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Effectiveness of Gratitude Training on Cognitive Emotion Regulation and Psychological Well-Being of Individuals with Diabetes in Urmia

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Diabetes is one of the serious diseases that can have a significant impact on mental health and quality of life of affected people. The present study aimed to investigate the effectiveness of gratitude training on cognitive emotion regulation and psychological well-being of individuals with diabetes. This quasi-experimental study was conducted using a pre-test and post-test design with a control group. Using the convenience sampling method, 30 individuals with diabetes living in Urmia, Iran, were selected and randomly assigned into either experimental or control group. A gratitude training program was conducted for 10 sessions for experimental group while control group stayed on waitlist. All the participants answered the cognitive emotion regulation questionnaire (CERQ) and the Ryff's psychological well-being scale (PWB). ANCOVA by using SPSS 26 was used for data analysis. Results showed that there were significant differences between the experimental and the control group on both mean scores of cognitive emotion regulation and psychological well-being even after controlling for the initial differences (all p's < 0.05). It seems gratitude training improves the quality of life of individuals with diabetes by improving their cognitive emotion regulation and psychological well-being. Therefore, this approach can be applied as an effective intervention for improving mental health in individuals with diabetes.

Keywords: Gratitude Training, Cognitive Emotion Regulation, Psychological Well-Being, Individuals with Diabetes

Non-infectious and non-contagious diseases may affect several health beliefs and they have attracted a lot of scientific attention (Parhizgari, Gouya & Mostafavi, 2017). In the not-too-distant past, the main problem faced by the public was infectious diseases and the high mortality rates they accounted for. However, infectious diseases are no longer the major life-threatening conditions as they used to be; instead, the most important causes of death in many countries are now non-contagious diseases like cardiovascular diseases, cancers, and diabetes. Diabetes is a chronic endocrine disease that is caused by poor glucose metabolism and problems in the production or utilization of insulin hormone (Zare' Shahabadi, Ebrahimi Sadrabadi, 2013).

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One of the leading causes of death and disability all around the world, diabetes has a great impact on affected people's life expectancy (World Health Organization, 2023). Various studies have revealed the life expectancy of people with well-managed diabetes even may exceed those of normal people (Jafari N, Farajzadegan, Loghmani & Majlesi, 2014). Diabetes has increased all over the world, especially in developing countries. Currently, 347 million people in the world suffer from this condition. Statistics show that the prevalence of diabetes in Iran is estimated to be 6% which means that near 4 million people are suffering from some type of diabetes in Iran (Sepahmansour, Katebi, 2019). These data highlight the need for paying greater attention to the concerns of people with diabetes. According to the International Diabetes Federation, in 2017, 8.8% of the adult population, accounting for about 425 million people had been diagnosed with diabetes and their number may possibly increase into more than 629 million people

by 2045, of which 212 million may be still undiagnosed (Keyvan, Khezri Moghadam, 2019).

Diabetes can, also, cause serious mental health problems such as hopelessness, and despair in affected people. Research shows that individuals with diabetes may experience serious problems related to their psychological well-being (Debono, Cachia, 2007). Psychological well-being refers to people's positive feelings about themselves and their lives (Winters & et al., 2010) and involves positive thoughts and feelings through which people evaluate their lives favorably (Kubzansky & et al., 2018). It is considered one of the main components of each person's healthy functioning, which has been examined from various points of views. One of the most important models that has conceptualized and operationalized psychological well-being is Ryff and Singer's (1998) multidimensional model (9). Ryff defines psychological well-being as "striving for perfection to realize one's real potential abilities" (Ryff & Singer, 1998). This model has been developed through integration of various theories of individual growth and adaptive functioning. Ryff and Singer determine six factors including self-acceptance, purposefulness in life, personal growth, effective communication with others, mastery of the environment, and autonomy as the components of psychological well-being (Poudel & Gurung, 2020).

Furthermore, there is a set of skills that increase the power of adaptability and efficient behaviors and enable a person to face the challenges of his or her life effectively (Uysal & Joseph, 2016). One of these skills is cognitive emotion regulation (Mousavi & Alvani, 2021), which involves utilizing behavioral and cognitive strategies to change the duration or intensity of the experience of an emotion. Thus, adaptive emotion regulation is associated with self-confidence and social interactions, an increase in the frequency of positive emotions, effective coping in stressful situations, and even the expansion of possible activities in response to social situations (Dillon & Pizzagalli, 2011). Proper management and regulation of emotions are one of the foundations of psychological well-being and health, and the importance of emotion regulation skills to maintain mental health has been confirmed in many studies (Dillon & Pizzagalli, 2011).

Are there interventions that can help people with chronic diseases such as diabetes increase their psychological well-being and cognitive emotion regulation strategies? The answer is yes, there are various ways to improve and strengthen skills related to psychological well-being and emotion regulation. In this regard, one of the most important and widely used educational interventions is gratitude training. Gratitude means being thankful, magnanimity, or appreciation. All derivatives of the Latin root of this word denote kindness, generosity, giving, and receiving gifts. Gratitude in psychology is a psychological and emotional state and is often associated with the perception where a person has received a benefit that he did not deserve or did not earn, but this benefit has reached them thanks to the good intentions of another person (Omidpour, Baradaran, Ranjbar Noushari, 2020). Gratitude is one of the most important positive emotions that has attracted a lot of attention in recent years and has been considered as an essential attribute of positive psychology (Wood & et al., 2016). Having such a spirit leads to an increase in a person's positive view of life and the situation in which he/she is placed (Ghadampour et al., 2020).

A review of the literature shows that some sporadic studies have addressed gratitude. For instance, Llenares, Deocaris, Espanola, and Sario (2020) illustrated that grateful people have happier dispositions, but the relationship between resilience, gratitude, and happiness among people, especially in collectivist cultures, such as Asian countries, has not been studied enough. To this end, the present study aimed to find out whether gratitude training can be effectively improve cognitive emotion regulation and psychological well-being of individuals with diabetes.

Method

Participants

This quasi-experimental study was conducted using a pre-test and post-test design with a control group. The research population consisted of all individuals with diabetes living in Urmia in 2021. Of this population, 60 participants were referred to initial interviews by using convenience sampling method, out of whom 30 participants were selected according to inclusion and exclusion criteria and randomly assigned to either experimental or control groups (n = 15 in each group). Before intervention,

the participants of both groups filled the questionnaires (pre-test phase). Gratitude training program was implemented for the experimental group, while the control group stayed on waitlist. After interventions, both groups filled the questionnaires again (post-test phase).

The inclusion criteria were: receiving a diabetes diagnosis, living in Urmia, willingness and having enough time to participate in the study, and non-participation in the simultaneous interventions. Exclusion criteria included: suffering from a severe mental disorder and withdrawal from participating in the research.

Measurement Instruments

The Ryff's Psychological Well-Being Scale (PWB-18-item short form): The Psychological Well-Being Scale (PWB) was designed by Ryff in 1989. The original version of this scale had 120 items, but in later studies, shorter forms with 84, 54, and 18 items were also used. The shortest form of Ryff's Psychological Well-Being Scale has 18 items. The items are scored on a six-point Likert scale from 1 (strongly disagree) to 6 (strongly agree). The scale consists of 6 factors (each with 3 items): self-acceptance, purposefulness in life, personal growth, effective communication with others, mastery of the environment, and autonomy. The evidence related to the convergent validity of the Psychological Well-Being Scale indicates that the six factors have positive correlations with life satisfaction, self-esteem, and creativity, and negative correlations with depression, luck, and external source of control. The Cronbach's alpha values were measured by Ryff for self-acceptance (0.93), effective communication with others (0.91), autonomy (0.86), mastery of the environment (0.90), purposefulness in life (0.90), and personal growth (0.87) (Ryff, 1989). Tabasi (2004) assessed the internal consistency of the scale where the related value was 0.94 for the whole scale and 0.63 through 0.89 for its subscales. Furthermore, the test-retest correlation for the whole scale was 0.76 and the corresponding values for its subscales ranged from 0.67 to 0.73 and were significant at the 0.001 confidence level interval (Momeni, 2008). Bayani and Kouchaki (2008) measured the Cronbach's alpha and came to 0.89 for the scale. Moreover, the reliability of this scale in the present study was equal to 0.81.

The Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski & Kraaij, 2001): The Cognitive Emotion Regulation Questionnaire (CERQ) is a self-assessment tool developed by Garnefski and Kraaij (Garnefski, Nadia & Kraaij, 2007). The original version of this questionnaire assesses nine different cognitive coping strategies people often use when faced with a negative event including five positive emotion regulation strategies (acceptance, putting into perspective, positive refocusing, refocus on planning, and positive reappraisal) and 4 negative emotion regulation strategies (self-blame, other blame, rumination, and catastrophizing). The total score is calculated as the sum of the scores for the 36 items, indicating the degree to which cognitive emotion regulation strategies are used. The items are scored on a 5-point scale (always, often, usually, sometimes, and never). The validity and reliability of the questionnaire were confirmed by Omidifar et al. (2006) and the reliability of the questionnaire was confirmed with the Cronbach's alpha of 0.70. The reliability of the instrument was assessed in the present study by using the Cronbach's alpha and the corresponding value was 0.79.

Procedures

The gratitude training intervention was carried out in 9 sessions (each lasting 90 minutes) for the intervention group. Table 1 shows the content of the training sessions.

Data Analysis

The collected data were analyzed by using the analysis of covariance in the SPSS 26 software.

Results

Demographic characteristics indicated that 50% of the participants were women and 50% were men who 36.7% of them held a high school diploma, 30% an associate diploma, and 33.3% a bachelor's degree. 36.6% of the participants aged between 21 and 30, 26.7% between 31 and 40, and 36.7% of them were between 41 and 50 years old. Table 2 shows the descriptive statistics for the research variables.

Table 1
A summary of the gratitude training sessions (Emmons, 2003)

Sessions	Content
1	Introducing the group members and the structure and goals of the training program, defining gratitude concepts and outcomes
2	Teaching the components of gratitude and the characteristics of grateful people
3	Teaching different styles and methods of expressing gratitude (verbal, compassionate, practical, and emotional)
4	Encouraging the group members to judge their personality as grateful or ungrateful people in different situations
5	Practical training on writing thank you letters for people who have played an important role in the participant's life
6	Assessing the feedback on thank you letters written by each participant and discussing their feelings
7	Teaching how to record daily events with blessings in daily life
8	Describing the experiences of the participants regarding the recording of events with the blessing and their impact on daily life
9	Summing up the discussion and presenting some solutions to use the instruction provided in the training program in daily life

As seen in Table 2, the mean scores of cognitive emotion regulation and psychological well-being for the participants in the intervention group were 64.13 and 46.93 respectively prior to the intervention and the post-intervention corresponding values were 83.13 and 55.53. Moreover, the mean scores of cognitive emotion regulation and psychological well-being for the participants in the control group were 63.2 and 50.53 respectively before the intervention and the post-intervention corresponding values were 63.4 and 53.13.

Levene's test confirmed the equality of the variances of cognitive emotion regulation and psychological well-being for both groups ($p>0.05$). The results of Box's test also confirmed the homogeneity of variance-covariance matrices for both groups ($p>0.05$). In addition, the results of the Kolmogorov-Smirnov test showed that the assumption of normality was observed ($p>0.05$). Finally, there were no significant interaction between the participants' scores on both cognitive emotion regulation and psychological well-being and the group membership in the pretest phase ($p>0.05$).

Table 2
The descriptive statistics for the pre-and post-intervention scores for the research variables

Variable	Groups	Pre-intervention scores		Post-intervention scores	
		Mean	SD	Mean	SD
Cognitive emotion regulation	Intervention	4.13	7.57	83.13	7.30
	Control	63.2	6.98	63.40	6.93
Psychological well-being	Intervention	6.93	5.65	55.53	3.73
	Control	0.53	7.83	53.13	9.43

Table 3
Multivariate analysis of covariance for the effect of group membership on the research variables

	Source of changes	*Sum of squares*	*df*	*Mean squares*	*F*	*Sig.*	*Effect size*
Cognitive emotion regulation	Pretest	460.8	1	460.8	12.95	0.001	0.32
	Group membership	2756.6	1	2756.6	77.48	0.001	0.74
	Error	96.53	27	35.57			
Psychological well-being	Pretest	521.47	1	521.47	15.3	0.001	0.36
	Group membership	125.51	1	125.51	4.47	0.004	0.14
	Error	919.99	27	34.07			

Table 3 shows the results of the analysis of covariance. As it is seen, the differences between the intervention group and the control group on both cognitive emotion regulation ($F_{1,27}$ = 77.48; p > 0.001; eta square = 0.32) and psychological well-being ($F_{1,27}$ = 4.47; p > 0.01; eta square = 0.14) were statistically significant even after controlling for the initial differences.

Discussion

The results showed that the gratitude training was effective in improving cognitive emotion regulation skills and psychological well-being of the participants. Results indicated that there were statistically significant differences between intervention and the control group on both cognitive emotion regulation and psychological well-being even after controlling for the initial differences. Applying the gratitude training program increased cognitive emotion regulation in the intervention group as it had been confirmed in other studies (Boggio et al., 2020).

Accordingly, it can be suggested that increased cognitive emotion regulation can reduce stress and anxiety in the participants (Drogar et al., 2020). Besides, Azargon et al. (2018) showed that gratitude training can reduce the levels of stress in couples (Azargon et al., 2018). According to these findings, it can be concluded that teaching gratitude skills to individuals with diabetes may reduce their levels of stress and anxiety through increased cognitive regulation skills.

Research has also confirmed the association between gratitude skills, mental health, and quality of life (Chang et al., 2020).

These findings also supported the positive effects of emotion regulation skills on the participants' mental health, and it can be argued that gratitude skills affect the participants' mental health and the ability to regulate emotions and improve their psychological well-being.

The significant difference between the intervention and the control groups in terms of psychological well-being even after controlling for the pre-test differences indicates that gratitude training can improve participants' psychological well-being as it is supported in previous studies (Chraif et al., 2022; Yoo, 2020). Accordingly, it can be argued that gratitude can improve psychological well-being by increasing stress resistance and also strengthening social ties and self-worth (Froh, Bono & Emmons, 2010). Indeed, gratitude skills can play an important role in improving the psychological well-being of individuals with diabetes by increasing their peace of mind and reducing depression symptoms (Wood et al., 2007). Martin Seligman (Seligman et al., 1988), a pioneer in the field of positive psychology, states “Every time a person expresses or receives gratitude, dopamine releases in the brain”. Dopamine is a neurotransmitter that can strengthen the connection between behaviors and feelings, and this in turn strengthens the mental quality and psychological well-being.

Conclusion

Expressing gratitude may improve cognitive emotion regulation skills in individuals with diabetes by increasing positive and compatible emotions and reducing negative and incompatible ones. It also improves constructive interactions with others, the environment, and the individual himself/herself. Moreover, it shifts a person's perspective to the positive side of the event, improves their psychological, cognitive, and behavioral performance, and ultimately enhances their psychological well-being. Therefore, gratitude training program should receive more attention in the mental health policy. Other studies need to explore the effectiveness of gratitude training on other incurable diseases like cancer.

Limitations

One of the main limitations of this study, was the impossibility of conducting a follow-up. follow-up measures should be taken in future studies to determine the persistence of the effects after intervention.

Author Note:
All the authors actively participated in conceptualization, methodology, editing and review.

Statements:
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