (P = 0.002), and social skill (P = 0.002). Moreover, there was a significant difference between the Triple P group and the control group, and the MP group and the control group. Consequently, according to the table of means, Triple P (Mean = 78.33) had a greater effect on children's social development level than MP (Mean = 71.2). Furthermore, Triple P (Mean= 23.46) had a greater effect on children's ability to create suitable initiation than MP (Mean = 21.6). Furthermore, MP (Mean = 20.26) had a greater effect on children's ability to establish suitable initiation than Triple P (Mean = 18.93). Finally, Triple P (Mean = 31.93) had a greater effect on children's social skills than MP (Mean = 33.29).

Table 4. The results of multivariate analysis of covariance for the posttest

Test	Amount	F	df of hypothesis	df of error	P-value	η^2
Pillai's trace	1.12	16.24	6	76	0.001	0.56
Wilks' lambda	0.15	19.19	6	74	0.001	0.60
Hotelling's trace	3.72	22.35	6	72	0.001	0.65
Roy's largest root	3.15	39.91	6	38	0.001	0.75

df: Degree of freedom

Table 5. The results of multivariate analysis of covariance regarding the effect of positive and mindfulness parenting on children's level of social development

Variable	SS	df	MS	F	P-value	η^2
Social development (Total)	1794.93	2	897.46	49.69	0.001	0.55
Suitable initiation	207.77	2	103.88	29.48	0.001	0.46
Suitable communication	155.04	2	77.52	14.87	0.001	0.36
Social skill	344.60	2	172.30	17.51	0.110	0.38

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

Discussion

The present study compared the effects of Triple P and MP on preschool children's social development levels. The study findings illustrated that Triple P had greater impact on children's social development level and the components of suitable initiation and their social skills than MP.

In agreement with the study findings, Jespersen, Morris, Hubbs-Tait, and Washburn (2021) reported significant increases in caregiver-reported responsive parenting, developmental knowledge, parenting efficacy, mindfulness, overall positive child behavior, child pro-social behavior, and decreased parenting stress. Analysis of the treatment and control groups illustrated group differences indicative of the effectiveness of the training programs on the parenting outcomes of mindfulness, parenting efficacy, and parenting stress (Jespersen et al., 2021). With increase in parents' abilities in parenting, children's developmental problems are reduced (Lee et al., 2019).

Therefore, parenting programs can improve children's development by teaching skills to parents and providing information about the challenges of parenting and the developmental process of children (Meleady, Clyne, Braham, & Carr, 2020). In other words, the kind of parenting used can play a role in highlighting or weakening the interactive structure of children (Jiang, Luo, Xu, & Wang, 2018). In exploring the effect of positive parenting and MP, it can be said that positive parenting focuses on parenting by paying attention to the child's capabilities rather than the negative and controlling factors (Day et al., 2021). Furthermore, positive parenting changes the relationship between parents and their children, and replaces negative emotions with positive ones to develop effective parenting and reduce interpersonal problems (Hornor et al., 2020). To put it simply, because of an emphasis on positive reinforcement, positive parenting can create more motivation for the expression of socially appropriate behavior (Weaver, Weaver, Loux, Jupka, Lew, & Sallee, 2019).

Table 6. The results of the follow-up test to compare the differences in social development levels among the different treatments groups

Variable	Groups	Difference of means	SD error	P-value
The level of social development	Triple P and MP	2.86	1.48	0.005
	Triple P and control	15.02	1.47	0.001
	MP and control	12.16	1.45	0.001
Suitable initiation	Triple P and MP	1.64	0.62	0.001
	Triple P and control	5.31	0.61	0.001
	MP and control	3.67	0.60	0.001
Suitable communication	Triple P and MP	2.64	1.05	0.020
	Triple P and control	4.91	1.01	0.001
	MP and control	2.26	0.88	0.001
Social skill	Triple P and MP	3.18	0.95	0.002
	Triple P and control	7.03	0.95	0.001
	MP and control	3.85	0.93	0.001

SD: Standard deviation

Childcare programs that include positive discipline principles have various strategies so that different users can use them for numerous purposes. The presence of parents and their persistence also influenced their success in carrying out the program in their daily lives at home (Estiningsih, Laksana, Syam, & Ariyanto, 2021).

In addition, MP training had more influence on children's ability to establish suitable communication than Triple P. These results are consistent with that of the studies by Baer (2009), Bogels and Restifo (2014), Sanders et al. (2014). Consequently, the findings of this research suggested that children's thoughts are developed through their social experiences. Moreover, they are able to conduct real communication by creating high functions in their minds. Therefore, children without high levels of social skills are not only unsuccessful in interactions with their peers, but also susceptible to more problematic behaviors (Deng, 2019).

In the study by Elgendy, Malky, and Ebrahem (2021), there was a high statistically significant reduction in the total mean score of parenting stress among the study group after the intervention compared to the control group, and there was a statistically significant improvement in the level of mindfulness in the parenting of the study group after the intervention compared to the control group. They concluded that the MP training had a statistically significant positive effect on reducing parenting stress and improving the level of mindfulness of parents of children with attention deficit hyperactivity disorder (Elgendy, Malky, & Ebrahem, 2021). The evidence suggests that there is a meaningful relationship between the social adjustment problems of childhood and the emergence of problems in the later stages of life. The studied interventions, which vary in their approach to mindfulness training, produce changes in parents' mindfulness. They also alter intrapersonal parenting experiences and states of well-being, such as parenting stress, anger management, negative mood states, and self-compassion. Some evidence shows that MP programs can affect interpersonal aspects of parenting, including empathetic concerns, parent-youth interactions, and discipline strategies (Coatsworth et al., 2015).

However, this study had some limitations, such as a lack of follow-up tests showing the continuity of the results of training, the mere use of a questionnaire, and not controlling possible effective variables like the styles of children's problem-solving behaviors and other possible moderating variables. Hence, it is suggested that future studies utilize various methods of evaluation to assess the changes and design new treatments which can cover the whole family.

Conclusion

The results of the study showed that there is a significant difference between the effect of positive parenting training and MP training on children's social development level and the components of suitable initiation, suitable communication, and social skill. According to the findings, Triple P had a greater effect on children's social development level than MP training. Furthermore, Triple P had a greater effect on children's ability to create suitable initiation than MP training. MP training had a greater effect on children's ability to establish appropriate initiation than Triple P. Finally, Triple P had a greater effect on children's social skills than MP training.

Conflict of Interests

Authors have no conflict of interests.

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The Effectiveness of Mindfulness-based Cognitive Therapy on the Vitality and Psychological Well-being of Prostate Cancer Patients

Jumaniyazov Kudrat Atabayevich[1], Ali Abdulhussain Fadhil[2], Suzan Hasan Hammoodi[3], Sadeq Sahib Sadeq[4], Abeer Mhussan Jabbar[5], Mutni A. Majeed[6], Hind Ali Nasser[7], Ali Turki Shnishil[8]

1 PhD, Department of Obstetrics and Gynecology, Urgench Branch of Tashkent Medical Academy, Urgench, Uzbekistan
2 College of Medical Technology, Al-Farahidi University, Baghdad, Iraq
3 Department of Nursing, Al-Hadba University College, Mosul, Iraq
4 Department of Medical Laboratories, College of Health and Medical Technology, Sawa University, Almuthana, Iraq
5 College of Nursing, National University of Science and Technology, Dhi Qar, Iraq
6 Nursing College, Al-Esraa University, Baghdad, Iraq
7 College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq
8 Al-Hadi University College, Baghdad, Iraq

Corresponding Author: Jumaniyazov Kudrat Atabayevich; ***PhD, Department of Obstetrics and Gynecology, Urgench Branch of Tashkent Medical Academy, Urgench, Uzbekistan***
Email: kudratulla@mail.ru

Quantitative Study

Abstract

Background: Prostate cancer is the most common cancer among men, and it can harm the mental health of affected people. The current research examined the effectiveness of mindfulness-based cognitive therapy (MBCT) on the vitality and psychological well-being of prostate cancer patients.

Methods: The current semi-experimental research was conducted with a pretest-posttest design, a control group, and a follow-up stage. The statistical population included all men with prostate cancer referred to Baghdad's Oncology Teaching Hospital, Iraq, in 2022. Using simple random sampling, 140 people were selected and divided into experimental and control groups (70 patients per group). The collected data were analyzed utilizing the chi-square test, independent t-test, and two-way repeated measures analysis of variance (ANOVA) in SPSS software. The statistical significance level of the results was considered to be 0.05.

Results: The study findings showed that MBCT was effective on the vitality ($F = 6.83$; $P = 0.011$) and psychological well-being ($F = 8.71$; $P = 0.006$) of prostate cancer patients.

Conclusion: It can be concluded that MBCT has improved vitality and psychological well-being in patients with prostate cancer. Therefore, hospital medical staff must take this treatment method into consideration.

Keywords: Mindfulness; Cognitive therapy; Psychological well-being; Prostate cancer

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Introduction

Being diagnosed with cancer can be a stressful event that jeopardizes many aspects of the patient's health, including his physical, mental, and family health (Farzanegan, Derakhshan, Hashemi-Jazi, Hemmati, & Azizi, 2022). Prostate cancer affects 70% of men; this rate can be reduced through screening and early detection (Zajdlewicz, Hyde, Lepore, Gardiner, & Chambers, 2017). Prostate cancer is primarily associated with older men (Teigen, 2023). A high prevalence of mental disorders ranging from depression, anxiety, and lack of adaptation to the disease is observed among patients with cancer (Levy & Cartwright, 2015). Psychological and physical problems harm the family life, work, social activities, and sexual performance of people with cancer, thus causing many psychological problems and reducing their quality of life (QOL) (Garland et al., 2017).

The relationship between a cancer patient's mental health with vitality and psychological well-being is a critical topic widely debated worldwide (Moss et al., 2015). As cancer is multifactorial in terms of etiology and treatment (control and treatment), psychological and behavioral factors are just as important as physical factors in its treatment. Psychological interventions, and drug treatments appear to be effective in treating psychological problems (Jazaieri & Shapiro, 2017).

In recent years, psychologists and researchers have become interested in mindfulness-based cognitive therapy (MBCT) (Penedo et al., 2006). Mindfulness is intentional attention combined with nonjudgmental acceptance of one's experiences in the present moment (Abd Alrazaq, Fadhil, Hameed, Alsaadi, Hussein, & Kadhum, 2023). Mindfulness teaches patients that while negative emotions may arise, they are not a fixed and permanent part of their personality. It also enables people to respond to events with thought and reflection rather than reacting involuntarily and thoughtlessly (Diez, Anitua, Castellanos, Vazquez, Galindo-Villardon, & Alkhraisat, 2022).

Mindfulness is a way to improve one's life, relieve pain, and enrich one's life and make it meaningful (Amanelahi, Nouri, & Hazrati, 2022). Increased mindfulness is linked to increased vitality, psychological well-being, agreeableness, openness, and reduced pain symptoms. This method is effective in treating a variety of mental hurts (Ford, 2021). It effectively treats sadness, depression, insomnia, sexual problems, chronic pain, and addiction, among other things. One of the fundamental mindfulness orientations is to insist on paying attention to the present moment (Conversano, Di, Miccoli, Ciacchini, Gemignani, & Orru, 2020). This present-oriented approach has proven beneficial to cancer patients and chronic pain patients. Investigation of mindfulness and its correlates and comparing its dimensions between clinical and non-clinical groups have a short history and has only recently expanded. As a result, many researchers attempted to investigate mindfulness of fundamental or pathological structures (Lepley, 2022).

Vitality is one of the variables investigated in the current study. Vitality is being full of energy, enthusiastic, and cheerful and not being tired, worn out, or exhausted (Ramler, Tennison, Lynch, & Murphy, 2016). According to previous research, irritability and fatigue appear when vitality is low. When vitality is high, enough energy is available to carry out activities, one's mood is good, and homework is completed successfully (Paiva et al., 2016). As a result, vitality denotes an abundance of positive mental energy, and a lively person is full of life. Researchers define vitality as an energy that comes from within oneself, a feeling of energy whose source is internal rather than external. They distinguish mental alertness from manic states because alertness is a feeling of being fresh and energetic (Lee, Chang, Lee, Lee,

Huang, & Lai, 2022).

Psychological well-being is another variable investigated in this study. A foundation of mental health is described as psychological well-being (Lashbrook, Valery, Knott, Kirshbaum, & Bernardes, 2018). Developing personal strengths and realizing one's potential for long-term and sustainable happiness are examples of psychological well-being. People with a high level of psychological well-being have a sense of happiness, ability, support, and life satisfaction, among other things (Danhauer et al., 2019).

Prostate cancer is prevalent in men, and patients face various psychological and physiological issues. As a result, new methods must be developed to improve their various characteristics. Furthermore, MBCT is a relatively new method of psychotherapy that has received little attention thus far. The current research examined the effectiveness of MBCT on the vitality and psychological well-being of prostate cancer patients. The current study's innovation is the simultaneous study of vitality and psychological well-being and the follow-up stage.

Methods

The current semi-experimental study was conducted with a pretest-posttest design, a control group, and follow-up stage. The statistical population included all men with prostate cancer referred to the Oncology Teaching Hospital of Baghdad, Iraq, In 2022; from among them, 140 people were chosen using simple random sampling and divided into experimental and control groups (each with 70 people). The inclusion criteria included having prostate cancer, having a minimum literacy level, being between 50 and 70 years of age, and not using similar treatment methods in the previous year. The exclusion criteria included refusal to participate in the study, incomplete questionnaire, and absence from more than 2 sessions.

The research's objectives and process were first explained to the participants to comply with ethical considerations. The experimental group received MBCT training intervention in eight 90-minute sessions based on the protocol by Galante et al. (2016), as shown in table 1. Finally, after completing the research, the control group participants also received the abovementioned intervention in the follow-up stage.

Demographic, vitality, and psychological well-being questionnaires were used to collect data. These questionnaires were completed by the research participants before the beginning of the therapy for the experimental group (in the pretest stage), after the completion of the therapy for the experimental group (in the posttest stage), and 3 months after the completion of the intervention (in the follow-up stage).

The Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) was utilized to estimate vitality. The SVS contains 7 items, each scored on a 7-point Likert scale ranging from 1 (for entirely incorrect) to 7 (for completely correct), with reversed scoring in items 2 and 3. The SVS score is the total score of the items. The total score of the scale ranges from 7 to 49, with higher scores indicating greater vitality. Sumi (2021) reported the validity and reliability of SVS to be 0.79-0.80 and 0.87-0.91 (using Cronbach's alpha), respectively. In the current study, the face validity of the SVS was 0.87, and its reliability, using Cronbach's alpha, was 0.92.

The Psychological Well-being Scale (PWB; Ryff, 1989) was used to assess psychological well-being. This scale comes in various forms, and the 18-item form was used in the current study. The items were scored on a 6-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree).

Table 1. Description of mindfulness-based cognitive therapy sessions

Session	Description
1	Developing a positive relationship, explaining the importance of mindfulness training, awareness of the automatic state, and automatic guidance of the mind when it is hijacked by mental occupations and the mind attempts to control it
2	Conscious attention to normal daily activities and habit-breaking exercises (doing things against the habit), such as changing your place of sitting
3	Familiarity with methods of knowing through thinking about something (often accompanied by judgment), becoming directly aware of something (often non-judgmental) and experiencing it in a training session, and familiarity with various states of mind (state of command)
4	Explaining that living in the present means avoiding the traps of the past and the future, becoming acquainted with the present, and staying in the present through meditation, explaining that forgiveness in daily life requires preparation through breathing and body meditation, and cultivating all-around compassion and kindness towards oneself, and meditating for more conscious choices that lead to creativity, resilience, and enjoying life as it is, not as one wishes
5	Becoming aware of the body's changes and feelings, teaching the technique of paying attention to body movements while breathing, practicing body inspection, and focusing on the changes of body parts and their movements while walking to gradually learn to experience the difference between the thinking and feeling minds
6	Walking with a conscious mind, paying attention to one's surroundings as a spectator, and focusing on the positive aspects of situations and events
7	Practicing mindfulness of the senses, paying attention to daily tasks, practicing mindfulness of breathing with calmness and without thinking about anything else, and training mindfulness of breathing before bed
8	Accepting mindfulness of thoughts and meditating on sounds and thoughts, and letting go of one-dimensional and irrational thoughts, beliefs, and desires

The total score of the scale is the total score of the items and ranges from 18 to 108. Using Cronbach's alpha method, Ryff (1989) determined that the reliability of the PWB was appropriate and reported values ranging from 0.72 to 0.89 for its subscales; moreover, Ryff reported validity values ranging from 0.32 to 0.74 for its various subscales. In the current study, the face validity of the PWB was 0.81, and its reliability using, Cronbach's alpha method, was 0.88.

The data obtained from the questionnaires were analyzed utilizing the chi-square test, independent t-test, and two-way repeated measures analysis of variance (ANOVA). The Bonferroni post hoc test was also utilized to compare the variables' scores during the evaluation stages. The collected data was analyzed in SPSS software (version 21; IBM Corp., Armonk, NY, USA), and the statistical significance level of the results was considered to be 0.05.

Results

Table 2 shows the demographic variables of the patients in both groups. As can be seen in table 2, 80 people (57.1%) were over 60 years of age, and 78 people (55.7%) had illness duration of over 3 years. The mean age of men in the experimental group was 64.21 ± 7.52 years, while that of the men in the control group was 62.86 ± 7.43 years. Furthermore, the mean duration of illness in the experimental and control groups was 3.65 ± 1.14 years and 3.24 ± 1.07 years, respectively. Moreover, 113 (80.7%) individuals had secondary education, 99 (70.7%) were unemployed, and all except one (1.4%) were married. The results indicated no significant difference between the demographic variables of the study groups ($P > 0.05$).

The pretest, posttest, and follow-up scores of the vitality and psychological well-being variables are presented in table 3.

Table 2. Demographic variables of participants

Variable		Experimental group [n (%)]	Control group [n (%)]	P-value
Age (year)	< 60	27 (38.6)	33 (47.1)	0.09
	> 60	43 (61.4)	37 (52.9)	
Duration of illness (year)	< 3	30 (42.9)	32 (45.7)	0.26
	> 3	40 (57.1)	38 (54.3)	
Marital status	Married	70 (100)	69 (98.6)	0.17
	Single	0 (0)	1 (1.4)	
Education	Secondary	59 (84.3)	54 (77.1)	0.53
	College	11 (15.7)	16 (22.9)	
Job	Employed	19 (27.1)	22 (31.4)	0.48
	Unemployed	51 (72.9)	48 (68.6)	

There was no statistically significant difference between the groups in the pretest stage regarding the variables mentioned (P > 0.050). However, the values of the variables in the two groups significantly differed during the posttest and follow-up stages (P < 0.001).

The assumptions of the two-way repeated measures ANOVA were investigated. As a result, the assumption of normality was confirmed based on the Kolmogorov-Smirnov test and the assumption of equality of variances was confirmed based on Levene's test for the groups' vitality and psychological well-being variables in the pretest, posttest, and follow-up stages (P > 0.050). Furthermore, Wilks' lambda test results in multivariate tests revealed that MBCT caused a significant change in one of the variables of vitality and psychological well-being in prostate cancer patients (P < 0.001).

Table 4 presents the two-way repeated measures ANOVA results. Table 4 shows that the effect of group, time, and their interaction on vitality and psychological well-being in patients with prostate cancer is significant (P < 0.050). As a result, MBCT has improved the variables, and the difference in the mean of the variables between the evaluation stages is also significant. Furthermore, the findings indicated that the intervention method of MBCT is responsible for 79.4% of time changes and 21.3% of group changes in the variable of vitality, and 76.1% of time changes and 28.7% of group changes in the variable of psychological well-being (P < 0.050).

The Bonferroni post hoc test was used to compare the results of different stages of the research, the results of which are shown in table 5.

Table 5 shows that the difference between the values of the variables in the pretest stage and the values of the posttest and follow-up stages is significant (P < 0.001). In contrast, the difference between the posttest and follow-up stages is not significant (P > 0.050). In other words, MBCT increased vitality and psychological well-being in patients in the posttest and follow-up stages.

Table 3. Mean and standard deviation (SD) of vitality and psychological well-being variables in pretest, posttest, and follow-up stages

Variable	Stage	Experimental group (mean ± SD)	Control group (mean ± SD)	P-value
Vitality	Pre-test	25.13 ± 5.71	25.67 ± 5.92	0.340
	Post-test	33.64 ± 6.39	26.07 ± 6.11	< 0.001
	Follow-up	33.18 ± 6.54	25.83 ± 6.05	< 0.001
Psychological well-being	Pre-test	47.53 ± 6.75	48.17 ± 6.46	0.270
	Post-test	61.14 ± 7.56	48.32 ± 6.57	< 0.001
	Follow-up	60.81 ± 7.24	48.41 ± 6.78	< 0.001

SD: Standard deviation

Table 4. The findings of two-way repeated measures analysis of variance

Source	SS	df	MS	F	P-value
Vitality					
Group	706.12	1	706.12	6.83	0.011
Time	565.74	1.74	325.14	84.08	< 0.001
Group × Time	641.49	1.74	368.67	95.34	< 0.001
Error	1529.34	63.48	24.09		
Psychological well-being					
Group	927.59	1	927.59	8.71	0.006
Time	782.07	1.52	514.52	116.43	< 0.001
Group × Time	1076.59	1.52	708.28	160.28	< 0.001
Error	2172.13	72.16	30.10		

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

However, the posttest and follow-up stages are similar. The difference between the posttest and pretest stages indicates the effectiveness of the intervention method, and the difference between the follow-up and pretest stages demonstrates the treatment's continued effectiveness in the follow-up stage.

Discussion

The current research examined the effectiveness of MBCT on the vitality and psychological well-being of prostate cancer patients. The findings indicated that the intervention method had an appropriate effect on these patients' vitality and psychological well-being variables. The findings of the current study are consistent with that of some previous researches in this field (Fang, Reibel, Longacre, Rosenzweig, Campbell, & Douglas, 2010; Zimmermann, Burrell, & Jordan, 2018; Teigen, 2023), but not that by Cordier, Gerber, and Brand (2019).

To support these findings, it can be stated that mental injuries are frequently perpetuated by biased and extreme thinking and distortion in data processing, resulting in decreased health, vitality, and psychological well-being. Emotional stress can affect a person's behavior to the point where he cannot control himself. Recognizing and addressing these issues and providing training such as MBCT to improve vitality and psychological well-being is an essential part of training (Brown & Ryan, 2003). In mindfulness training, the patient examines his/her thoughts, feelings, and bodily sensations through repeated exercises directed at a neutral object, such as breathing (Zimmermann et al., 2018).

MBCT reduces exaggeration by focusing on the here and now and rejecting various issues and problems. As a result, it causes people to see problems as they are rather than as they think under the influence of circumstances. A correct and realistic understanding of problems leads to a more positive and optimistic approach to life (Nyklicek, Dijksman, Lenders, Fonteijn, & Koolen, 2014).

Table 5. The Bonferroni post hoc test results for the comparison of the results of the different study stages

Variable	Stages		Mean difference	Standard error	P-value
Vitality	Pretest	Posttest	-8.51	0.52	< 0.001
	Pretest	Follow-up	-8.05	0.46	< 0.001
	Posttest	Follow-up	0.46	0.27	0.580
Psychological well-being	Pretest	Posttest	-13.61	0.39	< 0.001
	Pretest	Follow-up	-13.28	0.35	< 0.001
	Posttest	Follow-up	0.33	0.16	0.460

When such people face inappropriate situations, instead of reacting to make the situation worse, they develop a state of awareness and acceptance, and their ability to cope improves, resulting in the achievement of logical solutions to problems and the maintenance of peace (Ortner, Kilner, & Zelazo, 2007). Thus, mindfulness training improves or increases the psychological well-being of patients due to the factors listed above.

MBCT, in the face of challenges, leads to problem-solving and learning; thus, after overcoming the challenges of the disease, one feels more vitality. Patients are motivated to deal with psychological challenges, adverse conditions, and future challenges when they have a sense of self-confidence and efficiency. Patients appear self-assured, energetic, and convinced that they can overcome problems and challenges. This belief is related to one's ability to deal with environmental stressors through adaptive vitality functions (Penedo et al., 2013).

Several studies have shown that cognitive interventions reduce stress and improve patients' performance (Dodds et al., 2015). The mindfulness-based cognitive therapy can reduce the mental pressure and anxiety caused by the disease, resulting in more courage and satisfaction; thus, by increasing exercises to decentralize thoughts and emotions, a person can increase his/her level of self-acceptance and direct his/her awareness from the past and future to the present (Reich et al., 2017). Furthermore, by carefully observing his/her inner reality, a person realizes that happiness is a quality that is independent of external elements and changes in the inner world, and it occurs when a person abandons reliance on thoughts, positions, and predetermined mental plans. As a result, it causes a person to abandon his/her automatic behaviors to obtain a proper state or escape from painful situations, achieving liberation, and thus, feeling more alive.

Numerous studies have demonstrated that an increase in life satisfaction due to an increase in well-being reduces anxiety, depression, negative emotions, and psychological symptoms while increasing self-esteem, optimism, and positive emotions. Mindfulness clarifies experiences and teaches people to live their lives moment by moment. This improves psychological well-being by reducing negative psychological symptoms (Innes, Selfe, Khalsa, & Kandati, 2016).

Mindfulness exercises help to develop mindfulness factors such as observation, non-judgment, non-reactivity, and acting with awareness. The development of these factors improves psychological well-being by reducing stress and psychological symptoms (Monti et al., 2006). Indeed, as mindfulness improves, so does the patient's ability to step back and observe states like anxiety. As a result, the patient can break free from automatic behavior patterns. However, he/she can use the information from these states to improve his/her psychological well-being.

One of the limitations of the present research is that it is limited to a specific type of patients referred to a hospital. A similar study on other societies with different cultures is suggested for future research. It is suggested that other interventional treatment methods be performed on prostate cancer patients and the findings be compared to the findings of the current research. It is also suggested that the MBCT be used to help other patients' mental health.

Conclusion

The current research found that MBCT positively affected and increased vitality and psychological well-being in prostate cancer patients. Therapists and health professionals can use MBCT to intervene in mental health variables. Based on the

findings, psychologists and therapists are advised to use MBCT in conjunction with other educational and therapeutic methods to improve referring patients' vitality and psychological well-being.

Conflict of Interests

Authors have no conflict of interests.

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Investigation of the Effects of Cognitive Rehabilitation Training on the Memory Deficits of Adults with Attention Deficit Hyperactivity Disorder

Dadamuxamedov Alimjon[1], Khalid A Al-Dabbagh[2], Ali Turki Shnishil[3], Haady Abdilnibi Altememy[4], Israa Abed Jawad[5], Abeer Mhussan Jabbar[6], Mutni A. Majeed[7], Mais Mazin Al-Hamdani[8], Sara Kareem Obaid[9]

1 Senior Lecturer, Department of Modern Information and Communication Technologies, International Islamic Academy of Uzbekistan, Tashkent, Uzbekistan
2 Department of Nursing, Al-Hadba University College, Mosul, Iraq
3 Department of Nursing, Al-Hadi University College, Baghdad, Iraq
4 College of Islamic Sciences, The Islamic university of Najaf, Najaf, Iraq
5 Department of Education, Al-Nisour University College, Baghdad, Iraq
6 College of Nursing, National University of Science and Technology, Dhi Qar, Iraq
7 Nursing College, Al-Esraa University, Baghdad, Iraq
8 College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq
9 Ministry of Education, Babil Education Directorate, Babil, Iraq

Corresponding Author: Dadamuxamedov Alimjon; ***Senior Lecturer, Department of Modern Information and Communication Technologies, International Islamic Academy of Uzbekistan, Tashkent, Uzbekistan***
Email: a.dadamuxamedov@iiau.uz

Quantitative Study

Abstract

Background: In adults with attention deficit hyperactivity disorder (ADHD), problems with executive functions are common. The present research aims to investigate the effects of cognitive rehabilitation training on the memory deficits of adults with ADHD.

Methods: The current semi-experimental research utilized a pre- and post-test design and a control group. All patients between the ages of 25 and 50 referred to Alrashad Hospital for Mental Health in Baghdad, Iraq, in 2022, were included in the statistical population. The statistical sample of 64 patients was chosen using a simple random sampling method and randomly assigned into both experimental and control groups (32 people per group). Barkley Adult ADHD Rating Scale-IV (BAARS-IV) and Wechsler Memory Scale (WMS) were used to collect data. To perform the analysis of covariance (ANCOVA), SPSS software was utilized, and the significance level of the results was less than 0.05.

Results: Cognitive rehabilitation training was effective in improving auditory memory ($F = 7.76$, $P < 0.001$), visual memory ($F = 5.17$, $P < 0.001$), visual working memory ($F = 11.36$, $P < 0.001$), immediate memory ($F = 9.28$, $P < 0.001$), and delayed memory ($F = 7.12$, $P < 0.001$).

Conclusion: Cognitive rehabilitation training improves the memory deficits of adults with ADHD. Thus, psychologists can utilize cognitive rehabilitation training in conjunction with other treatment methods to enhance the memory of adults with ADHD.

Keywords: Cognitive training; Memory disorders; Attention

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Introduction

Attention deficit hyperactivity disorder (ADHD) is a usual neurotic disturbance that begins in babyhood and lasts into adulthood (Tajik-Parvinchi, Wright, & Schachar, 2014; Naji, Rahnamay-Namin, Roohafza, & Sharbafchi, 2020). This disorder is distinguished by three major characteristics: hyperactivity, impulsivity, and attention deficit (Faghihi, Goli, Talighi, & Omidi, 2019). Other features of this disorder include emotional instability, unexpected and intense anger, intense emotional responses, confusion in doing things, instability in interpersonal relationships, inefficiency, and career and academic failures, among others (Najarzadegan, Nejati, Amiri, & Sharifian, 2015). It was once thought that hyperactivity disorder improved after adolescence, but it is now known that it continues into youth and adulthood in more than 60% of cases (Shariat, Amini, & Mohebati, 2023).

Executive functions include activity continuity, attention maintenance, planning, organization, problem-solving, and proper information processing (Ali, Viczko, & Smart, 2020). Although, according to the findings of numerous studies, people with ADHD have a deficit in executive functions, this is the case (Emadian, Bahrami, Hassanzadeh, & Banijamali, 2016; Albahadlv et al., 2023). Several administrative functions, like attention, active memory, inhibition and control of stimuli, cognitive flexibility, problem-solving, planning, and organization, assist the brain's superior cognitive abilities, such as language, perception, and thinking (van Dun, Overwalle, Manto, & Marien, 2018). Executive functions play a crucial role in regulating and self-regulating behavior, as well as in developing cognitive and social skills. They are essential for adaptation and successful performance in the real world (Bangirana, Giordani, John, Page, Opoka, & Boivin, 2009; Mosaiebi & Mirmahdi, 2017; Pahlevanian, Alirezaloo, Naghel, Alidadi, Nejati, & Kianbakht, 2017; Aivazy, Yazdanbakhsh, & Moradi, 2019).

Each of the numerous treatment options for ADHD has adverse effects. It is a common practice to prescribe stimulants to treat this disorder (Rodrigo-Yanguas, Gonzalez-Tardon, Bella-Fernandez, & Blasco-Fontecilla, 2022). Although these medications are effective at alleviating the symptoms of ADHD, they are correlated with potential side effects like growth retardation, insomnia, and heart arrhythmia; therefore, alternative treatments with fewer side effects must be sought (Beirami, hashemi, khanjaani, nemati, & rasoulzadeh, 2021; Mozaffari, Hassani-Abharian, Kholghi, Vaseghi, Zarrindast, & Nasehi, 2022; Denny et al., 2023).

Cognitive rehabilitation training is a technique that aims to strengthen the human cognitive system, including the ability to solve problems, focus and attention, visual and auditory processing, visual and auditory memory, the capacity to comprehend three dimensions, abstract perception, reasoning memory, and so on (Mahardika, Yunitasari, & Rachmawati, 2021). Cognitive rehabilitation training focuses on improving cognitive functions by providing performance-oriented therapeutic activities based on the principle of the brain's neuroplasticity (Bangirana, Boivin, & Giordani, 2013). These programs can adjust the assignment's difficulty level from easy to difficult based on individual differences and problems (Bongers, Benninga, Maurice-Stam, & Grootenhuis, 2009; Askari, Tajeri, Sobhi-Gharamaleki, & Hatami, 2021).

In this method, the therapist considers the data gleaned from the evaluation of the sessions, designs tasks to strengthen the brain's cognitive functions, and increases the rate of hardness of the tasks as the patient improves (Soroush-Vala, Rahmanian, Jadidi, & Hassanvandi, 2023).

There have been few studies on the effects of cognitive rehabilitation training on adult memory deficits. Given the prevalence of ADHD and the problems that hyperactivity causes in various areas of adult life, it is critical to research to find the best treatment for these patients. As a result, the current research aims to investigate the effects of cognitive intervention on the memory deficits of adults with ADHD. So far, a similar study has yet to be conducted in Iraq, considering the study's innovation.

Methods

The current semi-experimental research utilized a pre- and post-test design and a control group. All patients between the ages of 25 and 50 referred to Alrashad Hospital for Mental Health in Baghdad, Iraq, in 2022, were included in the statistical population. A simple random sampling method was used to select a statistical sample of 64 patients, then randomly assigned into experimental and control groups (32 individuals per group). After the research was completed, the intended intervention was also presented to the control group.

Inclusion criteria included hyperactivity disorder based on a psychiatrist's evaluation, a Barkley Adult ADHD Rating Scale-IV (BAARS-IV) score of 80 or higher, not taking psychiatric drugs in the past year, not having participated in a similar intervention in the past year, and the age range of 25-50 years old. Exclusion criteria included refusal to participate in the research, inability to complete questionnaires, and absenteeism for more than two sessions. Following ethical considerations, the participants were assured that their identities would remain confidential. After selecting the sample, cognitive rehabilitation training was provided to experimental group members. Data were collected utilizing a demographic questionnaire, the BAARS-IV, and the Wechsler Memory Scale (WMS).

BAARS-IV is a 30-item self-report scale developed by Barkley in 2011. This scale assesses three subscales: attention deficit, hyperactivity disturbance, and impulsivity. The questions are filled using a 4-point Likert scale. Internal consistency reliability examined utilizing Cronbach's alpha with the above sample was 0.89 for the whole scale and 0.88, 0.79, and 0.84 for attention deficit, hyperactivity disturbance, and impulsivity subscales, respectively.

Wechsler developed the WMS in 1945 to assess adults' memory. Anyone between 16 and 90 years old can do the scale. The latest version is the fourth edition, which came out in 2009. Five index scores show how well a person did: auditory memory, visual memory, visual working memory, immediate memory, and delayed memory (Carlozzi, Grech, & Tulsky, 2013). The content validity index (CVI) in the current study was 0.81, and it was approved by four professors from the College of Nursing, University of Baghdad. The internal consistency method yielded reliability with a Cronbach's alpha of 0.79.

In this research, cognitive rehabilitation training based on the Sohlberg and Mateer (2001) protocol emphasized memory training and attention stability. The cognitive rehabilitation training for the intervention group consisted of 11 sessions focusing on memory and attention (one session per week for 60 minutes). Table 1 describes cognitive rehabilitation training sessions.

Inferential statistical methods such as analysis of covariance (ANCOVA) were used to analyze the data. Besides, the Kolmogorov-Smirnov test, Levene's test, and Box's M test were utilized. SPSS software (version 23, IBM Corporation, Armonk, NY, USA) was used to perform the desired statistical analyses, and the significance level of the results was less than 0.05.

Table 1. Description of cognitive rehabilitation training sessions

Session	Description
1	Implementing the pre-examination stage of expressing ethical concerns and research goals
2	Exercises in sustained attention and memory cards with shapes
3	Exercising the distinction between pictures and memory cards using sentences
4	Performing word-based selective attention, puzzle, and memory card exercises
5	Exercises in visual and auditory memory
6	Exercising particular attention and concentration
7	Exercising numerical memory, short-term memory, and visual memory
8	Practices in numerical memory and long-term memory
9	Performing auditory memory exercises and shifting attention from one stimulus to another
10	Doing shape memory and long-term memory training exercises
11	Post-test phase implementation

Results

In table 2, demographic variables are listed. Table 2 shows that 33 people (51.6%) were over 35. The mean age of people in the experimental and control groups was 33.29 ± 6.54 and 37.61 ± 7.18 years, respectively. In addition, 41 people (64%) were men, 45 people (70.3%) were married, 34 people (53.1%) had secondary education, 46 people (71.9%) were employed, and 56 people (87.5%) lived in cities. The research subjects were identical, and neither the chi-square test nor the independent t-test found any differences regarding demographic variables for both groups ($P > 0.05$).

Before beginning the intervention, both experimental and control groups underwent a pre-test phase. After the conclusion of the intervention sessions in the experimental group, both groups participated in the post-test phase. Table 3 separately provides the mean and standard deviation (SD) of the WMS subscales for the two experimental and control groups. Table 3 demonstrates that the control group's pre-test and post-test findings did not change ($P > 0.050$), whereas the experimental group's post-test mean value increased ($P < 0.001$). Consequently, cognitive rehabilitation training reduced memory deficits.

The assumption that the grades were normally distributed was examined utilizing the Kolmogorov-Smirnov test. If the significance level of the result is greater than 0.05, the hypothesis of normality of the distribution of subscales is met; otherwise, this assumption is not met. Table 4 shows the findings of this hypothesis. Levene's test showed the homogeneity of memory deficit subscales ($F = 1.53$, $P = 0.37$). The Box's M test findings also indicated the homogeneity of the variance–covariance matrix ($F = 1.78$, $P = 0.16$).

Table 2. Demographic variables of the individuals

Variable		Experimental group [n (%)]	Control group [n (%)]	P-value
Gender	Men	19 (59.4)	22 (68.7)	0.71
	Women	13 (40.6)	10 (31.3)	
Age (year)	< 35	17 (53.1)	14 (43.8)	0.54
	> 35	15 (46.9)	18 (56.2)	
Marital status	Married	8 (25.0)	11 (34.4)	0.19
	Single	24 (75.0)	21 (65.6)	
Education	Illiterate	2 (6.3)	3 (9.4)	0.13
	Secondary	16 (50.0)	18 (56.2)	
	College	14 (43.7)	11 (34.4)	
Job	Employed	21 (65.6)	25 (78.1)	0.62
	Unemployed	11 (34.4)	7 (21.9)	
Living place	Urban	26 (81.2)	30 (93.7)	0.78
	Village	6 (18.8)	2 (6.3)	

Table 3. Mean and standard deviation (SD) of the subscales of memory deficits in pre- and post-test

Variable	Phase	Experimental group (mean ± SD)	Control group (mean ± SD)	P-value
Auditory memory	Pre-test	15.73 ± 1.66	15.92 ± 1.74	0.180
	Post-test	15.41 ± 1.53	19.26 ± 1.94	< 0.001
Visual memory	Pre-test	11.17 ± 1.82	11.24 ± 1.73	0.630
	Post-test	10.91 ± 1.65	14.71 ± 2.38	< 0.001
Visual working memory	Pre-test	11.68 ± 1.74	11.53 ± 1.89	0.560
	Post-test	11.43 ± 1.59	15.46 ± 2.54	< 0.001
Immediate memory	Pre-test	14.61 ± 1.86	14.76 ± 2.07	0.290
	Post-test	14.23 ± 1.73	19.14 ± 2.35	< 0.001
Delayed memory	Pre-test	16.29 ± 2.19	16.42 ± 2.51	0.140
	Post-test	16.47 ± 2.36	22.34 ± 2.65	< 0.001

SD: Standard deviation

The findings of the ANCOVA to investigate the effects of cognitive intervention on the subscales of memory deficits are displayed in table 5.

The findings of a one-way ANCOVA examining the significance of subscale differences between both groups are presented in table 6. According to table 6, the independent variable (intervention) after the intervention produced a statistically significant difference in the subscales of memory deficits ($P < 0.001$). Therefore, when the intervening variable (pre-test) was controlled, the intervention significantly decreased the patients' mean values on the desired subscales.

Discussion

The current research aims to investigate the effects of cognitive rehabilitation training on the memory deficits of adults with ADHD. In the experimental group, cognitive rehabilitation training improved auditory memory, visual memory, visual working memory, immediate memory, and delayed memory in adults with ADHD. The current research findings were consistent with those of other studies in this field (Virta et al., 2008; Narimani, Soleymani, & Tabrizchi, 2015; Nejati, 2020).

Memory is one of several determinants of high-level cognitive brain functions like reasoning, intelligence, and language comprehension (Cermak & Maeir, 2011). To explain the efficacy of cognitive rehabilitation training, it is possible to say that rehabilitation exercises cause continuous and extensive changes in the brain level and that new behavior leads to the reconstruction or reorganization of damaged brain cycles. Targeting a particular cognitive process that predicts or affects a variety of other cognitive processes, for instance, will improve all the skills affected by that process.

Table 4. Evaluating the normality of the distribution of the subscales in the pre- and post-test

Variable	Phase	Experimental group		Control group	
		Z-value	P-value	Z-value	P-value
Auditory memory	Pre-test	0.107	0.28	0.219	0.34
	Post-test	0.103	0.16	0.174	0.21
Visual memory	Pre-test	0.245	0.57	0.271	0.67
	Post-test	0.162	0.36	0.294	0.81
Visual working memory	Pre-test	0.183	0.28	0.147	0.36
	Post-test	0.109	0.22	0.116	0.23
Immediate memory	Pre-test	0.172	0.43	0.204	0.39
	Post-test	0.120	0.37	0.167	0.25
Delayed memory	Pre-test	0.193	0.37	0.173	0.36
	Post-test	0.148	0.24	0.154	0.27

Table 5. Analysis of covariance (ANCOVA) findings for the effects of cognitive intervention on the subscales of memory deficits

Source of variation	SS	df	MS	F
Pre-test	74.68	1	74.68	11.26
Dependent variable	726.19	1	726.19	109.53
Error	612.51	24	25.52	
Total	673.04	27		

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

In other words, the broad transfer of how these exercises are presented is such that the individual's cognitive abilities are challenged. As a result of repeated successes during these challenges, cognitive skills are enhanced (Kianbakht et al., 2015).

In cognitive rehabilitation training, there is a type of treatment whose primary objective is to correct the patient's cognitive performance deficiencies, such as attention and concentration, memory, performance improvement, and social comprehension (Lindstedt & Umb-Carlsson, 2013). Rehabilitative treatment, in the sense that it solely and primarily focuses on cognitive abilities, particularly memory, causes individuals to become more aware of their memory and cognitive skills and to find more appropriate solutions to problems relating to working memory. In the current research, based on the theoretical foundations of Sohlberg and Mateer's cognitive rehabilitation training (2001), various exercises were conducted to enhance attention, concentration, and memory. According to the present study's findings, training in these techniques and skills has decreased memory defects. In other words, cognitive rehabilitation training treats cognitive deficits that involve restoring dysfunction or increasing compensation for damaged areas through strategy training or repetition and practice (Najian & Nejati, 2017).

In addition, the principles of neural and brain plasticity can be mentioned when describing the efficacy of cognitive intervention on the executive functions of planning and problem-solving. Neuropsychological studies indicate that abnormalities of the prefrontal cortex, a brain region involved in administrative procedures, contribute to the pathology of ADHD (Simone, Viterbo, Margari, & Iaffaldano, 2018). Although the brain is a dynamic organ capable of neural regeneration and extensive neurological organization throughout life, this is the case. Every learning experience and behavioral change is accompanied by structural alterations in the brain, particularly in dendritic and synaptic fibers. Consequently, with the cognitive rehabilitation training and learning program's exercises, the brain and its activities manifest with progressive growth and development, and brain and executive functions improve.

In brain regeneration, other brain regions can gradually assume the functions of damaged areas and form new neural pathways. Therefore, cognitive rehabilitation training intervention can assist the brain in preventing and compensating as much as possible for the adverse effects of brain damage by creating alternative neural pathways (Slomine & Locascio, 2009).

Table 6. One-way analysis of covariance (ANCOVA) results for the effects of cognitive rehabilitation training on memory deficit subscales

Source of variation	Subscales	SS	df	MS	F	P-value
Dependent variable	Auditory memory	26.71	1	26.71	7.76	< 0.001
	Visual memory	18.23	1	18.23	5.17	< 0.001
	Visual working memory	41.12	1	41.12	11.36	< 0.001
	Immediate memory	32.57	1	32.57	9.28	< 0.001
	Delayed memory	24.08	1	24.08	7.12	< 0.001

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

According to the principle of brain plasticity and self-repair, cognitive rehabilitation training induces stable synaptic changes in low-activity brain regions. Structured stimulation through learning experiences and targeted brain exercises has been linked to improving neuronal behavior function. Therefore, cognitive and behavioral symptoms improve due to rehabilitation programs that repair the damaged brain regions responsible for cognitive and behavioral deficits.

Cognitive strategies are actions and thoughts that improve storing and retrieving information from memory (Lee, Li, Yeh, Huang, Wu, & Du, 2017). These techniques assist the individual in preparing new information to be combined with previously learned knowledge stored in long-term memory. Since these strategies were taught in the present study's training sessions, it is reasonable to assume that the memory deficits of the subjects have diminished. Because in the training sessions, emphasis was placed on strengthening short- and long-term memory skills, multi-step commands, and auditory and visual memory, it has significantly reduced memory defects and enhanced various aspects of patients' memories.

Among the limitations of the current research is that it was executed in a hospital. Another limitation of the current research is the small size of the statistical sample. It is suggested that future studies use different educational intervention methods and compare the results to the current study. Research should also be conducted on other age groups, such as children and older people. It is also suggested that a similar study be conducted on other societies with varying cultural levels.

Conclusion

The findings indicated that cognitive rehabilitation training improved the memory of adults with ADHD. According to the findings, the cognitive rehabilitation training reduced memory defects by improving the damaged areas through strategy training or repetition and practice. Consequently, cognitive rehabilitation training improved auditory memory, visual memory, visual working memory, immediate memory, and delayed memory

Conflict of Interests

Authors have no conflict of interests.

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