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The Effectiveness Reality Therapy-Based Educational Package on Pain Perception and Self-Care in Older Adults with Diabetes

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ABSTRACT

Objective: The present study examined the effectiveness of a reality therapy-based educational package on pain perception and self-care behaviors in older adults with Type 2 Diabetes.

Method: This quasi-experimental study employed a pretest-posttest design with a control group and a 2-month follow-up. The statistical population included older adults with Type 2 Diabetes in Tehran, Iran, in 2023-2024, from which 50 participants were selected using convenience sampling. Participants were randomly assigned to the experimental (n = 25) and control (n = 25) groups. The experimental group received nine sessions of the reality therapy-based educational package while the control group received no intervention. Instruments included the researcher-developed Pain Perception Questionnaire and the Self-Care Questionnaire for Older Adults by Hemati and Hashemloo (2015). Data were analyzed using repeated measures ANOVA and Bonferroni post hoc tests with SPSS version 27.

Results: Findings indicated that the reality therapy-based educational package significantly improved self-care behaviors and reduced pain perception in older adults with Type 2 Diabetes. These effects were maintained after the two-month follow-up.

Conclusions: The results suggest that reality therapy-based interventions can be an effective psychosocial approach to enhance self-care and reduce pain perception in older adults with Type 2 Diabetes. Psychologists, counselors, and healthcare providers are encouraged to implement this educational package to promote better health outcomes in this population.

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Introduction

Aging is a phenomenon that occurs due to progressive changes in the body's cells, and it is conventionally considered synonymous with the age of 65 years (Daneshvar et al., 2018). Aging can have significant effects on individuals in both physical and psychological domains. Physical and psychological abnormalities are common in old age and can rapidly and interactively affect quality of life. Decreased functional capacity and the emergence of various age-related abnormalities lead to numerous physical and psychological problems that mutually influence one another (Wang et al., 2024). Research indicates that chronic and debilitating diseases increase with aging, potentially leading to serious health conditions during this period (Daneshvar et al., 2018). Among these conditions, older adults with diabetes face more challenges and difficulties compared to their non-diabetic peers. Diabetes is a serious and potentially life-threatening disease, a major cause of mortality, and a significant factor in reducing individuals' functional abilities. It is considered the most prevalent metabolic disease worldwide (Kharaei et al., 2020). This disease not only affects the patient's physical health but also has substantial psychological and social consequences (Daneshvar et al., 2018).

When examining the impact of diabetes on the lives of older adults, one of the most affected variables is the quality of life. Quality of life is defined as an individual's perception of their position in life within the context of their culture and value systems, and in relation to their goals, expectations, standards, and concerns (World Health Organization, 2020). Chronic pain is one of the major factors that negatively influences quality of life in older adults with diabetes. Pain is defined by the International Association for the Study of Pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage (Khoshkhoo et al., 2020). The experience of pain consists of two main dimensions: a sensory dimension reflecting pain intensity and an emotional dimension reflecting the individual's level of distress and dissatisfaction with the pain experience. Pain is a complex phenomenon influenced by numerous psychosocial factors. Individual, psychological, social, cultural, environmental, and even religious differences play a crucial role in shaping pain perception. Therefore, individuals with similar physical conditions may experience and interpret pain differently (Taherizadeh et al., 2022). In chronic diseases such as diabetes, biological changes and related complications often lead to persistent pain in various parts of the body, which can further exacerbate psychological distress and functional limitations.

Another important component associated with chronic physical illnesses such as diabetes is self-care. Given the nature of diabetes, self-care plays a critical role in disease management alongside pharmacological treatments (Avish et al., 2025). Self-care is particularly important in older adults, as it contributes to health maintenance, disease prevention, and independence. The World Health Organization (2018) defines self-care as activities undertaken by individuals, families, and communities to promote health, prevent disease, limit illness, and restore health. Engaging in

effective self-care behaviors can reduce physical and psychological complications, enhance functional abilities, and improve daily functioning in older adults (Shrestha et al., 2021).

Research has shown that self-care behaviors can facilitate adaptation to chronic illness, improve quality of life, reduce hospitalization rates, and decrease mortality among patients with chronic diseases (Mason et al., 2011). Moreover, self-care is considered a key factor in reducing both psychological and physical consequences of diabetes (Peltra et al., 2023). As a result, various psychological and educational interventions have been proposed to enhance self-care behaviors in patients with diabetes. One such intervention is reality therapy. Reality therapy is a psychological approach that emphasizes acceptance of reality, personal responsibility, and purposeful planning to achieve meaningful goals (Fordo et al., 2018). Developed by William Glasser in the 1950s and formally introduced in his book Reality Therapy in 1965, this approach focuses on present behavior rather than past experiences (Asadi et al., 2014). Reality therapy teaches individuals that they can only control their own behavior and encourages self-evaluation without blame (Fateh-ollazadeh et al., 2020).

According to Glasser (2013), individuals who experience psychological difficulties often struggle with ineffective decision-making and fail to meet their basic needs through realistic planning. Reality therapy aims to help individuals gain effective control over their lives by improving judgment, responsibility, and behavioral choices. In Iran, this therapeutic approach has been applied in various populations and contexts, with studies demonstrating its effectiveness in improving general health and reducing anxiety-related symptoms (Jabari et al., 2022). Overall, the lives of older adults with diabetes are influenced by multiple interacting factors, including pain perception and self-care behaviors. Despite the documented effectiveness of reality therapy in improving psychological outcomes, limited research has examined its application in older adults with diabetes, particularly in relation to pain perception and self-care. Furthermore, there is a lack of structured, age-appropriate educational packages based on reality therapy principles tailored to the specific needs of this population.

Recent research emphasizes that psychological interventions grounded in cognitive, moral, and behavioral frameworks can play a crucial role in improving self-regulation, adaptive functioning, and health-related behaviors. Dortaj et al. (2021) demonstrated that moral intelligence—through components such as responsibility, ethical judgment, and empathy—significantly contributes to wisdom and adaptive decision-making in adults, highlighting the importance of purposeful and responsible behavior in managing life challenges. Such capacities are particularly relevant for older adults with chronic illnesses, including diabetes, where effective self-care and realistic decision-making are essential for disease management. Similarly, Saadat et. al. (2023) showed that structured, theory-based training packages such as green therapy can enhance higher-order cognitive and self-regulatory functions by improving frontal lobe activity and mirror neuron functioning. These findings suggest that well-designed educational packages can positively influence cognitive control, behavioral regulation, and emotional adaptation. Drawing on this evidence, a reality therapy-based educational package may provide an effective framework for

older adults with diabetes by strengthening responsibility, self-evaluation, and adaptive coping, thereby improving self-care behaviors and reducing pain perception, which are key determinants of quality of life in this population. Therefore, the present study aimed to design and evaluate a reality therapy-based educational package for older adults with diabetes and to examine its effectiveness on pain perception and self-care. By addressing both psychological and behavioral dimensions of diabetes management, this study seeks to contribute to improving the overall well-being of older adults with diabetes. Accordingly, the study sought to answer the following research question:

- Does a reality therapy-based educational package have a significant effect on pain perception and self-care in older adults with diabetes?

Materials and Methods

Design

This quasi-experimental study was conducted using a pretest–posttest, control group design with a follow-up period of two months.

Participants

The statistical population included all older adults with Type 2 Diabetes in Tehran, Iran, in 2023-2024. A total of 50 participants were selected using convenience sampling. Participants were then randomly assigned to either the experimental group (n = 25) or the control group (n = 25).
Participants in the experimental group received nine sessions of reality therapy-based training, while the control group received no intervention during the study period. Both groups completed the pretest prior to the intervention and the posttest immediately after the completion of the training sessions. One month after the posttest, a follow-up assessment was administered to both groups.
The inclusion criteria included: being 65 years of age or older, having a diagnosis of Type 2 diabetes, willingness to participate in the study, and not receiving concurrent psychological or counseling interventions. The exclusion criteria included: absence from more than three intervention sessions, failure to complete assigned tasks, occurrence of unforeseen events (such as serious illness or death), and withdrawal of consent or unwillingness to continue participation.

Instruments

Pain Perception Questionnaire

Due to the lack of a specific pain perception questionnaire tailored to older adults with diabetes, a researcher-developed questionnaire was used in this study. This questionnaire was designed based on a comprehensive review of relevant research literature and consultation with medical and scientific sources related to pain and diabetes. The instrument was developed to assess participants' subjective perception of pain associated with diabetes in older adulthood. The content validity of

the questionnaire was evaluated using expert judgment. The initial version was reviewed by a panel of 11 experts in psychology, nursing, and diabetes care. Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated based on the Lawshe method. The results demonstrated acceptable content validity, with CVR values ranging from .64 to 1.00 and an overall CVI of .82. The reliability of the questionnaire was examined in a pilot study conducted on 30 older adults with diabetes who were not included in the main study sample. Internal consistency was assessed using Cronbach's alpha coefficient, which yielded a value of .81, indicating good reliability for research purposes.

In addition, confirmatory factor analysis (CFA) was performed to validate the factor structure identified through exploratory factor analysis. The results of CFA supported a one-factor model of pain perception, showing an acceptable fit to the data. Model fit indices indicated satisfactory goodness of fit ($\chi^2/df < 3$, Comparative Fit Index [CFI] and Incremental Fit Index [IFI] > .90, and Root Mean Square Error of Approximation [RMSEA] < .08). All factor loadings were statistically significant and exceeded .50, confirming that the retained items adequately represented the underlying construct of pain perception. These findings provide further evidence for the construct validity of the Pain Perception Questionnaire in older adults with Type 2 diabetes.

Self-Care Questionnaire for Older Adults

The Self-Care Questionnaire for Older Adults was designed and validated in 2015 by Hemati and Hashemloo. This questionnaire consists of 40 items and includes five factors identified through exploratory factor analysis, which together explain 93.79% of the total variance. The internal consistency of the questionnaire was confirmed with a Cronbach's alpha coefficient of .84, indicating acceptable reliability. This instrument assesses five dimensions of self-care behavior, including physical care, daily care, emotional care, social care, and care during illness. Additionally, the reliability of all subscales was reported by the developers to be above .70 using Cronbach's alpha.

Reality Therapy-Based Educational Package

The reality therapy-based educational package used in this study was designed and developed by the researchers based on the theoretical principles of reality therapy proposed by Glasser. The development process of the package involved a systematic review of the literature related to reality therapy, diabetes management, pain perception, and self-care in older adults. The primary objective of the package was to improve pain perception and self-care behaviors in older adults with diabetes through enhancing responsibility, realistic decision-making, and purposeful behavioral planning. After formulating the initial codes related to the development of the educational package, nine sub-themes were extracted. These sub-themes were conceptually derived from the core components of reality therapy, including acceptance of reality, personal responsibility, need satisfaction, self-evaluation, effective choice-making, and realistic planning.

The content of the package was specifically adapted to address diabetes-related challenges in older adulthood, with a particular focus on pain perception and self-care behaviors. The validity of the extracted themes and the overall educational package was assessed using expert judgment. To

evaluate content validity, the opinions of 11 experts in reality therapy and psychological interventions were obtained regarding the necessity and relevance of each theme. The Lawshe method was employed, and experts were asked to classify each theme as "essential," "useful but not essential," or "not necessary." Based on expert agreement, the content validity ratio (CVR) was calculated for each theme, and the content validity index (CVI) for the entire package was determined. The results indicated acceptable content validity for all extracted sub-themes, and the finalized educational package was approved for implementation. The results of the content validity assessment are presented in Table 1.

The educational package was implemented in nine structured sessions, each session designed to be appropriate for the cognitive, emotional, and physical characteristics of older adults. The sessions emphasized increasing awareness of personal responsibility in health-related behaviors, modifying maladaptive perceptions of pain, strengthening self-evaluation skills, and promoting effective self-care practices through realistic and achievable planning.

Table 1. Validation of Extracted Themes

Overarching Theme	Organizing Themes	Agree	CVR
Training Basic Needs	Basic Needs	11	1
Training Interpersonal Skills	Mutual understanding skills	10	.82
	Internalization of skills	10	.82
	Application of skills	9	.64
Training Connecting Behaviors and Destructive Behaviors	Connecting Behaviors and Destructive Behaviors	10	.82
Training Internal and External Control	Internal and External Control	11	1
Training the Behavior Machine	Being familiar with the importance of the machine behavior	11	1
	Being familiar with the techniques of the machine behavior	10	.82
Training the Ideal World	Ideal World Images	9	.64
Training Responsibility and Choices	Accepting Responsibility	11	1
	Importance of Choice	11	1
	Fulfilling Commitments	11	1
Training Perception	Training the concept of Perception	10	.82
	Training to understand the Perceptual World of Others	11	1
	Training to understand the Surrounding Environment	11	1
	Training to understand Existing Realities	9	.64
	Training to understand Difficult Situations	11	1
	Obligation to change perception	9	.64
Training Joyful Activities	Training Joyful Thinking	9	.64
	Training Controlling Disruptive Factors to Joy	9	.64

As the results show, the content validity index for all themes is above the acceptable level, confirming the validity of each theme. Subsequently, to assess whether the collected data have adequate reliability, coding reliability was examined. Calculating coding reliability, which involves categorizing or associating research units into categories, is crucial for successful analysis. In this research, test-retest reliability and intra-rater agreement (reliability between two coders) were used to calculate the reliability of the analysis and coding of the interviews. For inter-rater reliability, two interviews were randomly selected from the conducted interviews, and each was coded twice at short and specific intervals. The codes identified at the two time intervals for each interview were then compared. The test-retest method was used to assess the stability of the researcher's coding. In each interview, codes that are identical at the two time intervals are marked as "agreement," and non-identical codes are marked as "disagreement." The method for calculating reliability between codings performed by the researcher at two time intervals is as follows: (Test-retest reliability percentage = Number of agreements × 2 / Total number of codes × 100). The test-retest reliability of the conducted interviews in this research, using the mentioned formula, was 82%. Since this reliability percentage is above 60%, the reliability of the coding was confirmed.

Table 2. Reality Therapy-Based Educational Package

Session Topic	Description of Actions Taken
Training Basic Needs	Goal: Survival, Love and Belonging, Freedom, Power, Leisure
	Actions Taken ……
Training Interpersonal Skills	Goal: Training on establishing effective relationships, which are the foundation of all needs
	Actions Taken ……
Training Connecting Behaviors and Destructive Behaviors	Goal: Training on 7 connecting behaviors and 7 destructive behaviors for healthy relationships with others
Training Internal and External Control	Goal: Training on getting out of the cycle of controlling and being controlled
	Actions Taken ……
Training the Behavior Machine	Goal: Training on how an individual's thoughts and behaviors can change their physiology and feelings, and how self-care behaviors can impact the destructive pain cycle of the patient, and training on active action
	Actions Taken ……
Training the Ideal World	Goal: Training on correcting the individual's ideal world images and their impact on desires and feelings, and training on achievable and unattainable desires, and intervening in the ideal world
	Actions Taken ……
Training Responsibility and Choices	Goal: Training on accepting a new lifestyle, accepting responsibility, understanding the importance of choice, and fulfilling commitments
	Actions Taken ……
Training Perception	Goal: Training on how perception can impact the change in the ideal world and the individual's acceptance, and the meaning an individual assigns to existing phenomena
	Actions Taken ……
Training Joyful Activities	Goal: Training on gratitude and positive thinking, good deeds without expecting anything in return, mindfulness and living in the present, investing in social relationships, managing stress and difficulty and harm, taking care of the body and mind
	Actions Taken ……

To calculate reliability using the inter-rater agreement method, a psychology expert in the field of reality therapy, who was familiar with the subject of this research, was asked to participate as a research collaborator (coder). Then, the researchers, along with this research collaborator, coded 2 interviews, and the intra-rater agreement percentage, which is used as the research reliability index, was calculated. The inter-rater reliability was 84%. Since it is above 60%, the reliability of the coding was confirmed. Subsequently, after examining the validity and reliability of the obtained results, a treatment protocol was prepared based on these extracted components, and the programs for each session were prepared based on the main theme, resulting in the protocol presented in Table 2.

Results

This section examines whether the reality therapy-based educational package has an effect on pain perception and self-care in older adults with Type 2 Diabetes. Table 5 summarizes the descriptive results (mean and standard deviation) of the pre-test and post-test scores of the participants in the study groups for the variables of pain perception and self-care.

Table 3. Mean and Standard Deviation of Research Variables

Variable	Dimension	Stage	Group	Mean	SD	Minimum	Maximum
Self-Care	Physical	pre-test	experiment	29.64	3.82	22	38
			control	30.92	4.37	24	40
		post test	experiment	34.92	3.19	28	43
			control	31.40	3.08	26	37
		Follow-up	experiment	35.68	3.94	30	48
			control	31.24	3.99	25	38
	Daily	pre-test	experiment	21.32	4.08	12	29
			control	22.84	3.05	15	27
		post test	experiment	26.40	3.39	18	36
			control	22.44	2.86	17	27
		Follow-up	experiment	25.48	5.04	16	36
			control	23.44	3.03	19	32
	Emotional	pre-test	experiment	19.60	3.32	12	25
			control	20.76	3.06	15	27
		post test	experiment	22.80	3.21	15	28
			control	21.16	2.98	16	27
		Follow-up	experiment	23.08	3.17	18	30
			control	21.96	3.09	16	28
	Social	pre-test	experiment	28.48	5.32	21	40
			control	31.04	4.86	24	42
		post test	experiment	34.52	6.37	23	48
			control	29.68	6.92	10	44
		Follow-up	experiment	23.72	6.39	23	46
			control	76.29	95.5	16	45
	During Illness	pre-test	experiment	72.31	14.5	20	43

Table 3. Mean and Standard Deviation of Research Variables

Variable	Dimension	Stage	Group	Mean	SD	Minimum	Maximum
			control	28.32	17.5	22	41
		post test	experiment	36.38	89.6	24	49
			control	24.32	43.6	20	47
		Follow-up	experiment	60.37	97.5	25	46
			control	20.33	43.7	19	46
Pain Perception	-	pre-test	experiment	0.31	85.5	18	40
			control	84.29	30.7	16	44
		post test	experiment	24.39	33.6	26	51
			control	68.28	64.5	17	38
		Follow-up	experiment	24.37	20.6	24	48
			control	28.29	81.6	21	50

The design used in this research was a pre-test-post-test design with a control group, and the dependent variables were the post-test scores of the dimensions of the pain perception and self-care variables. Since these variables were measured simultaneously, and the pre-test scores of the mentioned variables were used as covariates, the statistical method used for the main hypothesis of the research was multivariate analysis of covariance. It is worth noting that when the dependent variables of the research have a correlational structure, multivariate methods should be used. Therefore, the dimensions of the pain perception and self-care variables were analyzed simultaneously. In other words, the primary purpose of the study was to see whether reality therapy training has an effect on the linear combination of pain perception and self-care scores in older adults with Type 2 Diabetes. Furthermore, to examine the follow-up status of the significance of each research variable and to compare the two groups (the experimental and control groups) within the framework of the sub-hypotheses, univariate analysis of covariance was used.

To use the multivariate analysis of covariance method, the basic assumptions of this statistical method, namely multivariate normality, homogeneity of variance-covariance matrices, homogeneity of regression coefficients, and correlation between research variables, were examined. First, the multivariate energy test was used to assess the lack of deviation from the normal distribution of the dependent variable scores in the research. The significance level obtained in the multivariate energy test was greater than 0.05 (0.05<P, E). In other words, the assumption of normality of the data distribution was adequately met for the research data. Next, the M-Box test was used to examine the assumption of homogeneity of covariance matrices in the multivariate setting. The results show that, based on the value of the test statistic and the obtained significance level, the assumption of homogeneity of variance-covariance matrices for the variables was met (Box's M=123.54 and P=.54). Subsequently, to assess the existence of a correlational structure between the dependent variable scores to enable multivariate analysis, Bartlett's test of sphericity was used. The results of Bartlett's test (Chi-Square=178.31; P=.01) indicate that there is a relationship between the dependent variables of the test. Therefore, due to the existence of a

necessary correlational structure between the research variables, there is no obstacle to using multivariate statistical methods. The homogeneity of regression slopes for the research variables was examined using the interaction between the pre-test scores and the grouping variable. The results of examining the assumption of homogeneity of regression slopes showed that, based on the non-significance of the test statistic for all research variables, this assumption was met (P<.05).

After examining the assumptions, the multivariate analysis of covariance was performed. Typically, the results of four tests—Pillai's trace, Wilks' lambda, Hotelling's trace, and Roy's largest root—are evaluated. If the assumptions are met, Wilks' lambda is a good option for analyzing the results. The Wilks' lambda multivariate statistic was significant at the 0.05 error level (Wilks' Lambda = .05, F= 28.11 and P= .01). This indicates that the linear combination of the dependent variables (post-test scores of the pain perception and self-care dimensions) after adjusting for the differences in the covariate variables (pre-test scores of the research variables) was influenced by the independent variable (reality therapy-based training). The analysis results show that the independent variable had an effect on the linear combination of the dependent variables, and it can be argued that reality therapy training had an effect on at least one of the dependent variables. Subsequently, after determining that the mentioned multivariate test was significant and that the linear combination of the dependent variables was affected by the independent variable, a more detailed examination of the dependent variables was conducted. The results of the univariate analysis of covariance show whether each of the dependent variables was individually affected by the independent variable.

Table 4. Results of Univariate Analysis of Covariance

Variable		Source of Variation	df	MS	F	P	η2
Self-Care	Physical Self-Care	Pre-test	1	99.13	13.4	0.01	0.28
		Group	1	163.84	22.15	0.01	0.39
		Error	34	7.4	-	-	-
	Daily Self-Care	Pre-test	1	58.16	8.81	0.01	0.21
		Group	1	265.14	40.15	0.01	0.54
		Error	34	6.6	-	-	-
	Emotional Self-Care	Pre-test	1	120.4	99.21	0.01	0.39
		Group	1	85.44	15.61	0.01	0.31
		Error	34	5.48	-	-	-
	Social Self-Care	Pre-test	1	60.31	1.12	0.3	0.03
		Group	1	397.21	14.02	0.01	0.29
		Error	34	28.13	-	-	-
	During Illness Self-Care	Pre-test	1	36.96	56.1	0.22	0.4
		Group	1	623.07	26.75	0.01	.44
		Error	34	23.63	-	-	-
Pain Perception	-	Pre-test	1	72.89	3.28	0.08	.09
		Group	1	571.08	26.88	0.01	.44
		Error	34	22.21	-	-	-

As observed in Table 4, there is a significant difference between the post-test mean scores of the dimensions of physical care (F = 22.15, P = .01, η2 = .39), daily care (F = 40.15, P = .01, η2 = 0.54), emotional care (F = 15.61, P = .01, η2 = .31), social care (F = 14.02, P = .01, η2 = .29), and care during illness (F = 26.75, P = .01, η2 = .44) between the experimental and control groups after controlling for the pre-test effect. Additionally, there is a significant difference between the post-test mean scores of pain perception after controlling for the pre-test effect (F = 26.88, P = .01, η2 = .44) between the experimental and control groups. Therefore, based on the obtained empirical evidence, it can be stated that reality therapy education has an impact on increasing self-care behavior and reducing pain perception in elderly individuals with diabetes. To examine the stability of the effect in the experimental group, repeated measures analysis and Bonferroni post-hoc tests were used. The assumption of homogeneity of variances across all group combinations is mandatory for using this test. Mauchly's test of sphericity was used to test the assumption of equal variances. The results indicated that the assumption of equal covariance between observations for both variables was not significant (P>.05), thus confirming this assumption. Subsequently, repeated measures analysis was used to examine the stability of the effectiveness of reality therapy on the dimensions of self-care and pain perception. The within-subject effects can be observed in Table 5.

Table 5. Within-Subject Effects Test

Variable		Source of Variation	df	MS	F	P	η2
Self-Care	Physical Self-Care	Stages	2	27.57	68.77	.01	.74
		error	48	3.93	-	-	-
	Daily Self-Care	Stages	2	183.16	28.09	.01	.54
		error	48	6.52	-	-	-
	Emotional Self-Care	Stages	2	93.45	25.62	.01	.52
		error	48	3.65	-	-	-
	Social Self-Care	Stages	2	269.08	17.93	.01	.43
		error	48	15.01	-	-	-
	During Illness Self-Care	Stages	2	330.17	68.32	.01	.58
		error	48	10.1	-	-	-
Pain Perception	-	Stages	2	461.81	77.32	.01	.58
		error	48	14.09	-	-	-

According to the results in Table 5, it can be stated that there is a significant difference at the .05 error level between different measurement stages in the variables of pain perception and self-care across the three measurement stages. Hence, it can be concluded that there is a significant difference at the .05 error level between different measurement stages in pain perception and self-care. Given that the results of the repeated measures analysis were significant, further investigation was conducted using the Bonferroni correction post-hoc test to examine pairwise differences between stages. The results of the pairwise comparison between stages are presented in Table 6.

Table 6. Bonferroni Test Results for Comparing the Mean Scores of Measurement Stages

Variable	Dimension	Stage	Mean Difference	SE	P
Self-Care	Physical Self-Care	pretest and follow-up	-6.04	.49	0.0
		posttest and follow-up	-0.76	.53	.49
	Daily Self-Care	pretest and follow-up	-4.16	.67	0.0
		posttest and follow-up	.92	.77	.73
	Emotional Self-Care	pretest and follow-up	-3.48	.57	0.0
		posttest and follow-up	-.28	.43	1
	Social Self-Care	pretest and follow-up	-5.24	.98	0.0
		posttest and follow-up	.80	1.04	1
	During Illness Self-Care	pretest and follow-up	-5.88	.80	0.0
		posttest and follow-up	.76	.85	1
Pain Perception	-	pretest and follow-up	-6.24	1.17	.01
		posttest and follow-up	2.01	.91	.11

The results of Table 6 show that there is a significant difference between the pre-test and follow-up stages for all dimensions of pain perception and self-care. However, there is no significant difference between the post-test and follow-up stages. Therefore, it can be concluded that the effect of reality therapy on the two variables of pain perception and self-care is stable.

Discussion

The present study examined the effectiveness of a reality therapy-based educational package on pain perception and self-care behaviors among older adults with Type 2 Diabetes. The findings demonstrated that reality therapy training had a significant and sustained effect on multiple dimensions of self-care, including physical care, daily care, emotional care, social care, and care during illness. These results suggest that teaching reality therapy principles to older adults with diabetes can enhance their sense of responsibility, self-evaluation, and purposeful decision-making, which are central components of effective self-care behaviors (Fordoo et al., 2018; Glasser, 2013).

The observed improvement in self-care behaviors aligns with prior research highlighting the critical role of psychological and educational interventions in managing chronic illnesses such as diabetes (Mason et al., 2011; Patra et al., 2023). By focusing on realistic planning, accountability, and present-oriented behavior, reality therapy appears to empower older adults to actively engage in health-promoting behaviors, thereby improving their overall functioning and independence (Shrestha et al., 2021). Additionally, previous studies have indicated that interventions targeting mindfulness and cognitive-behavioral skills can similarly enhance self-management and quality of life among patients with chronic diseases (Khoshkhati et al., 2018; Patra et al., 2023), supporting the theoretical basis for the effects observed in this study.

In addition to self-care, the findings revealed that reality therapy training significantly reduced pain perception among older adults with Type 2 Diabetes. This is consistent with the biopsychosocial model of chronic pain, emphasizing that pain is influenced not only by biological factors but also by psychological and social variables (Gatchel et al., 2007). Reality therapy may

reduce pain perception by helping individuals reinterpret their pain experience, enhance coping strategies, and increase their perceived control over their condition, which in turn reduces emotional distress associated with pain. Similar effects on pain and anxiety have been observed in other clinical populations, including burn patients, where psychological interventions reduced both pain intensity and anxiety (Qamarani et al., 2019). Furthermore, mindfulness-based interventions have been reported to decrease pain perception and improve coping skills in patients with chronic conditions (Khoshkhati et al., 2018).

The results of this study are consistent with previous findings indicating the effectiveness of reality therapy in reducing pain, anxiety, and psychological distress in various patient populations (Ebrahimian et al., 2018; Hooman et al., 2024; Qamarani et al., 2020). Furthermore, the relationship observed between psychological well-being and self-care behaviors in this study supports earlier research suggesting that improved mental health is associated with better adherence to self-care and health-related behaviors (Behzadi et al., 2021; Jackson et al., 2021). The findings also corroborate studies on geriatric populations, which emphasize that multimorbidity and psychological distress can negatively impact self-care and quality of life, highlighting the need for structured psychosocial interventions (Danshour et al., 2018; Weber et al., 2015).

Overall, the findings suggest that reality therapy-based education is an effective psychosocial intervention for improving self-care behaviors and reducing pain perception in older adults with diabetes. By addressing both psychological and behavioral dimensions of disease management, this approach contributes to improving quality of life, which is a key concern in aging populations with chronic illnesses (Daneshvar et al., 2018; World Health Organization, 2020). Moreover, the observed effects align with research showing that combining educational, cognitive, and mindfulness-based strategies can produce synergistic improvements in self-care, pain management, and overall well-being among individuals with chronic illnesses (Khoshkhati et al., 2018; Patra et al., 2023).

Despite its contributions, this study has several limitations. First, the use of convenience sampling limits the generalizability of the findings to the broader population of older adults with diabetes. Second, the relatively small sample size may have reduced the statistical power of the analyses. Third, the study relied on self-report measures, including a researcher-developed pain perception questionnaire, which may be subject to response bias. Additionally, some potentially influential variables such as gender, duration of diabetes, comorbid chronic conditions, and socioeconomic status were not controlled.

Future studies are recommended to use randomized sampling methods and larger sample size to enhance generalizability. Further research could also examine the effectiveness of reality therapy-based interventions in comparison with other psychological approaches or in combination with pharmacological treatments. Long-term follow-up studies are suggested to assess the durability of intervention effects over extended periods. Additionally, future research may explore the application of reality therapy-based educational packages in other chronic disease populations or different age groups. Investigating combined approaches such as reality therapy with mindfulness

or cognitive-behavioral interventions may provide additional insights into optimizing patient outcomes.

Conclusion

The findings of this study provide strong evidence that reality therapy-based education has a positive and lasting impact on self-care behaviors and pain perception among older adults with Type 2 Diabetes. By teaching principles such as personal responsibility, self-evaluation, realistic planning, and purposeful decision-making, reality therapy empowers older adults to actively manage their health, improve adherence to self-care behaviors, and reduce the emotional and sensory experience of pain. Given the significant effects observed, healthcare planners, policymakers, and mental health professionals are encouraged to integrate reality therapy-based educational programs into diabetes care services for older adults. Implementation in healthcare centers, community clinics, and elderly care facilities as a complementary, non-pharmacological intervention can improve self-care, reduce pain perception, and enhance overall quality of life.
In sum, reality therapy education represents an effective, practical, and evidence-based psychosocial approach for older adults with Type 2 Diabetes, offering a promising strategy to address both psychological and behavioral aspects of disease management.

Author Contributions

Sara Fallahi: Conceptualization, methodology, software, validation ; Fatemeh Ghaemi: formal analysis, investigation, resources, and data curation; Hossein Ebrahimi Moghadam: writing and preparing the original draft. All authors have read and agreed to the published version of the manuscript.

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Ethical considerations

The authors avoided data fabrication and falsification.

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Conflict of interest

The authors declare no conflict of interest.

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