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Efficiency Comparison of Behavioral Activation and Acceptance-Commitment Therapy on the Alexithymia in Patients with Diabetes Type 2

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Abstract: The primary objective of the present study was to compare the effectiveness of two therapeutic approaches, namely Behavioral Activation (B.A) and Acceptance-Commitment Therapy, in addressing alexithymia among individuals with Type 2 diabetes. The research methodology employed was experimental, employing a pre-test-post-test design with an equivalent control group. The study encompassed individuals diagnosed with Type 2 diabetes residing in Abadan and Khorramshahr cities (Iran). A sample of 45 individuals with Type 2 diabetes was selected using a convenience sampling method. Subsequently, from this sample, 15 participants were randomly allocated to Experimental Group 1 (receiving Behavioral Activation therapy), another 15 to Experimental Group 2 (receiving Acceptance-Commitment therapy), and the remaining 15 to the Control Group. The research utilized the Toronto Alexithymia Scale Test as the assessment tool. Data analysis was conducted using multivariate and univariate analysis of covariance. The results of the data analysis revealed a significant distinction in the impact of Behavioral Activation (B.A) and Acceptance-Commitment therapy on the reduction of alexithymia in individuals with Type 2 diabetes. Notably, Acceptance-Commitment therapy exhibited a higher level of effectiveness in reducing alexithymia compared to Behavioral Activation (B.A) among individuals with Type 2 diabetes. Consequently, it can be concluded that Acceptance-Commitment therapy, in conjunction with its acceptance commitment techniques, is a more efficacious approach for reducing alexithymia in individuals diagnosed with Type 2 diabetes.

Keywords: Behavioral activation therapy, Acceptance-commitment therapy, Alexithymia, Diabetes

Introduction

Diabetes stands as one of the most widespread medical conditions, often resulting in various cognitive and emotional challenges for affected individuals. The primary cause of diabetes is the insufficient production of insulin within the body or the inadequate quantity of insulin produced, which fails to meet the body's demands. Insulin plays a crucial role in regulating the entry of glucose into the bloodstream. When glucose fails to enter the body's cells, the levels of sugar in the bloodstream rise, leading to the manifestation of diabetes symptoms. Type 2 diabetes is notably one of the prevalent forms of this condition (Yang et al., 2020). People who have diabetes face with emotional disorders, inability to regulate emotions due to the stress of the disease. In patient with diabetes type 2, mood swings can cause emotional distress. Alexithymia in patients due to emotional disorder causes inability to express emotion, happiness and reduces the level of emotional quality. As people are not emotionally

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empowered, they cannot enhance and improve their health when they are facing the challenges of the disease (Baseri & Bozorgi, 2017). It should be referred that people who are weak in recognizing the proper use of their emotions lack the ability to take advantage of their emotional world and experience of positive emotions such as happiness in them decreases and their anxiety increases. Alexithymia is an emotional-cognitive phenomenon that directly affects mental functioning disorders. Studies show that emotional disorders cause problems in patients with diabetes and lack of emotional health has a negative effect on the disease process (Tilaki et al., 2018). Khaleghi (2016) in a study compared the Alexithymia in patient with type 2 diabetes with healthy individuals and the results demonstrated that patients with diabetes type 2 have a much higher level of Alexithymia. Therefore, one of the acute problems of patients with diabetes type 2 is due to emotional problems and emotional stress caused by the disease of inability to express emotions or Alexithymia. Alexithymia as an emotional-cognitive phenomenon refers to a specific disorder in mental function that took places as a result of the process of automatic inhibition of information and emotions. The presence of Alexithymia in individuals limits characteristics such as inability to re-recognize, verbal description of personal emotions, extreme lack of symbolic thinking, revealing feedback, feelings, desires, and tastes. Inability to use emotion, emotion as symptoms of emotional problems, decreasing of dream recall, difficulty distinguishing between emotional states, body senses, emotionless face, lack of emotional facial expressions, have limited capacity for empathy and self-awareness that can affect performance of individual (Sifneos, 2000). It should be said that to decrease the emotional problems of patients with diabetes type 2, one of the treatment and therapies that can have significant effects on controlling emotional problems in patients is behavioral activation therapy. Khaledinia et al. (2021) stated in a study that behavioral activation therapy declines patients' disorders. Behavioral activation therapy focuses on disorders specifically and concentrates on most of the individual's activities both related and unrelated to the disease, lifestyle changes and distinctions, and the consequences of the disease. This type of treatment helps the patient to recover in the first place and activates the patient in terms of behaviorally and socially, and by increasing constructive interaction with healthy people and reducing the symptoms of depression, anxiety, stress, mental pressures and demoralization, patient will be ready for engaging completely with the treatment process over a long period of time in order to sustain recovery (Loxton & Dawe, 2001).

It should also be said that in order to decline the emotional problems in patient with diabetes type 2, the approach of commitment and acceptance therapy that is shown in the researches will play an effective role in reducing cognitive and emotional problems and it can be used (Engle & Follette, 2018). Acceptance and commitment therapy (ACT) is a behavioral therapy grounded in the awareness that it has proven effective in addressing a wide spectrum of clinical conditions, recognizing that the

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psychological processes within the human mind often led to psychological distress (Hughes et al., 2017). Within ACT, the underlying premise asserts that individuals can only construct a meaningful life through conscious action. This therapeutic approach imparts valuable skills for effectively managing internal experiences (Motamedi et al., 2019). In the initial phases of ACT, the primary aim is to enhance an individual's psychological acceptance of their mental experiences, encompassing thoughts and feelings, while concurrently diminishing counterproductive attempts at control. Patients are instructed that any efforts to control or evade these unwanted mental experiences are futile or counterproductive, exacerbating their distress. Instead, the emphasis is on complete acceptance of these experiences without any internal or external reactions aimed at their elimination (Hooper et al., 2015).

The subsequent stage involves intensifying the person's psychological presence in the present moment, fostering an acute awareness of their mental states, thoughts, and behaviors in the here and now. The third phase entails guiding the individual to disengage from these mental experiences, essentially detaching their actions from these experiences to the extent that they can operate independently of them. Fourthly, the therapy endeavors to reduce excessive preoccupation with one's self-constructed personal narrative, such as adopting a victim mentality, which individuals often craft in their minds. The fifth step involves aiding the individual in identifying their core personal values, elucidating them clearly, and transforming them into tangible behavioral objectives (values clarification). Finally, the therapy focuses on cultivating motivation for committed action, encouraging goal-oriented activity aligned with established values, all while embracing these mental experiences. These mental experiences may encompass anxiety, depressive thoughts, obsessions, trauma-related thoughts, and fears (Fidelman, 2018).

Regarding the two research interventions under comparison, studies have shown that both interventions yield significant effects in mitigating various issues. Kyamanesh (2018) conducted research focused on patients with type 2 diabetes, exploring the impact of commitment and acceptance therapy on alexithymia rates and quality of life. The findings demonstrated that commitment and acceptance therapy effectively reduce alexithymia. Similarly, Taheri (2019) conducted a study highlighting the effectiveness of commitment-acceptance therapy in reducing alexithymia among patients.

Fernández-Jiménez et al. (2020) conducted a study that revealed the significant impact of commitment and acceptance therapy on reducing alexithymia. Similarly, Gilbert et al. (2014) conducted research that concluded commitment and acceptance therapy's substantial effectiveness in reducing alexithymia. Rostami and Dasht Bozorgi (2019) investigated the effect of acceptance and commitment therapy on the resiliency and alexithymia of the patients with Somatic Symptom Disorder (SSD) and indicated a significant difference between the average scores of resiliencies and alexithymia of the experimental

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and control groups in the post-test stage. So, the method of group therapy based on acceptance and commitment significantly increased resiliency and decreased alexithymia of the patients with SSD. Today, both developing and developed countries are grappling with a diabetes epidemic, particularly type 2 diabetes. The prevalence and incidence rates of this disease continue to rise in most nations unabated. The number of individuals affected by diabetes has surged from 118 million in 1995 to 260 million in 2014, with predictions estimating it will reach 300 million by 2025. In Iran, type 2 diabetes afflicts 8.6% of the population, making it a significant public health concern. This ailment, a major contributor to kidney diseases, impacts over 250,000 people annually in the country. It profoundly affects an individual's mental, physical, and emotional well-being, causing a multitude of physical, mental, and social challenges that disrupt normal daily life (Heshmati et al., 2015).

Patients with diabetes often grapple with physical limitations and stressful experiences, leading to heightened stress perceptions and an inability to articulate their emotions. Consequently, these patients often struggle to describe their emotional states (Sadeghi et al., 2018). Alexithymia, a condition marked by the inability to express emotions, is a risk factor for numerous mental disorders. People with alexithymia face significant emotional and physical pressure stemming from emotions that they cannot effectively convey. This condition hinders emotional regulation, fosters patient resistance, limits emotional awareness, and contributes to prolonged physiological arousal, neural responses, and mental stress (Poquérusse et al., 2018).

In the contemporary era, alongside pharmacological treatments, non-pharmacological approaches rooted in behavioral sciences have gained prominence. Notably, therapeutic interventions such as behavioral activation and commitment and acceptance therapy have demonstrated their potential to alleviate socio-psychological and emotional issues in patients, ultimately enhancing their life quality and facilitating cognitive and emotional growth.

The significance of this research lies in its comparative exploration of two therapeutic protocols: behavioral activation and commitment and acceptance therapy. Both interventions have proven effective in mitigating cognitive and emotional challenges. This research offers valuable insights into selecting the most suitable treatment method for improving the emotional well-being of patients with type 2 diabetes, providing therapists with enhanced tools for patient recovery. While previous studies have examined the impact of behavioral activation and commitment-acceptance therapy on alexithymia, none have undertaken a comparative analysis of these two approaches in type 2 diabetes patients. This research represents a promising step toward improving the mental and physical health of these patients and serves as a catalyst for the adoption of more effective treatments by healthcare professionals and therapists.

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Patients with type 2 diabetes often confront emotional difficulties, with alexithymia exacerbating their challenges. Addressing alexithymia is crucial for enhancing their overall quality of life. Behavioral activation and commitment-acceptance therapy have emerged as effective approaches in this regard, as validated by prior research. However, the central aim of this study is to determine which treatment approach accelerates the reduction of alexithymia in type 2 diabetes patients, ultimately identifying the most effective method for improving their emotional well-being. Thus, the primary objective of this study is to compare the efficacy of behavioral activation (B.A) and acceptance-commitment therapy in addressing alexithymia in type 2 diabetes patients. The core question to be addressed is whether there exists a discernible difference in the effectiveness of these two therapies in reducing alexithymia among patients with type 2 diabetes.

Material and Methods

In this study, an experimental approach was employed, specifically utilizing a pre-test-post-test design with an equal control group. This research methodology was chosen as it aims to detect changes resulting from the comparative effectiveness of behavioral activation (B.A) and acceptance-commitment therapy on alexithymia in patients with type 2 diabetes. In this process, prior to the application of behavioral activation and commitment-acceptance therapy interventions, both experimental groups, 1 and 2, comprising selected type 2 diabetes patients, underwent an initial assessment of alexithymia through a pretest. The purpose of this alexithymia pre-test was to establish a baseline and enable the comparison of alexithymia levels among experimental groups 1 and 2, as well as the control group, both before and after the interventions. Subsequently, following the completion of behavioral activation and commitment-acceptance therapy sessions for the two experimental groups, a post-test for alexithymia was administered to both groups.

The study's statistical population encompassed all patients diagnosed with type 2 diabetes in Abadan and Khorramshahr in 2019. The sample size, determined using the Cochran formula with a margin of error of 0.05, consisted of 45 patients with type 2 diabetes who were selected via convenience sampling. Initially, a list of patients with type 2 diabetes was compiled. Based on the list and specific inclusion criteria, such as a minimum disease duration of 6 months, the ability to attend treatment sessions, a minimum diploma-level education, and the absence of severe neuropsychiatric disorders like epilepsy, vision problems, severe hearing impairments, and personality disorders, 52 patients with type 2 diabetes were identified. Out of these, 45 patients were selected using the Cochran formula. From the selected research sample, 15 patients with type 2 diabetes were randomly assigned to experimental group 1

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(behavioral activation therapy), 15 to experimental group 2 (acceptance and commitment therapy), and 15 to the control group.

Instrument

Toronto Alexithymia Scale (TAS-20): The TAS-20 is a widely used 20-item instrument for measuring alexithymia. It consists of three subscales:

- Difficulty Describing Feelings: Assesses the difficulty in describing emotions (Items 2, 4, 11, 12, 17).
- Difficulty Identifying Feelings: Measures the difficulty in recognizing emotions (Items 1, 3, 6, 7, 9, 13, 14).
- Externally-Oriented Thinking: Evaluates the tendency to focus attention externally (Items 5, 8, 10, 15, 16, 18, 19, 20).

Scoring is conducted on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), with five negatively-keyed items (4, 5, 10, 18, 19). The total alexithymia score is computed by summing responses to all 20 items, while each subscale factor's score is the sum of responses to the respective subscale. The TAS-20 employs cutoff scoring: scores equal to or below 51 indicate non-alexithymia, scores equal to or exceeding 61 suggest alexithymia, and scores between 52 and 60 indicate possible alexithymia. The TAS-20 has demonstrated good internal consistency (Cronbach's alpha = .81) and test-retest reliability (.77, $p < .01$). Research employing the TAS-20 has shown satisfactory levels of convergent and concurrent validity. The three-factor structure aligns with the theoretical framework of alexithymia, and this structure has proven stable and replicable across clinical and nonclinical populations. In this study, the questionnaire's validity was established through correlation analysis with the Anxiety Questionnaire, yielding coefficients ranging from 0.45 to 0.49, with an overall coefficient of 0.51, all of which were statistically significant at the 0.001 level. Reliability, as assessed using Cronbach's alpha method, yielded values of 0.88 for the total questionnaire score and 0.82, 0.80, and 0.86 for the three components measuring difficulty in identifying emotion, describing emotion, and externally-oriented thinking, respectively (Besharat, 2007). In the current study, the questionnaire's reliability was determined to be 0.87 via Cronbach's alpha method.

Behavioral Activation Therapy Sessions: Behavioral activation therapy, based on the model by Kanter et al. (2009), was conducted over eight sessions, each lasting 90 minutes, for experimental group 2 consisting of patients with type 2 diabetes. A summary of the session content is provided in table 1.

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Table 1. Summary of Behavioral Activation Therapy

Sessions	Description
Session 1	Pre-test implementation Creating a therapeutic relationship with people Teaching behavioral conventions
Session 2	Teaching and concentrating on activating behavior on interaction of individual with environment Teaching suitable strategies
Session 3	Psychological teaching about healing processes
Session 4	concentrating on stress and anxiety aspects Using of positive verbal reinforcement by hope therapy
Session 5	Focusing on the emotional-cognitive aspects Mood swing
Session 6	Focusing on behavioral mood and judgments Controlling moods and behavioral judgments
Session 7	Teaching about psychological, behavioral and social dimensions Teaching about Coping skills and behavioral reconstruction
Session 8	Summarizing Presenting treatment summary Opinion poll Presenting tenacious solutions Post-test implementation

Acceptance and commitment therapy sessions: Acceptance and commitment therapy Intervention Sessions according to the Practical Guide to Commitment-Acceptance Therapy of Patretisa and Moran, (Sadeghnezhad et al., 2020) was implemented during 8 sessions of 90 minute sessions on experimental group (2) in patients with diabetes type 2. The summary of the sessions is provided in table 2.

Table2. Summary of Commitment and Acceptance Therapy sessions

Sessions	Description
Session 1	Pre-test implementation Creating a therapeutic relationship with patients
Session 2	Familiarizing with concepts of Commitment and Acceptance Therapy Creating insight in patients toward the problem Challenging negative thoughts and emotions
Session 3	Teaching creative hope Familiarizing with discomfort, problems caused by not controlling stress levels controlling destructive emotions
Session 4	Establishing admission Mindfulness by giving up trying to control Creating cognitive, mood and emotional splitting
Session 5	Teaching to discuss about value-oriented living and value prioritization
Session 6	Teaching and discussing about selection Realistic goals Obstacles and their evaluation
Session 7	Clarifying values Actions, struggling with passion, commitment
Session 8	Discussing about conceptualization Summarizing and Opinion poll Presenting final suggestions Post-test implementation Planning in order to follow and evaluate after therapy

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Results

The mean and standard deviation of research variables in experimental and control groups in pre-test of post-test of alexithymia are presented in Table 3.

Table 3. Mean and standard deviation of alexithymia in experimental and control groups in pre-test and post-test

Variable	Group	Stage	Mean	SD	N
Alexithymia	Experiment 1	Pre-test	78.93	3.84	15
		Post-test	37.80	6.62	15
	Experiment 2	Pre-test	79.20	4.17	15
		Post-test	26.73	4.56	15
	Control	Pre-test	80.26	3.12	15
		Post-test	78.10	2.85	15

The results of the Kolmogorov-Smirnov test about the normality of scores are presented in Table 4.

Table 4. Results of Kolmogorov-Smirnov test about the normality

Variable	Groups	Kolmogorov-Smirnov	
		Statistic	p
Alexithymia	Experiment 1	0.20	0.08
	Experiment 2	0.18	0.16
	Control	0.15	0.09

As it is shown in Table 4, the null hypothesis for normal distribution of scores is confirmed. That is, the default of normal distribution of scores in the pre-test and in both experimental (1), (2) and control groups is confirmed.

Table 5. Test results of the default homogeneity of regression slopes of research variables

Variable	Source variable	F	p
Alexithymia (1)	Group interaction*pre-test	1.67	0.51
Alexithymia (2)		2.37	0.28

As it is shown in Table 5, the amount of F interaction is not significant for alexithymia variable of the research. Therefore, the homogeneity of regression assumption is confirmed.

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Table 6. Levene test results about equality default of variances of research variables scores

Variable	F	DF1	DF2	p
Alexithymia (1)	0.85	1	28	0.69
Alexithymia (2)	1.23	1	28	0.27

As it can be seen in Table 6, Levene test is not significant in the alexithymia variable. Therefore, the variance of the experimental groups 1, 2 and the control group is not significant in the alexithymia variable. As a result, the homogeneity of variances hypothesis was confirmed. The null hypothesis for equalizing the variances of the scores in the research variable was confirmed. That is, the equality of variance default of scores in the experimental groups and the control group was confirmed.

Table 7. The Results of multivariate analysis of covariance on the mean scores of alexithymia

Test	Value	DF	Error DF	F	p	Effect size	Power
Pillai's Trace	0.93	2	25	117.48	0.001	0.93	1
Wilks Lambda	0.06	2	25	117.48	0.001	0.93	1
Hotelling Trace	15.32	2	25	117.48	0.001	0.93	1
Roy's largest root	15.32	2	25	117.48	0.001	0.93	1

As it is shown in Table 7, by controlling the pretest significance levels of all tests, they indicate that there is a significant difference at least between patients with diabetes type 2 in experimental groups (1, 2) and control in terms of the dependent variable of alexithymia ($F = 117.48$ and $p<0.001$). The value of effect or difference is equal to 0.93. In other words, 93% of individual differences in the post-test score of alexithymia in patients with diabetes type 2 are related to the effect of behavioral activation and commitment and acceptance therapy.

Table 8. The Results of univariate analysis of covariance on the mean post-test score of alexithymia

Variable	Effect	SS	DF	MS	F	p	Effect size	Power
Alexithymia (1)	group	4267.64	1	4267.64	164.04	0.001	0.81	1
Alexithymia (2)	group	10876.98	1	10876.98	309.64	0.001	0.92	1

As it is shown in Table 8, by controlling the pretest, the significance levels of all tests indicate that there is significant difference both between patients in diabetes type 2 of experimental group (1) and control in terms of alexithymia ($p <0.001$ and $F=164.04$) and between patients in diabetes type 2 of experimental group (2) and control in terms of alexithymia ($p <0.001$ and $F = 309.64$). The effect size or difference for alexithymia is 0.81 and 0.92, respectively. In other words, 81% and 92% of individual differences in the post-test score of alexithymia in patients with diabetes type 2 of experimental groups (1 and 2) are related to the effect of behavioral activation and commitment and acceptance therapy. However, in

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order to determine the efficiency distinction, the univariate analysis of covariance and Bonferroni post hoc test were performed and the results are presented in Table 9.

Table 9. Comparison of behavioral activation therapy and commitment and acceptance therapy effect on alexithymia

Variable	Groups	Mean differences	p
Alexithymia	behavioral activation therapy- commitment and acceptance therapy	11.93	0.001

As it can be seen in Table 9, the mean differences between the behavioral activation therapy and the commitment and acceptance therapy for the alexithymia variable is (MD = 11.93), which is significant at the level of p <0.001, therefore it was found that there was significant difference between the effect of behavioral activation and commitment and acceptance therapy on the rate of alexithymia in patients with diabetes type 2 and according to the mean amount of alexithymia, commitment and acceptance therapy is more effective than behavioral activation therapy in reducing alexithymia in patients with diabetes type 2.

Discussion

The primary objective of the present study was to compare the effectiveness of behavioral activation (B.A) and acceptance-commitment therapy in addressing alexithymia in patients with type 2 diabetes. The findings of this study revealed significant disparities in alexithymia between the experimental group (1) and the control group among patients with type 2 diabetes, as well as between type 2 diabetic patients in experimental group (2) and the control group. Notably, the effect size for alexithymia was calculated at 0.81 and 0.92 for experimental groups (1 and 2), implying that 81% and 92% of the variation in post-test alexithymia scores among type 2 diabetic patients could be attributed to the impact of behavioral activation and commitment and acceptance therapy, respectively.

Furthermore, the mean differences between the outcomes of behavioral activation therapy and commitment and acceptance therapy for the alexithymia variable were statistically significant. Consequently, it was established that there exists a substantial discrepancy in the influence of these two therapeutic approaches on alexithymia in patients with type 2 diabetes. Specifically, commitment and acceptance therapy exhibited greater efficacy than behavioral activation therapy in reducing alexithymia among patients with diabetes type 2. It's worth noting that no prior research had undertaken a comparative analysis of these two treatments, making this study an important contribution to the field.

The results of this investigation align with the findings of previous studies, reinforcing the notion that commitment and acceptance therapy effectively reduces alexithymia. Additionally, research by Rostami and Dasht Bozorgi (2019) concluded that behavioral activation therapy significantly diminishes

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alexithymia. Fidelman (2018) similarly found that commitment and acceptance therapy has a significant impact on reducing alexithymia, as did Fernández-Jiménez et al. (2020) in their study. Furthermore, Panayiotou et al. (2015) demonstrated the effectiveness of behavioral activation therapy in reducing alexithymia.

Patients with type 2 diabetes often encounter considerable difficulties in articulating their emotions due to the challenges posed by negative emotional perceptions, emotional conflicts, and the stress associated with self-expression. In the context of this study, both behavioral activation and commitment and acceptance therapy were found to have a profound impact on reducing alexithymia in type 2 diabetic patients. Ultimately, these therapeutic interventions facilitated a shift away from established emotional expression patterns toward the adoption of new behaviors driven by the motivation to enact change. This transformation enhanced patients' comprehension of their emotional experiences, equipping them with the skills to manage their emotions and promoting the development of emotional intelligence and purposeful growth in their lives.

In conclusion, the therapeutic interventions of behavioral activation therapy, characterized by effective communication techniques and an emphasis on behavioral control, along with the use of verbal reinforcement, contributed significantly to the reduction of alexithymia in patients. Similarly, commitment and acceptance therapy heightened emotional awareness in individuals, enabling them to gain insight into their emotional states, thoughts, and behaviors in the present moment. This intervention, coupled with the technique of cognitive splitting, led to a decrease in impulsive decisions triggered by negative emotions, ultimately improving patients' ability to describe and express their emotions effectively.

Commitment and acceptance therapy, through its focus on goal-oriented activities, value identification, acceptance of mental experiences, mood evaluation, and selection of appropriate emotional responses, fosters a deeper understanding of the link between actions and emotional outcomes. This therapy enables systematic substitution of maladaptive emotional patterns, ultimately reducing difficulties such as the inability to utilize emotions, distinguishing between emotional states, and the absence of emotional presence. Consequently, it leads to a reduction in alexithymia among patients. Notably, the present study revealed that commitment and acceptance therapy outperforms behavioral activation therapy in reducing alexithymia among patients with type 2 diabetes.

Commitment and acceptance therapy's emphasis on the six principles of cognitive defusion, acceptance, present-moment awareness, self-observation, values, and committed action contributes significantly to enhanced psychological flexibility. This approach empowers patients to perceive their thoughts, imaginations, memories, and other cognitions as they are, without engaging in struggles with them. By

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creating a space for understanding emotions, bodily sensations, and inner experiences without resistance, it effectively diminishes alexithymia. Through an experiential engagement with the present moment characterized by openness and acceptance, patients who undergo commitment and acceptance therapy develop an improved ability to monitor their emotions. They gain the tools to effectively cope with both negative and positive emotions and identify their personal capacities for managing emotional states. This fosters a positive focus, systematic planning, emotional regulation, mental processing, motivation, and acceptance. As a result, it enables patients to express their feelings more effectively, maintain their emotional well-being, and reduce the prevalence of alexithymia.

It is also important to note that commitment and acceptance therapy grants individuals access to a heightened sense of self. It helps them clarify their core values and meaningful priorities, allowing them to set goals aligned with these values. This process reduces barriers to the emergence and expression of emotions among patients.

In conclusion, a significant discrepancy in the effectiveness of behavioral activation and commitment and acceptance therapy in reducing alexithymia among type 2 diabetic patients was observed. Commitment and acceptance therapy emerged as the more effective approach in mitigating alexithymia in this patient population.

Limitations

- Caution is needed when generalizing the study results to all diabetic patients, as the findings may not be universally applicable.
- The absence of existing research comparing behavioral activation therapy and commitment and acceptance therapy on alexithymia limited the ability to directly compare and align with prior research findings.
- The prevalence of the disease necessitated online meetings, which introduced limitations in the research process.

Suggestions

- Counseling and treatment centers should prioritize the effectiveness of commitment and acceptance therapy, given its superior impact on alleviating alexithymia in patients with type 2 diabetes. Treatment protocols should be adapted to maximize its effectiveness.
- Healthcare providers should take note of the efficacy of both behavioral activation and commitment and acceptance therapies in their patient referral policies. Identifying the relative effectiveness of these therapies can guide medical centers in adopting more optimal methods for addressing patients' emotional issues.

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- Centers should pay attention to the impact of commitment and acceptance therapy on alexithymia improvement and communicate the treatment results to both patients and therapists. This knowledge can enhance understanding and utilization of effective therapeutic approaches.

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