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Original Article

Compilation and Validation of a Technology Enhanced Cognitive-Behavioral-Emotion-Focused Treatment Package: A Comprehensive Protocol for Management of Type 2 Diabetes

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Abstract

Introduction: Reliance on linear biomedical models in the treatment of type 2 diabetes without deep intervention in the cognitive, emotional, and behavioral layers of the patient's experience has reached a plateau of treatment efficacy in practice. This study was conducted with the aim of developing and validating an integrated technology-enhanced cognitive-behavioral-emotion-focused therapeutic package for type 2 diabetes.

Methods: A sequential exploratory design was employed in this study. In the first phase, a systematic review of sources from 2010–2025 and directed qualitative analysis (NVivo) led to the extraction of clusters around axes of emotion regulation, cognitive and meaning reconstruction, stress coping and management, technology-enhanced self-care, social support, and relapse prevention. In the second phase, these clusters were operationalized into an eight-session protocol and submitted to 10 specialists for examination of content validity.

Results: The Content Validity Ratio (CVR) with a threshold of 0.62 and Content Validity Index (CVI) with a threshold of 0.79 were calculated, and results for all items exceeded the threshold. Several borderline cases were revised after feedback (terminology correction, consolidation, or clarification of technology-enhanced procedures) and were retained without structural deletion in the final version. Integrative analysis showed that the integration of the application (daily logging of mood, thoughts, and behaviors; adaptive feedback; intelligent reminders) with sequences of emotional–cognitive skills can create the capacity for "closed-loop learning" to reduce the gap between sessions and daily life and generate secondary data for future personalization.

Conclusion: Given the confirmation of formal and content validity of the technology-enhanced cognitive-behavioral-emotion-focused therapeutic package based on specialist assessment, this protocol can be applied to individuals with type 2 diabetes. With a comprehensive view and attention to all three domains of cognition, behavior, and emotion, this study addressed bridging the gap between existing protocols and their fragmentation. The integration of technology aims at making this disease management more practical and facilitating it in everyday life.

Keywords: Validation, Clinical protocol, Cognitive-behavioral therapy, Emotion-focused therapy, Type 2 diabetes

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Introduction

In recent decades, type 2 diabetes has become an issue far beyond a mere metabolic disorder and functions as an exemplar of the pattern of complexity characterizing chronic diseases at the level of health systems and patients' biopsychosocial domains. According to World Health Organization reports, chronic diseases account for 82% of deaths in Iran. Diabetes is among the most common chronic, non-communicable, and prevalent metabolic disorders worldwide. This disease has shown alarming prevalence rates in recent years and is increasing rapidly, representing one of the major causes of disability and

death in older adults. The prevalence of type 2 diabetes was estimated to be approximately 9% in Iran (1). The convergence of demographic trends such as aging, urbanization, changes in dietary patterns, and reduced physical activity combined with psychosocial pressures has increased the burden of this disease in countries such as Iran (2) and has demonstrated that reliance on linear biomedical models without deep intervention in the cognitive, emotional, and behavioral layers of the patient has reached a plateau of treatment efficacy in practice (3). Clinical experience and research evidence from both domestic and international sources consistently emphasize that the sustainability of any care algorithm in the field of type 2 diabetes requires the integration of mechanisms capable of resetting the patient's thinking styles, emotion processing, meaning-making regarding the illness, and organization of daily actions related to self-care in a realistic and sustainable manner (4).

Although numerous educational programs and intervention packages have been developed over the past two decades, a conceptual and operational gap remains between cognitive–behavioral components and emotion-focused processes. A significant portion of common packages, rooted in the cognitive–behavioral approach, focus on correcting dysfunctional beliefs about the nature of the disease, promoting problem-solving in the management of regimen, and structuring behavioral monitoring and planning (5). Cognitive-behavioral Therapy (CBT), as a structured, short-term, and present-focused model for correcting dysfunctional thinking and behavior patterns in type 2 diabetes, has shown efficacy (6). However, it has some limitations such as insufficient attention to emotion processing, weakness in improving emotion regulation, and persistence of negative self-views (7), as well as relative inability to account for emotional fluctuations and changes in meaning of life (6). The neurochemical distinction between emotion and cognition supports the proposition that reliance solely on cognitive restructuring in chronic diseases is insufficient, and the integration of emotion-focused approaches becomes necessary (8). Emotion-focused Therapy (EFT), with its focus on processing and direct experience of emotion, prevention of avoidance and suppression, facilitation of meaning reconstruction, and strengthening post-traumatic growth, compensates for part of this gap (9). However, its lengthy nature and predominant focus on the emotional layer may result in neglect of organizing cognitive components and self-care behaviors such as dietary adherence (10).

In this context, existing literature on individual intervention elements such as lifestyle education, emotion-based therapies, acceptance and commitment mechanisms, and coping-focused interventions has offered scattered support for the efficacy of specific components (11–14), but this fragmentation itself indicates the absence of a framework capable of documenting the integrative role of each component in a comprehensive learning–change pathway. Furthermore, data from systematic reviews regarding the predictive components of participation and adherence indicate that disease and medication-related beliefs, health literacy, perceived costs, and initial treatment experience can serve as key intervention nodes in designing the cognitive–behavioral layers of the package (15,16). However, in the absence of structured mechanisms for generalization to observable daily behaviors, there remains a risk of change at the level of insight or emotional release. This dichotomizing distinction consequently traps patients in a cycle of incomplete awareness or fragmented behavioral skills that does not generate the synergy necessary to consolidate self-care patterns.

In such a context, digital health technology is not merely a peripheral tool for content delivery but rather provides a unified platform for integrating cognitive, emotional, and behavioral processes. The use of interactive smartphone-based modules, real-time self-report monitoring, adaptive reminders, algorithmic feedback, and rapid communication channels with the treatment team can reduce the long-standing tension between the "therapy session" and "real life" and minimize the temporal–structural gap between acquisition of a skill and its application (17). Despite these capabilities, a critical review of existing products and programs reveals that emphasis is either on collecting quantitative indices of behavior and metabolism without psychological analytical layers or on delivering linear educational packages without dynamic personalization loops. The absence of integrative models that embed cognitive–behavioral and emotion-focused content within meaning-function adaptive algorithms has shaped the primary gap in this field.

The need to develop a package in which a specific process map guides movement from establishing safety and reducing emotional attentional bias to recognizing illness-centered thought patterns, meaning reconstruction, and then to consolidating self-regulation behaviors in a data-driven cycle not only has theoretical roots but is also defensible based on qualitative domestic data regarding treatment adherence barriers (17). In those data, weak perception of treatment team participation, message inconsistency, absence of space for hearing emotional distress, and contextual family and occupational pressures are reported as factors that erode active patient participation (17). If a package cannot, through user experience (UX) design, divide the learning pathway into digestible units while simultaneously keeping cognitive, emotional, and behavioral activation layers aligned, the risk of early dropout and symbolic use remains high, factors that the designed application took into account to enable maximum efficacy.

Therefore, the focal problem of the present research is to address a multitier gap, including the absence of an integrated technology-enhanced package with a coherent theoretical foundation on one hand and the lack of a systematic and culturally adapted validation process for such an intervention in the field of type 2 diabetes in Iran on the other. It should be noted that the output of this work

is presented in the form of an application offering diverse access modes, including conducting protocol sessions in a virtual environment and saving time and energy (which, given the age group of individuals with diabetes, is highly important), performing exercises within the application, intelligent reminders, contact and question–answer with the treatment team, regular blood sugar recording and graphical reporting, and similar services. The innovation of this research, in addition to the simultaneous use of cognitive, behavioral, and emotion-focused approaches and having a comprehensive view of the individual, is the use of technology to facilitate task performance for the patient and enable access to health system users. The main objectives of this study are to establish and validate the conceptual, content, and operational framework of the technology-enhanced cognitive-behavioral-emotion-focused therapeutic package commensurate with the cultural context and structure of existing care and to validate it in terms of content validity, internal coherence, process transparency, and acceptability among experts and initial users. Based on this premise, the research investigates whether it is possible to provide a documented and analytical pathway from the concept of integration to the structure of an intervention amenable to empirical testing in subsequent phases, and whether the necessary infrastructure for developing more advanced models based on obtained data can be created.

Materials and Methods

The present study was conducted as a mixed design and was of an exploratory type. The sequential exploratory strategy has two phases. In the first phase, data are collected and analyzed, and in the second phase, quantitative data are built upon the results of qualitative analysis, collected, and analyzed. The purpose of this strategy is to use quantitative data and results to help interpret qualitative findings. In the quantitative portion of the research, expert survey and quasi-experimental research methods were used. Therefore, the research population in the first phase comprised written documents and records in the form of books, articles, dissertations, and those published electronically and credibly during 2010–2025 in the field of chronic disease management and type 2 diabetes found in international databases including SID, Science Direct, PubMed, Scopus, and Elsevier. To obtain existing information, studies conducted in the aforementioned time interval were examined. To conduct the search, combinations of keywords related to the topic of study were used in the mentioned databases. Therefore, the criteria for selection and exclusion of samples were as follows: all articles and dissertations that addressed the target topic during the 15-year interval were initially included in the study for review, but studies that discussed the relevant topic but presented insufficient or inappropriate data were excluded from the study. Through initial identification of texts using keywords and identification of sources referenced in those texts, other relevant sources not initially considered were also obtained and reviewed. This process continued until theoretical saturation was reached, meaning that studying new sources did not yield additional novel components. Figure 1 shows the phases of selection, refinement, and screening of research.

In the second part, specialists were defined as individuals possessing at least doctoral-level qualifications in psychology and counseling or as physicians specializing in endocrinology with a minimum of 10 years of professional experience in working with patients with chronic diseases, including those with diabetes. In this regard, the sampling method consisted of two components. In the first component, sampling was purposive, and sources that were credible and published in a specified time interval were selected. In the second component, sampling was also purposive, and 10 specialists meeting the specified criteria were used.

The implementation method was as follows. In the first component, data were collected through systematic review of sources and documents using a systematic review method. In the second component, data collected

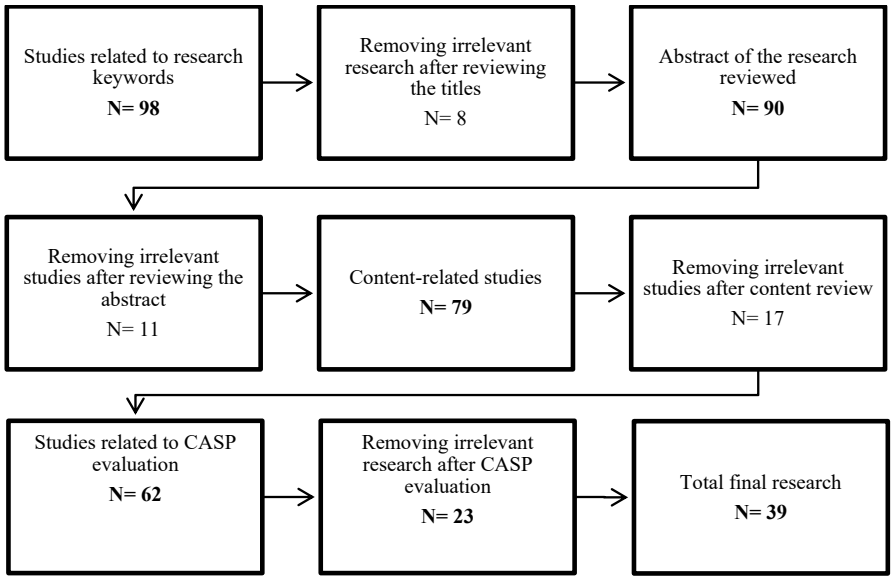

Figure 1. Stages of Research Selection, Refinement and Screening

using specialist opinion gathered through focus groups were converted to intervention techniques based on components validated in content validity review by specialists. In other words, in this phase, the design of the technology-enhanced cognitive-behavioral-emotion-focused protocol and the preparation of session plans and content took place. Based on results from the examination of existing literature, content, programs, and session plans based on the teachings of the technology-enhanced cognitive-behavioral-emotion-focused protocol for individuals with diabetes were developed.

In the next step, to assess content validity, the designed program was provided to specialists in the relevant field. First, the general objectives of the training protocol as well as the objectives and content of each technique were stated. Then, specialists were requested to rate their level of agreement regarding each session in two categories, relevance to the program and necessity of its existence, on a 6-point Likert scale (0 to 5), and if satisfactory results were obtained, proceed to preliminary implementation assessment. Accordingly, to examine content validity, two coefficients were used: Content Validity Ratio (CVR) and Content Validity Index (CVI). Additionally, Lawshe's ratio was used to quantify content validity. For this purpose, first the protocol objectives were explained to specialists and operational definitions related to content were stated. Afterwards, they were asked to classify each content based on a three-part Likert scale (essential, useful but not essential, and not necessary). Then, responses were calculated using the following formula:

$$CVR = (nE - N/2) / (N/2)$$

Where:

- nE = number of specialists who responded to the "essential" option
- N = total number of specialists

If the calculated value is greater than the table values, the content validity is accepted:

It should be noted that in the present research, 10 specialists were utilized. Therefore, the minimum acceptable CVR was 0.62.

In contrast, based on the Content Validity Index presented by Waltz and Bausell, specialists are asked to specify the degree of relevance of each item on a four-part scale (irrelevant, needs major revision, relevant but needs revision, and completely relevant). The number of experts who selected options 3 and 4 is divided by the total number of experts:

CVI = (number of experts selecting options 3 or 4) / (total number of experts)

If the resulting value is less than 0.7, the item is rejected; if it is between 0.7 and 0.79, revision should be performed; and if it is greater than 0.79, it is acceptable.

In the final step, program review and finalization were undertaken, and it should be noted that the final program had little difference from the program implemented in the previous phase in content, with only some details in the implementation process modified.

Finally, it should be added that given the research design and implementation method, for data analysis in the qualitative section, systematic review was used. For information extraction and category classification, NVivo Enterprise-20-v1.7.1 software was used. In addition, two coefficients, including Content Validity Ratio (CVR) and Content Validity Index (CVI), were employed.

Results

After collecting all research studies, 98 studies that were aligned with the objectives of present study' were obtained, of which 59 were eliminated and 39 studies were selected for the next phase. The review and selection processes in this research are briefly presented in Figure 1.

By studying existing research as well as books and encyclopedias related to cognitive-behavioral-emotion-focused therapy for diabetic individuals (type 2), objectives and topics have been extracted to be taught according to need during sessions. In this regard, Table 1 presents educational objectives and contents of the protocol by session, and finally the Content Validity Ratio and Content Validity Index for each item.

Given that 10 specialists provided opinions on the present protocol (Table 2), the minimum acceptable CVR was 0.62. As observed in Table 1, all content showed values above this limit and it can be stated that content validity ratio was acceptable. As previously stated, if the resulting CVI value is less than 0.7, that content should be removed. According to the content validity index values in the table, it was determined that all proposed contents had values above the considered threshold. With all these interpretations, it can be stated that the designed and developed cognitive-behavioral-emotion-focused therapy for diabetic individuals (type 2) possesses necessary validity.

Discussion

The present discussion section, relying on the process of developing and validating an integrated technology-enhanced cognitive-behavioral-emotion-focused package for type 2 diabetes, has attempted to demonstrate how responding to existing theoretical and operational gaps can transcend the level of adding scattered components and result in a coherent process architecture. In the demographic, lifestyle, and contemporary psychosocial pressure context, type 2 diabetes has transformed from a purely metabolic disorder into a systemic phenomenon (1,2), a condition in which reliance on linear biomedical models and classical patient education has reached a plateau of treatment efficacy with limited capacity to generate new and sustainable impact (18). Connecting this contextual finding to the limitations of cognitive–behavioral approaches in chronic disease management, including insufficient penetration of deep emotion processing, persistence of negative self-views, and difficulty accounting for meaning fluctuations (6,7), and also the potential deficits of an emotion-focused

Table 1. Assessment of Content Validity Ratio and Content Validity Index

Session	Topic	Content	CVR	CVI
1	Introduction, psycho-education and application introduction	Introduction to overall session structure and treatment objectives	1	1
		Explanation of basic concepts of type 2 diabetes and role of psychological factors in its management	1	1
		Introduction to technologies used in treatment (applications)	0.64	0.86
		Importance of recording daily events and mood for monitoring psychological changes	0.73	0.73
	Assignment	Daily recording of mood and diabetes-related events in application	0.86	0.86
2	Emotion regulation training and emotion identification	Definition of emotion and importance of emotion regulation in living with diabetes	0.64	0.73
		Teaching methods for identifying emotions and their physical symptoms	0.73	0.86
		Examining relationship between emotions and disease-related behaviors	0.64	0.73
		Practical exercise in identifying and naming emotions in daily situations	0.64	0.73
	Assignment	Practice identifying and naming emotions in daily situations and recording them	0.86	0.71
3	Cognitive restructuring and correction of diabetes-related dysfunctional thoughts	Introduction to dysfunctional thoughts and their role in maladaptive feelings and behaviors	0.86	0.71
		Teaching identification of negative thoughts and common cognitive distortions in diabetic patients	0.86	0.70
		Techniques for replacing negative thoughts with realistic thoughts	0.73	0.73
		Practical cognitive restructuring exercise using technological tools	0.73	0.70
	Assignment	Identifying negative thoughts about illness and replacing with realistic thoughts, recording in application	0.64	0.70
4	Teaching behavioral coping skills and stress management	Introduction to stress and its effect on diabetes control	0.73	0.73
		Teaching healthy coping skills (such as problem-solving, time management, etc.)	0.73	0.70
		Introduction to relaxation techniques (deep breathing, guided meditation, etc.)	0.64	0.80
		Practical stress management exercise using application	0.73	0.93
	Assignment	Practice stress management technique (such as deep breathing or guided meditation) and record experience	0.73	0.73
5	Teaching self-care and treatment adherence with application	Importance of self-care in diabetes control and complication prevention	0.73	0.73
		Introduction to technological tools for medication, diet, and physical activity tracking	0.64	0.93
		Teaching recording and analysis of self-care data in application	0.62	0.80
		Examining treatment adherence barriers and technological solutions to overcome them	0.73	0.76
	Assignment	Using application or online tool for medication, diet, and physical activity tracking	0.86	0.80
6	Strengthening social support and effective communication	Role of social support in chronic disease management	0.86	0.93
		Teaching effective communication skills with family, friends, and treatment team	0.73	0.73
		Introduction to online support groups and participation methods	0.73	0.93
		Practical exercise in establishing supportive communication and recording experience in application	0.64	0.73
	Assignment	Establishing supportive communication (e.g., contact with friend or support group) and recording feelings afterward	0.73	0.73
7	Facing daily challenges and relapse prevention	Identifying common challenges in diabetes management pathway	0.86	0.80
		Teaching development of coping strategies for difficult situations	0.86	0.93
		Using application for predicting and preventing relapse of maladaptive behaviors	0.73	0.93
		Practical exercise facing a challenging situation and recording strategies	0.86	0.86
	Assignment	Identifying a personal challenge and developing coping strategy with application	0.64	0.73
8	Summary, progress evaluation, and future planning	Review of treatment path and individual achievements	0.73	0.93
		Evaluating progress in emotional, cognitive, and behavioral domains	0.73	0.86
		Teaching development of practical plan for continuing path and maintaining achievements	0.73	0.73
		Introduction to technological resources for long-term support and self-monitoring	0.73	0.80
	Assignment	Preparing practical plan for continuing path and personal goals, recording in application	0.73	0.93

approach in the absence of organizing behavioral self-care skills (10) provided the argumentative foundation for integration. Neurochemical evidence distinguishing emotion and cognition pathways (8) and the capacity for meaning reconstruction and post-traumatic growth in emotion-focused approaches (9) support the proposition that extension of cognitive restructuring techniques alone will not suffice to address accumulated needs of patients unless regulated emotional experience simultaneously connects to cognitive learning loops and behavioral self-care pathways. In this regard, the scattered empirical support for individual components, lifestyle education, acceptance and commitment, coping skills, and emotion-focused interventions (11–14), rather than indicating component sufficiency, served as an indicator of the absence of a functional integration map that could illuminate the role of each component in a continuous learning–change pathway. Furthermore, when data

Table 2. Decision-making Regarding CVR

Number of expert respondents	Minimum CVR
7 and fewer than 7 people	0.99
8 people	0.85
9 people	0.78
10 people	0.62
15 people	0.49
20 people	0.42
25 people	0.37
30 people	0.33
40 people	0.29

from systematic reviews regarding the importance of disease and medication beliefs, health literacy, perceived costs, and initial treatment experience (15,16) were considered alongside contextual barriers reported in domestic qualitative research, such as feeling unheard regarding emotional distress, message inconsistency, and family and occupational pressures (17), the necessity of designing interactive and data-driven layers was doubled. Within this framework, technology was defined not as a peripheral tool for content delivery but as the architectural basis for closed-loop learning cycles in which continuous monitoring and adaptive feedback reduce the classic gap between session and daily life (19) and enable simultaneous synchronization of emotional experience, cognitive correction, and behavioral activation. It is important to note that the claims made about technological features in the present study have not been empirically tested and are discussed only in terms of expected capabilities that will be evaluated in future research.

The use of a sequential exploratory design to move from the phase of construct extraction to their transformation into observable session objectives and techniques helped align the method with the integrative goal. In other words, concepts clustering around axes such as emotion regulation, meaning reconstruction, technology-enhanced self-care, coping, and relapse prevention were initially identified, and each axis was then operationalized in the form of session sequences and digital tasks. Content validity findings, in their entirety, supported acceptance of content components by experts; however, it is necessary to emphasize that several CVI values close to the optimal threshold require clarification of the review process. This transparent confrontation with borderline data is not a weakness but rather a component of authentic reporting that creates an opportunity for iterative improvement before entering pilot and clinical trial phases. Additionally, the purposive nature of expert sampling, although aligned with content validity standards, raises the possibility of discourse concentration bias, and development of subsequent studies combining multidisciplinary experts (endocrinology, user experience design, health data science) can strengthen external validity.

It should be added that the product of this process is an interdisciplinary model in which emotion regulation serves as the initial gateway for establishing safety and reducing emotional reactivity, cognitive restructuring serves as the platform for meaning reorganization and disease-centered bias correction, and the technology layer serves as the engine for sustaining self-regulation behaviors and monitoring participation, an approach that can reduce the recognized gap between "insight" and "sustained behavioral engagement" (6,9). Linking daily tasks of recording mood, thoughts, and self-care behaviors to algorithmic feedback creates the capacity for adaptive profiles that can serve as the basis for developing personalization algorithms based on clustering of emotional–cognitive patterns in next phases. Additionally, the integration of social support elements and effective communication in the session structure provides a direct response to findings regarding the role of support networks in adherence and quality of life in chronic patients (2,17). From this perspective, the present package can serve as a foundational framework for designing feasibility and acceptability pilot studies with indicators such as session completion rates, frequency of daily data entry, and retention indices. Furthermore, preliminary efficacy testing on variables affecting type 2 diabetes management and treatment follow-up, as well as development of supplementary modules for common comorbidities such as anxiety and depression, could also prove beneficial. By integrating cognitive–behavioral and emotion-focused foundations within a technology architecture, this research provided a conceptual and practical step toward transcending the fragmentation of intervention components and creating a continuous learning pathway for patients with type 2 diabetes. The relative robustness of content validity, together with clear identification of points requiring revision, provides the foundation for a responsible transition to efficacy testing phases. The primary added value is not merely the addition of technology but rather the interactive meaning-making of the patient's daily data within loops of emotion regulation, cognitive reconstruction, and consolidation of self-care behaviors, a loop that can be considered an expandable model for other complex chronic diseases if in subsequent phases demonstrates significant correlation with clinical and psychological outcome indices. This therapeutic package provides the possibility that randomized clinical trials can be conducted and necessary efficacy be confirmed. Accordingly, personalization based on emotional–cognitive patterns become feasible, ultimately achieving the overarching goal of reducing the individual and health system burden of type 2 diabetes in the Iranian context and beyond.

Furthermore, since this research was conducted in the Iranian population context, the role of context-specific factors should be considered. In other words, certain elements are directly dependent on cultural, social, and health system factors in management of type 2 diabetes. These elements include dietary patterns based on local culture, societal beliefs and attitudes toward disease and treatment, health literacy levels, access to primary and specialty care services, insurance coverage of medications

and services, family role in patient care, and health system policies and resources. These factors can significantly affect the acceptance of interventions, treatment adherence, and clinical outcomes in patients. In contrast, there are components that possess greater generalizability and can be applied across most contexts. These components include evidence-based principles in disease diagnosis and monitoring such as HbA1c measurement, lifestyle modification through increased physical activity and healthy nutrition, general principles of stepwise pharmacological treatment, patient self-care education, prevention and management of chronic complications, and the use of patient-centered care approaches. These elements, despite requiring minor adaptation to different contexts, provide a common framework for the management of type 2 diabetes globally.

Conclusion

The technology-enhanced cognitive-behavioral-emotion-focused therapeutic package, with a comprehensive view and attention to all three domains of cognition, behavior, and emotion, addressed bridging the gap between existing protocols and their fragmentation. Additionally, the integration of technology aimed at making this approach more practical and applicable in the daily lives of individuals with type 2 diabetes. However, while this therapeutic package received scientific validation from specialists, the limitations of this research must be noted. First, random sampling was not used in this research, and second, the validation conducted in this research was limited to the content level and based on the opinions of a limited number of experts. Although this number adequately meets methodological requirements, it necessarily limits generalizability. Therefore, caution should be exercised in generalizing the results of this research. In other words, experimental research is needed to confirm its efficacy. Given the results obtained from this investigation, it is recommended that this therapeutic package be implemented in clinical samples and its impact be measured on indices such as treatment adherence, stress levels, and quality of life. Considering that this package was developed for individuals with type 2 diabetes, to increase generalizability it is recommended that it should be examined and analyzed in population groups with larger numbers and also other psychological and somatic disorders. Additionally, examination of the experience of therapists and clients in the practical implementation of this package could contribute to its enrichment in subsequent revisions.

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Authors' Contribution

Conceptualization: Reza Abedi.
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Writing-Original Draft: Reza Abedi.
Writing–Review & Editing: Ahmad Borjali, Abolghasem Eisa Morad, Mohammad Asgari, Faride Hosseinsabet.

Competing Interests

The authors declare that they have no conflict of interests.

Ethical Approval

This article is the result of part of a doctoral dissertation entitled "Compilation and validation of technology-enhanced cognitive-behavioral-emotion-focused treatment package and its effectiveness on treatment adherence, stress level, and quality of life in individuals with type 2 diabetes". It was approved by the Ethics Committee of Allameh Tabataba'i University (IR/ETHICS.2025.87142.1363). It should also be noted that informed consent was obtained from all specialist participants in the research. Prior to study entry, the objectives of the research, method of participation, duration of collaboration, data use, and right to withdraw at any stage without negative consequences were clearly explained to the experts. Participation in the research was entirely voluntary, and informed consent was obtained in written/electronic form (as applicable). Regarding ethical considerations, the principles of confidentiality and data anonymization were fully respected, and identifying information of experts was not disclosed in any phase of analysis and result reporting. Furthermore, the present study was conducted in accordance with the principles of ethics in biomedical and health research and necessary approvals were obtained from the relevant research ethics committee.

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