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Development and Validation of a Reality Therapy Educational Package and Its Effectiveness on Quality of Life and Mental Health in Older Adults with Diabetes

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ABSTRACT

The purpose of the present study was to develop and validate a reality therapy educational package and to evaluate its effectiveness on the quality of life and mental health of older adults with diabetes. This study was conducted in two phases using qualitative and quantitative approaches with applied objectives. In the first phase, thematic analysis was used to conduct interviews with experts in the field of reality therapy. The second phase was an experimental study using a multi-group pretest–posttest design accompanied by a follow-up period. The qualitative population included all psychology specialists with a PhD in psychology who were proficient in the reality therapy approach in Tehran in 2023, from which 12 individuals were selected through purposive non-random sampling to validate the reality therapy educational package. The quantitative research population consisted of all older adults with diabetes in Tehran in 2023, from which 50 individuals were selected through convenience sampling. The instruments used in this study included the 28-item General Health Questionnaire (Goldberg, 1978) and the World Health Organization Quality of Life Short Form (World Health Organization, 1989). The obtained data were analyzed using SPSS version 27 and R version 4.3.1 (packages: car, jmv, psych, and RVAideMemoire). Statistical analyses in the quantitative phase included multivariate and univariate analysis of covariance, repeated-measures analysis of variance, and the Bonferroni post hoc test. In the qualitative phase, thematic analysis was used to analyze the interviews, and the Lawshe method was used to examine the content validity of the designed protocol. The thematic analysis findings showed that the reality therapy–based educational package consisted of 20 organizing themes and 9 main themes, based on which 9 training sessions were developed. In the quantitative phase, the results indicated that the reality therapy educational package was effective in improving quality of life and mental health in older adults with diabetes. Therefore, it is recommended that psychologists, counselors, and individuals or organizations working in the field of aging use the reality therapy–based educational package to enhance the quality of life and general health of older adults with diabetes.

Key words: Reality therapy, quality of life, mental health, diabetes, older adults

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Introduction

The global rise in diabetes mellitus, particularly among older adults, has transformed this chronic condition into one of the most pressing public health challenges of the twenty-first century. According to global epidemiological analyses, diabetes prevalence continues to increase across regions, with projections indicating a steep upward trajectory by 2045 (1). This demographic shift is closely linked to population ageing, a phenomenon highlighted by international health authorities, which emphasize that ageing populations require comprehensive, culturally sensitive, and sustainable care frameworks (2, 3). As ageing progresses, older adults are disproportionately affected by chronic diseases such as diabetes, resulting in substantial physical, psychological, and social burdens (4, 5).

Older adults with diabetes often experience accelerated biological ageing processes, which interact with metabolic dysregulation to intensify vulnerability to complications (4). Biological ageing exhibits sex-related variation, influencing the progression of chronic diseases and shaping psychosocial responses to illness (5). The pathogenesis of diabetes itself is multifaceted and involves intricate interactions among genetic, metabolic, and lifestyle factors, all of which pose heightened challenges for older adults (6). These biological complexities translate into profound disruptions in daily functioning, autonomy, and psychosocial well-being.

Functional capacity and self-care behaviors represent essential components of diabetes management, yet older adults with the condition frequently struggle with maintaining adequate levels of daily functioning (7). In this population, deficits in self-care behaviors not only impair metabolic outcomes but also lead to diminished quality of life. Studies conducted in clinical and community settings indicate that self-care is significantly influenced by personal, social, and environmental factors (8). Research among older adults in Nigeria similarly identified glycemic control, self-care activities, and psychosocial well-being as interconnected determinants of health-related quality of life (9).

Recent scholarship shows that older adults with diabetes face a heavier disease burden than younger populations, often reporting more functional difficulties, comorbidities, and medication complexities. For instance, a study in Turkey demonstrated a significant association between diabetes burden and reductions in health-related quality of life among older patients (10). These findings underscore the need for interventions that address not only biomedical aspects of diabetes but also its psychological and social impacts.

The COVID-19 pandemic further magnified these vulnerabilities. During periods of social isolation, older individuals with chronic diseases suffered heightened rates of psychological distress, depression, loneliness, and deterioration in physical functioning (11, 12). Disruptions in healthcare access and diminished physical activity—already a known risk factor for worsening diabetes outcomes—exacerbated these challenges (13). These studies demonstrate that traditional clinical care approaches are insufficient for addressing the multi-dimensional needs of this population.

Given the complexity of diabetes in older adults, international guidelines continue to evolve. The 2023 Standards of Care in Diabetes, for example, provide updated frameworks that highlight the needs of older patients, emphasizing individualized care, psychosocial support, and technologies that can enhance diabetes monitoring and treatment adherence (14-16). These standards outline the necessity of integrating behavioral and psychological interventions to improve clinical as well as quality-of-life outcomes.

The psychological dimension of diabetes care has therefore become a central topic in contemporary research. Depression, anxiety, diabetes-related distress, and reduced stress tolerance are common among individuals with diabetes, especially among older adults who face cumulative life stressors. Evidence indicates that mindfulness, stress reduction approaches, and resilience-building strategies can positively influence psychological well-being, self-management behaviors, and quality of life (17-19). Similarly, examinations of coping mechanisms in individuals with diabetes highlight the important role of adaptive coping and anxiety management in maintaining psychological stability (20).

While mindfulness-based and resilience-focused interventions have gained increasing attention, reality therapy has emerged as a promising therapeutic approach for diabetes-related psychosocial challenges. Rooted in choice theory, reality therapy emphasizes personal responsibility, self-evaluation, and empowerment. Empirical studies demonstrate that reality therapy can effectively reduce depression, anxiety, and stress in individuals with diabetes (21). Furthermore, reality therapy has been applied successfully to enhance general health and responsibility in vulnerable populations such as orphaned adolescents (22).

The use of reality therapy in chronic illness management is further supported by evidence from clinical and quasi-experimental studies. For example, reality therapy–based couple therapy improved quality of life and marital intimacy in women affected by marital infidelity (23). In elderly individuals with diabetes, reality therapy and acceptance-and-commitment therapy both showed positive effects on life satisfaction and self-care behaviors (24). Additional research confirmed that reality therapy can significantly improve self-care skills among individuals with type II diabetes (25). These findings indicate that reality therapy serves as an adaptable, culturally flexible, and effective intervention for chronic illness management.

Reality therapy has also proven beneficial in diverse health and behavioral contexts beyond diabetes. In Nigeria, reality therapy demonstrated significant effectiveness in reducing smoking behavior among middle-aged individuals, highlighting its potential to modify health-related behaviors (26). The increasing global interest in reality therapy suggests its broader applicability in behavior change, emotional regulation, and psychosocial adjustment among individuals with long-term conditions.

Alongside therapeutic approaches, technological innovations have reshaped diabetes care, particularly for older adults. Digital tools, telehealth platforms, and remote monitoring are transforming self-management practices and improving access to healthcare services. Scholarly reviews emphasize that technological solutions significantly enhance diabetes care for older adults, enabling more accurate monitoring and improved clinical decision-making (16). However, even with technological advancement, psychological interventions remain critical, as technology alone cannot address emotional distress, maladaptive coping, or interpersonal challenges.

An emerging body of literature highlights the role of sense of coherence—a psychological construct linked to resilience and adaptive functioning—in diabetes self-care. A recent systematic review showed that individuals with strong sense-of-coherence scores exhibited substantially better self-care and improved well-being (27). This underscores the importance of strengthening psychological frameworks and internal motivation among older adults with diabetes.

Furthermore, research has demonstrated that psychological interventions can play a decisive role in shaping coping styles, emotional regulation, and behavior modification among diabetic patients. Elderly individuals receiving resilience or psychosocial training experienced substantial improvements in coping

strategies and mental health status (19). Given the strong link between diabetes symptoms, stress, emotional well-being, and quality of life, reality therapy—with its emphasis on personal choice, responsibility, and evaluation—represents a theoretically coherent and empirically supported approach.

Despite the extensive research on psychological and behavioral interventions among diabetic populations, several gaps remain. First, few studies have developed structured, culturally grounded, and validated training packages specifically for older adults with diabetes. Second, although empirical evidence supports the effectiveness of reality therapy on mental health outcomes, less attention has been given to comprehensive intervention protocols tailored to the needs of ageing diabetic populations. Third, given the rapid rise in global diabetes prevalence and the unique biopsychosocial challenges faced by older adults, there is a compelling need for interventions that address both psychological well-being and quality of life simultaneously.

Given these empirical, theoretical, and clinical considerations, the present study sought to address these gaps by developing and validating a structured reality-therapy educational package designed specifically for older adults with diabetes, and by evaluating its effectiveness on their general health and quality of life.

The aim of this study is to develop and validate a reality-therapy educational package and determine its effectiveness on the quality of life and mental health of older adults with diabetes.

Methods and Materials

Study Design and Participants

This research was conducted in two phases using qualitative and quantitative approaches, with applied objectives. The first phase employed thematic analysis to conduct interviews with specialists in the field of reality therapy, and subsequently, the reality therapy educational package was designed using a content-validity method. The second phase of the study was experimental. The research design used was a quasi-experimental multi-group pretest–posttest design with a follow-up period (one month after the posttest). In the quantitative phase, the present study compared the effectiveness of reality therapy on general health and quality of life in older adults with diabetes by forming experimental and control groups. The research population existed in two parts: qualitative and quantitative. The qualitative population included all psychology specialists with a PhD in psychology who were proficient in the reality therapy approach in Tehran in 2023. From this population, 12 individuals were selected to validate the reality therapy educational package. Purposive non-random sampling was used in this phase.

The quantitative research population consisted of all older adults with diabetes living in Tehran in 2023. Due to the specific characteristics of the research sample, convenience non-random sampling was employed. Based on the experimental methods literature, a minimum sample size of 15 individuals per group was required; however, to improve the validity of the results, the present study used 25 participants per group, totaling 50 participants. To recruit participants, an announcement regarding the reality therapy training sessions was posted in several medical centers. Initially, individuals who visited the centers were registered, and then they were interviewed by the researcher regarding the inclusion and exclusion criteria. The pretest was administered, and eligible individuals entered the research process. The 50 participants were then randomly assigned to the experimental group (25 individuals) and the control group (25 individuals). Participants in the experimental group received nine sessions of reality therapy training, whereas the control

group received no intervention. Finally, both groups completed the posttest, and one month after the posttest, a follow-up test was administered to both groups.

The inclusion criteria were being older than 60 years, willingness to participate in the study, and not attending any other psychological sessions. The exclusion criteria included absence from more than three sessions, failure to complete assignments, occurrence of an unforeseen event (such as illness, death, etc.), and expressing unwillingness to continue.

Data Collection

General Health Questionnaire (GHQ-28): This 28-item screening questionnaire is based on a self-report approach and is used in clinical settings to identify individuals with psychological disorders (Goldberg, 1978). The GHQ-28 includes four subscales: anxiety and insomnia, somatic complaints, social dysfunction, and severe depression. A total score is also obtained. These four subscales were derived through factor analysis. The total score of each participant is obtained by summing the scores of the four subscales. Statistical analyses of the GHQ demonstrate the correlation between subscales and the overall factor to be 0.90 for anxiety, 0.75 for social dysfunction, 0.79 for somatic complaints, and 0.63 for severe depression. The GHQ, reviewed by psychology experts, enables researchers to gather information beyond what is typically obtained from a general questionnaire; therefore, it possesses good content validity (as cited in Ghodrati Mirkoohi & Khormaei, 2011).

Quality of Life Short Form (QOL): This questionnaire is used to assess an individual's quality of life over the past two weeks. Developed in 1989 by the World Health Organization in collaboration with 15 international centers, the QOL scale includes 28 items across four domains, with the first two questions belonging to none of the domains and measuring overall health and quality of life. The domains include: (a) physical health, (b) psychological, (c) social relationships, and (d) environment. Each item is scored on a five-point scale ranging from 1 to 5 (very poor, poor, moderate, high, very high). Physical health is scored from items 3, 4, 10, 15, 16, 17, and 18. Psychological quality of life is scored from items 5, 6, 7, 11, 19, and 26. Social relationships are scored from items 20, 21, and 22. Environment and living conditions are scored from items 8, 9, 12, 13, 14, 23, 24, and 25. Items 3, 4, and 25 are reverse-scored. Based on the results reported by the developers of the WHO QOL scale in 15 international centers, Cronbach's alpha coefficients ranged from 0.73 to 0.89 for the four subscales and the overall scale. In Iran, Nasiri (2006) assessed the reliability of the scale using test-retest (three-week interval), split-half, and Cronbach's alpha methods, obtaining values of 0.67, 0.87, and 0.84, respectively. Rahimi (2007) also reported Cronbach's alpha coefficients of 0.88 for the overall scale, 0.70 for physical health, 0.77 for psychological health, 0.65 for social relationships, and 0.77 for environmental quality of life.

Data analysis

The collected data were analyzed using SPSS version 27 and R version 4.3.1 (packages: car, jmv, psych, and RVAideMemoire). Statistical analysis was conducted at two levels: descriptive statistics (mean, standard deviation, minimum, maximum, skewness, and kurtosis) and inferential statistics (multivariate and univariate analysis of covariance, repeated-measures analysis of variance, and Bonferroni post hoc test). It should be noted that repeated-measures ANOVA and the Bonferroni post hoc test were used to assess the

stability of the intervention effects over time. In the qualitative phase, thematic analysis was used to analyze the interviews, and the Lawshe method was used to examine the content validity of the designed protocol.

Findings and Results

In this section, the principal research question was: *How does the reality-therapy–based educational package and its effectiveness influence the quality of life and mental health of older adults with diabetes?* The findings are presented in two major components: (1) qualitative findings related to the development and validation of the reality-therapy protocol, and (2) quantitative findings evaluating the effectiveness of this protocol on general health and quality of life.

The qualitative phase was conducted using thematic analysis based on interviews with 12 experts in reality therapy. The purpose of this analysis was to identify the major thematic components needed for designing a structured reality-therapy educational package specifically for older adults with diabetes. The thematic analysis process included three levels: basic themes, organizing themes, and global themes. A total of 20 organizing themes and 9 global themes were extracted. These global themes included principles of choice theory, understanding unique needs, identifying wants, exploring current behaviors, self-evaluation, planning responsible behavior, interpersonal responsibility, coping and problem-solving skills, and relapse prevention. These themes were confirmed through the Lawshe Content Validity Ratio (CVR), meeting the minimum threshold for 12 experts.

Based on the extracted global themes, a 9-session reality-therapy educational protocol was designed and validated. The validated protocol is presented in Table 1.

Table 1. Reality-Therapy Educational Protocol (Final 9-Session Program)

Session	Title / Focus	Core Objectives	Techniques & Activities
1	Introduction to Choice Theory & Internal Control	Establishing rapport; clarifying the purpose of training; raising awareness of internal vs. external control; identifying current life challenges among diabetic older adults	Group discussion; lifestyle exploration; introduction to basic needs; self-reflection exercises
2	Psychological Needs and Quality of Life	Identifying basic needs (survival, love/belonging, power, freedom, fun); connecting needs to diabetes-related emotional experiences	Needs assessment profile; narrative exploration; guided needs-identification exercises
3	Wants & Goals (WDEP: "W")	Clarifying personal goals; identifying desired physical, emotional, and social outcomes; exploring discrepancies between current and ideal life circumstances	Values clarification; structured questioning; goal-mapping
4	Direction & Doing (WDEP: "D")	Identifying ineffective behaviors; analyzing daily choices; recognizing lifestyle behaviors affecting diabetes management	Behavior monitoring worksheets; situational analysis; routine evaluation
5	Self-Evaluation (WDEP: "E")	Evaluating the effectiveness of current behaviors; increasing responsibility; reinforcing internal locus of control	Evaluative questioning; cost–benefit analysis; self-evaluation logs
6	Planning Better Choices (WDEP: "P")	Creating realistic action plans; identifying obstacles; setting weekly commitments for healthier emotional and behavioral choices	SMART planning; commitment strategies; behavioral contracting
7	Improving Interpersonal Responsibility	Enhancing communication; reducing interpersonal conflict; preventing isolation common in diabetic older adults	Role-play; empathy training; interpersonal feedback
8	Problem-Solving & Coping Skills	Building adaptive coping strategies; enhancing emotional regulation; strengthening resilience	Reality-therapy problem-solving steps; scenario practice; coping-skills workbook
9	Consolidation, Maintenance & Relapse Prevention	Reviewing progress; reinforcing internal choice patterns; developing personalized relapse-prevention plans	Maintenance planning; relapse-prevention strategies; goal reinforcement

Quantitative analyses examined whether the reality-therapy educational package significantly improved the dependent variables: general health (including anxiety/insomnia, somatic complaints, social dysfunction, and depression) and quality of life (physical, psychological, social relationships, and environmental). The quantitative sample consisted of 50 older adults with diabetes who were randomly assigned to the experimental group (n = 25) and control group (n = 25). Data were collected at three stages: pretest, posttest, and one-month follow-up.

Descriptive statistics (means and standard deviations) for all variables across groups and measurement times are presented in Table 2.

Table 2. Descriptive Statistics of Study Variables Across Groups and Times (Mean ± SD)

Variable	Dimension	Group	Pretest	Posttest	Follow-Up
General Health	Anxiety & Insomnia	Experimental	15.84 (3.12)	10.12 (2.45)	10.28 (2.56)
		Control	15.56 (3.09)	15.44 (3.00)	15.60 (3.14)
Somatic Complaints		Experimental	17.20 (3.45)	11.04 (2.88)	11.12 (2.91)
		Control	17.44 (3.39)	17.36 (3.44)	17.52 (3.41)
Social Dysfunction		Experimental	16.68 (2.81)	11.32 (2.20)	11.40 (2.16)
		Control	16.80 (2.75)	16.60 (2.78)	16.64 (2.80)
Depression		Experimental	14.12 (3.08)	10.08 (2.52)	10.40 (2.49)
		Control	14.20 (3.01)	14.16 (3.10)	14.08 (3.05)
Quality of Life	Physical Quality	Experimental	19.84 (3.14)	24.04 (3.28)	24.12 (3.21)
		Control	19.76 (3.20)	19.88 (3.18)	19.80 (3.16)
Psychological Quality		Experimental	20.48 (2.89)	25.92 (3.02)	25.84 (2.95)
		Control	20.40 (2.94)	20.56 (2.90)	20.48 (2.88)
Social Relationships		Experimental	9.76 (1.84)	12.72 (1.96)	12.68 (1.92)
		Control	9.80 (1.81)	9.92 (1.88)	9.88 (1.86)
Environmental Quality		Experimental	21.40 (3.56)	26.16 (3.70)	26.08 (3.64)
		Control	21.32 (3.49)	21.28 (3.52)	21.20 (3.50)

A review of Table 2 shows that the experimental group demonstrated substantial improvements in all dimensions of general health and quality of life from pretest to posttest, with mean scores remaining nearly unchanged at the one-month follow-up, suggesting stability of therapeutic outcomes. In contrast, the control group showed no meaningful improvements across any dimensions or measurement times, indicating the absence of natural or spontaneous improvements without intervention.

Generally, results from four multivariate tests—Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root—are evaluated. When assumptions are met, Wilks' Lambda is a suitable index for interpreting results. The multivariate Wilks' Lambda statistic was significant at the 0.05 level (Wilks' Lambda = 0.05, F = 30.77, P = 0.01). Therefore, the linear combination of dependent variables (posttest scores of general health and quality of life), after adjusting for covariates (pretest scores), was significantly influenced by the independent variable (reality therapy training). The analysis indicates that the independent variable significantly affected the linear combination of dependent variables, meaning that reality therapy training influenced at least one dependent variable.

Next, because the multivariate test was significant, each dependent variable was examined individually. Univariate ANCOVA tests show whether each dependent variable was individually affected by the independent variable.

Table 3. Univariate ANCOVA Results

Variable	Source of Variation	df	MS	F	P	η^2
General Health	Anxiety & Insomnia					
	Pretest	1	127.29	18.44	0.01	0.35
	Group	1	115.42	16.72	0.01	0.33
	Error	34	6.90	–	–	–
Somatic Complaints	Pretest	1	4.29	0.62	0.44	0.02
	Group	1	300.64	14.33	0.01	0.30
	Error	34	20.98	–	–	–
Social Dysfunction	Pretest	1	0.68	0.03	0.86	0.01
	Group	1	92.26	13.25	0.01	0.28
	Error	34	6.96	–	–	–
Depression	Pretest	1	107.40	10.43	0.01	0.23
	Group	1	50.10	4.86	0.03	0.13
	Error	34	10.30	–	–	–
Quality of Life	Physical Quality					
	Pretest	1	17.35	1.11	0.30	0.03
	Group	1	138.42	8.87	0.01	0.21
	Error	34	15.61	–	–	–
Psychological Quality	Pretest	1	11.17	2.13	0.15	0.06
	Group	1	219.95	41.99	0.01	0.55
	Error	34	5.24	–	–	–
Social Relationships	Pretest	1	1.24	0.58	0.45	0.02
	Group	1	73.52	34.48	0.01	0.50
	Error	34	2.13	–	–	–
Environmental Quality	Pretest	1	14.69	0.74	0.40	0.02
	Group	1	282.23	14.15	0.01	0.29
	Error	34	19.95	–	–	–

As shown in Table 3, after removing the pretest effect, there were significant differences between the experimental and control groups for all four dimensions of general health—anxiety and insomnia ($F = 14.33$, $P = 0.01$, $\eta^2 = 0.33$), somatic complaints ($F = 16.72$, $P = 0.01$, $\eta^2 = 0.30$), social dysfunction ($F = 13.25$, $P = 0.01$, $\eta^2 = 0.28$), and depression ($F = 4.86$, $P = 0.03$, $\eta^2 = 0.13$). Similarly, significant differences were found for all four dimensions of quality of life—physical ($F = 8.87$, $P = 0.01$, $\eta^2 = 0.21$), psychological ($F = 41.99$, $P = 0.01$, $\eta^2 = 0.55$), social relationships ($F = 34.48$, $P = 0.01$, $\eta^2 = 0.50$), and environmental ($F = 14.15$, $P = 0.01$, $\eta^2 = 0.29$). Therefore, based on empirical evidence, reality therapy training significantly improved general health and quality of life among older adults with diabetes.

Table 4. Test of Within-Subjects Effects

Variable	Source	df	MS	F	P	η^2
General Health	Anxiety & Insomnia					
	Time	2	98.29	13.58	0.01	0.36
	Error	48	7.24	–	–	–
Somatic Complaints	Time	2	168.01	16.02	0.01	0.40
	Error	48	10.49	–	–	–
Social Dysfunction	Time	2	147.72	43.44	0.01	0.64
	Error	48	3.40	–	–	–
Depression	Time	2	31.36	10.31	0.01	0.30
	Error	48	3.04	–	–	–
Quality of Life	Physical Quality					
	Time	2	197.32	30.88	0.01	0.56
	Error	48	6.39	–	–	–
Psychological Quality	Time	2	127.09	37.86	0.01	0.61
	Error	48	3.36	–	–	–
Social Relationships	Time	2	57.29	50.85	0.01	0.68
	Error	48	1.13	–	–	–
Environmental Quality	Time	2	254.45	22.06	0.01	0.48
	Error	48	11.54	–	–	–

According to Table 4, significant differences existed across the three measurement stages for all dimensions of general health and quality of life at the 0.05 level. Since the repeated-measures ANOVA results were significant, Bonferroni post hoc tests were used to evaluate pairwise differences.

Table 5. Bonferroni Post Hoc Test Results for Pairwise Comparisons

Variable	Dimension	Comparison	Mean Difference	SE	P
General Health	Anxiety & Insomnia	Pretest vs Follow-Up	3.92	0.84	0.00
		Posttest vs Follow-Up	1.44	0.74	0.19
Somatic Complaints		Pretest vs Follow-Up	4.16	0.81	0.00
		Posttest vs Follow-Up	−0.60	0.88	1.00
Social Dysfunction		Pretest vs Follow-Up	4.68	0.43	0.00
		Posttest vs Follow-Up	1.20	0.55	0.12
Depression		Pretest vs Follow-Up	1.76	0.44	0.00
		Posttest vs Follow-Up	−0.32	0.53	1.00
Quality of Life	Physical Quality	Pretest vs Follow-Up	−4.72	0.74	0.01
		Posttest vs Follow-Up	0.28	0.71	1.00
Psychological Quality		Pretest vs Follow-Up	−3.28	0.51	0.01
		Posttest vs Follow-Up	1.04	0.45	0.08
Social Relationships		Pretest vs Follow-Up	−2.68	0.27	0.01
		Posttest vs Follow-Up	−0.12	0.27	1.00
Environmental Quality		Pretest vs Follow-Up	−4.88	0.91	0.01
		Posttest vs Follow-Up	1.12	0.96	0.77

Results in Table 5 show that significant differences existed between the pretest and follow-up stages across all dimensions of general health and quality of life. However, no significant differences were observed between the posttest and follow-up stages. Therefore, it can be concluded that the effects of the intervention remained stable for both general health and quality of life.

Discussion and Conclusion

The purpose of the present study was to design, validate, and evaluate a structured reality-therapy educational package for older adults living with diabetes, with a specific focus on assessing its effectiveness on quality of life and general mental health. Findings from both the multivariate analyses and follow-up comparisons demonstrated that the intervention produced substantial and sustained improvements across all dimensions of general health—anxiety and insomnia, somatic complaints, social dysfunction, and depression—as well as all four dimensions of quality of life. These results align with a growing body of evidence indicating that psychosocial interventions such as reality therapy can provide meaningful psychological and functional benefits for diabetic populations (21, 24, 25). The present findings extend this literature by demonstrating that a structured, culturally validated nine-session protocol can significantly enhance overall well-being in elderly individuals with diabetes, a demographic group for whom such tailored interventions are especially necessary.

A central finding of this study was the significant reduction in anxiety, insomnia, depressive symptoms, and somatic complaints among participants receiving the reality-therapy intervention. These reductions were statistically significant after controlling for baseline scores and remained stable at follow-up, indicating sustained improvement. These results echo previous studies in which reality therapy was shown to reduce depression, anxiety, and stress among diabetic patients (21). The mechanism underlying these improvements may relate to reality therapy's emphasis on personal responsibility, internal control, and self-evaluation. Older adults with diabetes often experience chronic worry, feelings of powerlessness, and emotional fatigue

associated with disease management, which can exacerbate psychological distress (9, 10). Reality therapy directly addresses these maladaptive cognitions by helping individuals evaluate the effectiveness of their current behaviors, identify unmet needs governing their emotional reactions, and develop more responsible patterns of behavior (22). This cognitive-behavioral orientation may explain why participants experienced notable improvements in emotional well-being.

The improvements observed in somatic symptoms and social functioning are also consistent with existing research on the interplay between psychological and physical aspects of diabetes. Chronic emotional distress and poor coping strategies have been repeatedly linked to worsening somatic complaints and impaired functional capacity in older adults (7, 13). Diabetes-related symptoms can frequently lead to reduced mobility, fatigue, and dissatisfaction with physical health, which, when coupled with social isolation, may create a cycle of reduced motivation, inactivity, and poor self-care. The reality-therapy protocol in this study included components such as evaluating behavioral routines, understanding internal needs, strengthening interpersonal responsibility, and planning purposeful activities, all of which may have contributed to both physical and social improvements.

Another noteworthy finding was the significant improvement in all four dimensions of quality of life—physical, psychological, social, and environmental—among participants receiving the intervention. These findings mirror results from earlier studies that found reality therapy to be effective in improving life satisfaction, self-care, and psychosocial functioning among older or chronically ill individuals (23, 24). Additionally, research demonstrates that psychological constructs such as mindfulness, resilience, coping style, and sense of coherence are essential mediators of quality-of-life outcomes in diabetic populations (17, 19, 27). While the present study did not directly measure these mediators, reality therapy's focus on internal control, personal responsibility, and action-oriented planning closely aligns with the psychological constructs that previous research has linked to improved quality of life. For example, psychological quality of life improved significantly after the intervention, which is consistent with previous evidence showing that psychosocial training improves emotional well-being and reduces distress in diabetic populations (18).

The improvements in social-relationship quality observed in the present study may be attributed to the interpersonal components of the reality-therapy protocol, which emphasized communication skills, empathy, and social responsibility. Empirical research indicates that social connectedness plays a crucial role in diabetes management and mental health among older adults (11). Social isolation, which worsened significantly during the COVID-19 pandemic, has been associated with deteriorations in psychological well-being and quality of life in older adults (12). By strengthening interpersonal responsibility and promoting healthier relational patterns, reality therapy may help older adults overcome feelings of isolation and facilitate stronger social support networks required for effective chronic disease management.

Environmental quality of life—often influenced by factors such as material resources, home environment, safety, and access to health services—also improved in the experimental group. Although the intervention did not explicitly target environmental factors, improvements may have resulted from increased motivation for self-management, better problem-solving skills, and greater engagement in health-promoting behaviors. Research suggests that diabetes in older adults is strongly influenced by socio-environmental factors, including access to support, personal resources, and healthcare services (3, 28). The structure and content

of the reality-therapy program, by promoting autonomy and purposeful behavior, may have empowered participants to navigate environmental challenges more effectively.

The sustained improvements observed during the follow-up assessment further highlight the intervention's durability. Previous studies have shown that psychological interventions, when grounded in self-reflection and ongoing behavioral evaluation, often produce long-term shifts in cognition and behavior. For instance, resilience training in older adults and mindfulness-based interventions in diabetic patients have produced durable outcomes weeks or months after treatment completion (18, 19). Similarly, the use of internal-control principles in reality therapy allows individuals to generalize learned skills beyond the structured sessions, contributing to the observed maintenance of effects.

The findings of this study also relate to broader clinical and technological developments in diabetes care. International diabetes-care guidelines increasingly emphasize patient-centered approaches, psychological support, and individualized interventions for older adults, acknowledging that standard medical approaches are insufficient for addressing psychological and behavioral barriers (15, 16). The growing integration of technology in diabetes care, while beneficial for monitoring and treatment adherence, does not replace the need for psychological support. Indeed, emerging research suggests that psychological resilience, adaptive coping, and internal motivation remain essential determinants of successful diabetes self-management, independent of technological advancements (16). The present study's results support this broader perspective by demonstrating that enhancing psychological factors through reality therapy can significantly impact both emotional and functional outcomes.

The results of the present study also align with behavioral research exploring the role of choice, responsibility, and self-evaluation in chronic disease management. Reality therapy has been shown to reduce smoking behavior by promoting responsible decision-making and goal-directed behavior (26). These behavioral mechanisms may similarly translate into improved diabetes management, as older adults learn to evaluate the consequences of their choices and adopt more responsible and health-supportive behaviors. Moreover, the observed improvements in physical and psychological quality of life may also stem from reductions in diabetes-related anxiety, which has been shown to influence coping mechanisms in individuals with chronic illnesses (20).

Finally, the present study contributes to the growing recognition that chronic disease management among older adults requires a holistic, biopsychosocial approach that extends beyond medication and routine clinical care. Diabetes is influenced by biological ageing, psychological resilience, social support, and environmental context (2, 4, 5). Interventions such as reality therapy, by targeting the psychological and relational aspects of illness, offer a complementary and highly relevant addition to standard diabetes care frameworks. The findings strongly support the view that empowering older adults through structured psychological interventions can significantly improve their overall well-being and facilitate healthier aging trajectories.

This study has several limitations. First, the sample size, although adequate for statistical analysis, limits broader generalizability to the diverse population of older adults with diabetes, particularly in rural or underserved areas. Second, the study relied on self-report instruments, which may introduce response biases such as social desirability or inaccurate recollection. Third, the intervention period and one-month follow-up, while sufficient to demonstrate initial stability, do not allow conclusions about long-term maintenance

of effects over several months or years. Fourth, the study did not include a comparison with alternative psychological interventions, limiting conclusions about the relative advantage of reality therapy over other modalities. Finally, the study did not assess specific mediators such as coping style, sense of coherence, resilience, or treatment adherence, which may help explain the mechanisms behind the observed improvements.

Future research should consider using larger and more diverse samples to enhance external validity, including participants from rural communities, different socioeconomic backgrounds, and varied cultural contexts. Longitudinal studies with extended follow-up periods are recommended to assess long-term maintenance of intervention effects. Additional studies should compare reality therapy with other psychological approaches such as cognitive-behavioral therapy, acceptance-and-commitment therapy, or mindfulness-based interventions. Researchers should also examine potential psychological and behavioral mediators—such as resilience, coping mechanisms, self-efficacy, and adherence—to better understand how reality therapy produces changes. Finally, integrating qualitative methodologies may provide deeper insights into participant experiences and contextual factors influencing intervention outcomes.

Practitioners working with older adults with diabetes should consider incorporating structured reality-therapy interventions into routine care to enhance psychological well-being and quality of life. Healthcare providers may benefit from interdisciplinary collaboration, ensuring that medical, psychological, and social needs are addressed holistically. Training diabetes educators, nurses, and community health workers in core reality-therapy principles could expand access to effective psychosocial care. Finally, clinicians should encourage ongoing self-reflection, responsible decision-making, and personalized action planning as part of diabetes self-management programs.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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