




Identification of Types of Interventions Aiming at Psychological Health Enhancement for Family Caregivers of Individuals with War-Induced Post-Traumatic Stress Disorder: A Scoping Review

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Abstract

Background: Continuous care for patients with post-war stress disorder can affect the psychological health of caregivers. Recognizing the available and credible interventions for enhancing the psychological well-being of caregivers is one of the goals of healthcare providers. Therefore, the present scoping review was conducted with the aim of identifying the types of interventions aiming at enhancing the psychological health and well-being of the family caregivers of individuals suffering from war-induced post-traumatic stress disorder.

Methods: In this scoping review, studies conducted on healthcare interventions aimed at improving the psychological health of family caregivers of individuals with war-induced PTSD, with any study design published in both Persian and English languages, within the timeframe of 2000-2023, were searched in the following databases: PubMed (Medline), Google Scholar, Scopus, ProQuest, Science Direct, Web Of Science, Cochrane, SID, IranDoc, IranMedex, and Magiran. The search utilized the following keywords in English as well as their Persian equivalents: posttraumatic stress disorder, combat veteran, military veteran, psychological intervention, program, therapy, family caregiver, family member, partner, spouse, wife, and veterans' families.

Results: Out of a total of 22,500 articles initially found, ultimately, 11 articles were found to be eligible for this study. A review of the studies revealed that interventions conducted to enhance the psychological well-being of family caregivers of individuals with war-induced post-traumatic stress disorder were broadly categorized into three intervention groups. These intervention groups included the second wave of behavioral therapies (such as cognitive-behavioral strategy training, stress inoculation training, group therapy, and cognitive-based couples therapy), a third wave of behavioral therapy (acceptance and commitment-based therapies, mindfulness-based cognitive therapy, and mindfulness-based family therapy), and fourth wave of behavioral therapy (spiritual-religious interventions, hope therapy, logotherapy, internet-based interventions, and online education).

Conclusion: Based on the findings, it can be stated that the third wave of behavioral interventions, where behavioral strategies take precedence over traditional cognitive strategies, may prove beneficial in reducing psychological symptomatology and enhancing the psychological well-being of family caregivers of individuals with war-induced PTSD, compared to interventions in other categories. However, the clear lack of data underscores the need for further research into the psychological well-being of caregivers of individuals with war-induced PTSD.

Keywords: Posttraumatic Stress Disorder, Combat Veteran, Family Caregiver, Psychological Intervention

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↑What is “already known” in this topic:

Various studies have investigated the psychological health of the family caregivers of these veterans, and each of these studies has used different methods.

→What this article adds:

In general, there are three types of interventions for these people, and the third wave interventions that included acceptance and commitment therapy, cognitive therapy based on mindfulness, and family therapy based on mindfulness were more effective than other interventions.

Introduction

Post-Traumatic Stress Disorder (PTSD) is characterized by the emergence of specific symptoms following experiencing or witnessing one or more highly distressing or life-threatening events with a real risk of death or severe harm (1). It is a chronic mental disorder (2, 3) that develops in response to exposure to traumatic life events. Individuals respond to this experience with fear and helplessness, continually reliving the event in their minds while also seeking to avoid any reminders of it (4).

The lifetime prevalence rate of PTSD in high-risk groups, i.e., groups exposed to traumatic events, ranges from 5% to 75% (5). According to DSM-5, examples of highly stressful and traumatic events include experiences on the battlefield and natural disasters (e.g., floods, earthquakes, tsunamis) (6). Generally, war in any country can result in significant physical, human, and societal damages (7). War-induced stress leads to numerous and unpredictable short-term and long-term psychological challenges for returning soldiers, their families, and even society. One of the most significant mental health consequences of war is PTSD (8, 9).

PTSD, due to the occurrence of emotional disorders and maladjustment, can have unpredictable, destructive, and often irreparable consequences (10, 11) on the health of the affected individuals, their family members, and the community in all aspects, disrupting their functioning (10). Since a family is a system, any change in one part of it can lead to changes in the entire system. As a result, families of individuals with PTSD, due to the frequently direct and ongoing contact with the recurrent experiences of the patient's distress, often find themselves in a more emotionally challenging, unstable, and frequently exhausting situation (7, 8).

The continuation of this disorder often leads to persistent psychological problems, which diminish the quality of life for the affected individuals and their families (12, 13). In addition, as a result of assuming multiple roles, increased life responsibilities, financial concerns, reduced social support, and a sense of insecurity within the family, they gradually become susceptible to fear, anxiety, despair, feelings of shame and guilt, tension, and consequently experience impaired functioning within their family and society over time (13, 14). These factors can further expose caregivers of individuals with PTSD to an escalating risk of difficulties and, as a result, disruptions in their psychological well-being (15).

Psychological well-being can be viewed as how individuals perceive themselves, their lives, and their interactions with others. It encompasses how individuals assess and make decisions and choices regarding the challenges and issues in their lives (16). Individuals with lower psychological well-being tend to evaluate events as unfavorable, which is why they experience more negative emotions such as anxiety, sadness, and depression. They may also exhibit higher levels of aggression toward others. In contrast, individuals with higher psychological well-being are more engaged in public activities, predominantly experience positive emotions, embrace a positive assessment of ongoing

events, and tend to be more hopeful about the future (17). For this reason, one of the factors that can assist family caregivers of individuals with war-induced PTSD in reducing their anxiety and stress, coping more effectively with life challenges, being less susceptible to mental illnesses, and improving their quality of life is the provision of interventions aimed at preserving and enhancing their psychological well-being (16). If these individuals are left without treatment and intervention, their physical and mental health levels, as undiagnosed patients, may decline, potentially leading to adverse consequences and outcomes for both these individuals and society as a whole (17).

Among the therapeutic interventions that have led to improvements in the psychological problems of family caregivers of individuals with war-induced PTSD, approaches such as acceptance and commitment therapy, mindfulness-based cognitive therapy (18), cognitive-behavioral strategy training (19), stress inoculation, group training for interpersonal relationships and social skills (20), family therapy, couples therapy, internet-based interventions, social support, and education on topics such as effective communication, problem-solving, and emotion regulation can be mentioned (21, 22).

These interventions help the family caregivers of these individuals turn challenges into opportunities, effectively cope with problems, realize their potential abilities, become more self-aware of their emotions, and manage their feelings and emotions. Overall, these interventions can have a positive impact on the psychological well-being of these caregivers (23, 24). In this context, it is important to know the extent of the existing knowledge in this area in order to understand the applicability and benefits of types of interventions to promote psychological (Mental) health. This study aims to map the scientific evidence in the context of Health services interventions for family caregivers of persons with PTSD caused by war.

Methods

In this scoping review, a six-stage framework presented by Arksey & O'Malley (2005) was utilized to review various information sources to examine the nature of studies available on healthcare interventions aimed at improving the psychological well-being of family caregivers of individuals with war-induced PTSD. The scoping review is defined as a rapid exploration of key concepts within a specific research topic and the identification of primary sources and types of available evidence (25).

The six stages include 1) the identification of the research question, 2) the identification of relevant studies, 3) the selection of studies based on specific criteria and the subsequent selection of primary studies, 4) the charting and classification of key results (including study location, intervention, comparison, study population, objectives, actions, outcomes, etc.), 5) the collation, summarization, and reporting of the findings, and 6) consulting with stakeholders (optional). Therefore, the retrieved information was utilized in the form of a scoping review, and no critical assess-

ment of the studies was conducted. The present scoping review was guided by the question: "What are the interventions for the psychological well-being of family caregivers of veterans with PTSD?"

Identification of Relevant Studies

To ensure a comprehensive review, multiple sources were consulted (26). English-language texts were sought from databases including PubMed (Medline), Google Scholar, Scopus, ProQuest, Science Direct, Cochrane, and Web of Science. For Persian-language texts, searches were conducted in databases such as the Scientific Information Database (SID), Iranian Research Institute for Information Science and Technology (IranDoc, IranMedex), Barakat Knowledge Network System, and National Publications Database (Magiran). Also, a complementary search was performed on Google Scholar to ensure the full identification of relevant studies. Moreover, grey literature search and backtracking of the reference lists of finally included articles and previous scoping reviews enhanced the search coverage. The search strategy involved employing Medical Subject Headings (MeSH) terms and specific keywords in both Persian and English, including "posttraumatic stress disorder," "combat veteran," "military veteran," "psychological intervention OR program OR Therapy," "family caregiver," "family member," "partner," "spouse," "wife," and "veteran's families". The reference lists of the selected studies were also searched.

These selected databases were chosen to ensure a comprehensive, extensive, and in-depth search of the retrieved texts. To track the number of articles at each stage of the review, the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) framework was utilized (27).

The review process followed the eligibility criteria proposed by the Joanna Briggs Institute (JBI) (28): Population, Concept, and Context (PC). population, studies with family caregivers of people with war-related post-traumatic stress disorder were considered. In the concept, the studies in which the Interventions OR Program to promote psychological(Mental) health were considered (Table 1).

P: (veteran* OR "military veteran" OR "combat veteran*") AND (partner* OR spouse* OR wife* OR family* OR "family caregiver" OR "family member*") AND (PTSD OR posttraumatic OR post-traumatic OR "posttraumatic stress disorder")

I: (intervention* OR program OR "Therapy*")

Query: ((veteran* OR "military veteran" OR "combat veteran*") AND (partner* OR spouse* OR wife* OR family* OR "family caregiver" OR "family member*") AND (PTSD OR posttraumatic OR post-traumatic OR "posttraumatic stress disorder") AND ("Psychological Intervention" * OR program OR "Therapy*"))

Table 1. Research strategy

Strategy	Database	Results
((veteran* [Title/Abstract] OR "military veteran" [Title/Abstract] OR "combat veteran*" [Title/Abstract]) AND (partner* [Title/Abstract] OR spouse* [Title/Abstract] OR wife* [Title/Abstract] OR family* [Title/Abstract] OR "family caregiver" [Title/Abstract] OR "family member" [Title/Abstract]) AND (PTSD [Title/Abstract] OR posttraumatic [Title/Abstract] OR post-traumatic [Title/Abstract] OR "posttraumatic stress disorder" [Title/Abstract]) AND (intervention* [Title/Abstract] OR program* [Title/Abstract] OR "Therapy*" [Title/Abstract]))	MEDLINE (via PUBMED)	1602
((veteran* OR "military veteran" OR "combat veteran*") AND (partner* OR spouse* OR wife* OR family* OR "family caregiver" OR "family member*") AND (PTSD OR posttraumatic OR post-traumatic OR "posttraumatic stress disorder") AND (intervention* OR program OR "Therapy*")) in Title, Abstract, Keywords.	Cochrane	186
TITLE-ABS-KEY ((veteran* OR "military veteran" OR "combat veteran*") AND (partner* OR spouse* OR wife* OR family* OR "family caregiver" OR "family member*") AND (PTSD OR posttraumatic OR post-traumatic OR "posttraumatic stress disorder") AND (intervention* OR program OR "Therapy*"))	Scopus	573
TOPIC: ((veteran* OR "military veteran" OR "combat veteran*") AND (partner* OR spouse* OR wife* OR family* OR "family caregiver" OR "family member*") AND (PTSD OR posttraumatic OR post-traumatic OR "posttraumatic stress disorder") AND (intervention* OR program OR "Therapy*"))	Web of Science	376

Table 2. Inclusion and Exclusion Criteria

Criteria	Included	Excluded
Language:	Articles published in English and Persian	Articles published in languages other than Persian and English.
Time:	Studies in the time range from 1-1-2000 to 2019-2023 were accepted	Studies outside the specified time frame
Type of article:	Original article, review, letter, editorial, conference paper, communication	Online books
Content of article:	Articles whose findings were based on the purpose of the study(Interventions that were designed for family caregivers to enhance the psychological well-being of individuals afflicted with war-induced PTSD.)	Interventions that focused on the psychological well-being of the veteran himself

Selection of Relevant Studies

The inclusion and exclusion criteria during the search and document review process were revised and modified interactively by the researchers based on the research question and the objectives of the comprehensive review (Table 2.) To examine and select relevant studies, two researchers conducted a two-stage screening process. In the first stage, the researchers independently reviewed the titles and abstracts to determine eligibility and categorized studies as potentially relevant or irrelevant. In the second stage, the researchers independently assessed the potentially relevant studies to select definitively relevant ones. Ultimately, the researchers reached a consensus. The search strategy for each database was documented. Additionally, the search results were saved in the reference management tool End-Note-X10.

The resources examined in each database included articles (and case reports), conference proceedings, book sections, books, and other items refined based on the search strategy and the study’s objectives. The reviewed articles were screened and examined based on the PRISMA flowchart, and finally, eligible articles were selected (Figure 1).

Recording and Categorization of Extracted Data

In this stage, a data extraction form was designed, and the researchers independently reviewed the selected 11 studies and entered the extracted information into the data

extraction form. This form included information such as the title, study year, country, author, study type, sample size, participants’ characteristics, intervention, and results.

Results

All 11 selected articles were in the form of quantitative studies, including 3 experimental studies, 7 quasi-experimental studies, and 1 review study. Nine studies were conducted in Iran (11, 18, 19, 20, 29, 30, 31, 32, 33), one study in the United States (34), and one study in England (22). The review of the studies revealed that the interventions aimed at improving the psychological well-being of family caregivers of individuals with war-induced PTSD were generally categorized into three domains.

1- The second wave of therapeutic approaches is a combination of behavior therapy and cognitive therapy, with a greater emphasis on cognitive concepts (35). Its focus lies on the impact of beliefs, thoughts, and perceptions on one’s emotions and behaviors (36). This approach helps individuals learn how to identify and change disruptive or intrusive thought patterns that have a negative impact on their behavior and emotions (37). The results of the literature review indicated that training in cognitive-behavioral strategies has been effective in reducing symptoms of secondary traumatic stress disorder and psychological problems in the spouses of veterans suffering from chronic PTSD (11). Additionally, interventions such as stress inoculation training and group training for interpersonal relationships and social

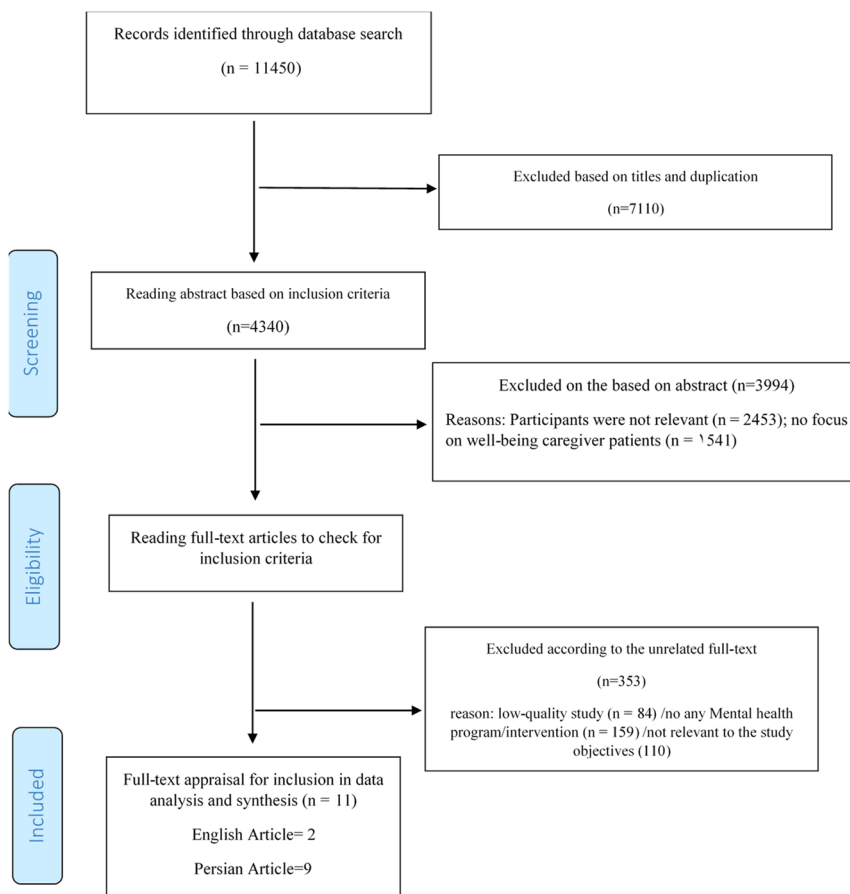


Figure 1. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

skills have been effective in improving the psychological well-being of the sons and daughters of veteran parents

Table 3. Summary of literature

Author (Year)	Title	Country	Design	Sample Size	Intervention	Result
Esmaeili et al. 2010 (20)	A comparison between group social skills training and stress inoculation training in terms of their effectiveness on psychological well-being: A case study of Veterans' daughters	Iran	Experimental	45	One Group Was Exposed To The Method Of Immunization Against Stress, One Group Was Given The Method Of Training Social Skills And Interpersonal Relations, And One Group Was Considered To Be On The Waiting List.	The Method Of Immunization Against Stress And Group Training In Interpersonal Relationships And Social Skills Was Effective. The Method Of Immunization Against Stress Was More Effective Than The Training Of Interpersonal Relations And Social Skills
tayibi et al 2011 (33)	Comparing the effectiveness of monotheistic and cognitive-behavioral integrated group therapy in reducing the psychological stress of spouses of post-traumatic stress disorder veterans	Iran	Semi-Experimental	24	The Two Experimental Groups Received Integrated Monotheistic And Cognitive-Behavioral Therapy In Ten Two-Hour Sessions, While The Control Group Did Not Receive Therapy.	Monotheistic Therapy Groups And Cognitive-Behavioral Therapy Groups Have Been Significantly Effective In Reducing Mental Stress. Also, There Was No Significant Difference Between The Two Groups Of Monotheistic And Cognitive-Behavioral Therapy In Reducing The Psychological Pressure Of Ptsd Veterans' Wives.
Esmaeili et al. 2011 (32)	The Comparison Of The Efficacy Of Social Skills Group Training, Stress Inoculation Training On Psychological Well-Being Of Post-Traumatic Stress Disorder (P.T.S.D) Veteran's Son	Iran	Experimental	45	One Group Was Exposed To The Method Of Immunization Against Stress And One Group Was Given The Method Of Training Social Skills And Interpersonal Relations, And One Group Was Considered To Be On The Waiting List.	The Method Of Immunization Against Stress And Group Training In Interpersonal Relations And Social Skills Was Effective In The Psychological Well-Being Of Male Children Of Veterans With Ptsd. Overall, The Method Of Immunization Against Stress Was More Effective Than Training In Interpersonal Relations And Social Skills.
Kazemi et al 2012 (11)	The effectiveness of teaching cognitive strategies based on mindfulness in reducing the symptoms of post-traumatic stress disorder and psychological problems of spouses of people with post-traumatic stress disorder. Thought & Behavior in Clinical Psychology	Iran	Semi-Experimental	28	The Training Of Mindfulness-Based Techniques Based On The Educational-Therapeutic Protocol Of Segal, Williams, And Teasdel (2002) Was Carried Out In 8 Sessions Of 50 Minutes For The Experimental Group.	The Training Of Cognitive Strategies Based On Mindfulness Was Effective In Reducing Disturbing Thoughts And Imaginations, Arousal Avoidance Responses, As Well As Reducing Symptoms Of Depression, Anxiety, Stress, Ineffective Attitudes, And Belief In Negative Spontaneous Thoughts.
Kazemi et al 2012 (19)	Evaluation of the effectiveness of training cognitive behavioral strategies in the secondary traumatic stress disorder (STSD) symptoms and psychological problems among devotees' wives with chronic PTSD due to war	Iran	Semi-Experimental	28	The Experimental Group Received Weekly Group Training During 10 Sessions Of 2 Hours And 30 Minutes Based On The Educational-Therapeutic Protocol Of Michael Frey (1999) And Robert Leahy (2003).	Cognitive-Behavioral Strategies Were Effective In Reducing Post-Traumatic Stress Disorder Symptoms And Psychological Problems Of Spouses Of Veterans With Chronic Ptsd.

Table 3. Continued

Author (Year)	Title	Country	Design	Sample Size	Intervention	Result
Alirezaei et al. 2017 (31)	the effectiveness of spirituality group therapy in the reduction of psychiatric disorders symptoms among partners of veterans with war-related PTSD	Iran	Semi-experimental	24	The experimental group of spirituality therapy was subjected to group intervention and training during 11 sessions of 90 minutes weekly.	Therapeutic spirituality was effective in reducing psychological symptoms (physical symptoms, obsessive-compulsive, sensitivity in interpersonal relationships, depression, anxiety, morbid fear, paranoia, psychosis) of veterans' wives with PTSD.
Isanejad et al. 2017 (18)	Effectiveness of Two Approaches of Acceptance and Commitment Therapy (ACT) and Mindfulness-Based Cognitive Therapy (MBCT) on Psychological Well-being of Veterans' Wives with Post-Traumatic Stress Disorder (PTSD)	Iran	Semi-experimental	43	The experimental groups were treated in eight 90-minute sessions. One of these groups underwent mindfulness-based cognitive therapy (MBCT), and the other group underwent acceptance and commitment-based therapy (ACT), while the control group received no treatment. Did not receive	Two approaches of acceptance and commitment and cognitive therapy based on mindfulness had a positive effect on improving the psychological well-being of spouses of veterans with PTSD.
Moqaddam et al. 2017 (30)	A Comparison of the Impact of Group Spiritual Therapy and Logotherapy on the Anxiety and Depression Symptoms of the Wives of Disabled Veterans Suffering from War-Related PTSD	Iran	Semi-experimental	36	Experimental group of spiritual therapy during 11 sessions of 90 minutes and experimental group of semantic therapy during 10 sessions of 90 minutes were subjected to intervention and training.	Both spiritual therapy and meaning therapy methods are effective in reducing anxiety and depression symptoms of spouses of veterans with PTSD.
Turgoose et al. 2019 (22)	A systematic review of interventions for supporting partners of military Veterans with PTSD	England	Systematic review	25 studies reviewed	-	The most common feature of interventions was psychoeducation on topics such as communication, problem-solving, and emotion regulation. Many papers described the advantages of group processes such as social support and normalization, gained from partners sharing experiences with one another.

with PTSD. It is worth noting that stress inoculation training was more effective compared to interpersonal relationship training (20, 32). Furthermore, the results of a study by Turgoose et al. (2019) demonstrated that interventions such as group therapy and couples therapy based on cognitive-behavioral theories generally led to improvements in the psychological well-being of the partners of veterans with PTSD (22).

2- The third wave of behavioral therapy focuses more on behavioral strategies rather than traditional cognitive strategies (38). In third-wave therapy methods, the goals shift from mere symptom reduction to the growth of skills with the aim of improving both the quality and quantity of meaningful activities from the patient's perspective (39). The results of several studies have shown that training in Ac-

ceptance and Commitment Therapy (ACT) and Mindfulness-Based Cognitive Therapy (MBCT) is effective in enhancing the psychological well-being of the spouses of veterans with PTSD (18). Additionally, training in mindfulness-based cognitive strategies has been effective in reducing intrusive thoughts, avoidance responses, and symptoms of depression, anxiety, stress, dysfunctional beliefs, and negative self-appraisals (19). Furthermore, the findings of a systematic review indicated that mindfulness-based family therapy has generally led to improvements in the psychological well-being of partners of veterans with PTSD (22).

3- The fourth wave of behavioral therapy places a key emphasis on functional assessment, aiming to identify the unique problems of clients and select appropriate interventions from available treatments (40). the fourth wave aims

Table 3. Continued

Author (Year)	Title	Country	Design	Sample Size	Intervention	Result
Taghavi et al. 2020 (29)	Comparison of the Effectiveness of Two Religious-Spiritual and Hope Interventions on Reducing Stress, Anxiety, and Depression of Spouses of Veterans with PTSD	Iran	semi-experimental	34	Experimental group 1, during 8 sessions on 3 even days of the week, was subjected to a combined training of some spiritual-existential interventions based on Viktor Frankl's perspective. Experimental group 2, during 8 sessions on 3 odd days of the week, underwent hope therapy training based on Schneider's theories of hope, and Worthington was placed.	Two spiritual-religious methods and hope therapy significantly reduced the stress, anxiety, and depression of the subjects, and the effects were stable after 3 months of follow-up. Also, both spiritual-religious methods and hope therapy were effective in reducing stress, anxiety and depression of the spouses of veterans suffering from post-traumatic stress and there was no difference.
Erbes et al. 2020 (34)	A Pilot Trial of Online Training for Family Well-Being and Veteran Treatment Initiation for PTSD	American	Pilot Trial	46	The course contains 12 lessons designed to take about 15 minutes each. The lessons are divided into six sections: "Introduction, Safety Planning"- "Improve the Situation"- "Care for Yourself"- "Rebuild Your Relationship" and "Get Your Veteran into Care	this pilot trial suggests that VA-CRAFT holds initial promise in reducing caregiver burden and as such it could be a useful resource for family members of veterans with PTSD. However, VA-CRAFT does not enhance veteran treatment initiation. It may benefit from enhancements to increase effectiveness and caregiver engagement.

to provide an approach for understanding and healing human suffering, grounded in behavioral principles and utilizes various behavioral therapy and compassion-focused therapies (41). It has been shown that spiritual-religious intervention, hope therapy, and logotherapy lead to the reduction of stress, anxiety, and depression among spouses of veterans with PTSD (29, 30). Additionally, the results of a study by Alirezaei et al (2017) indicated that spiritual therapy results in a reduction in psychological symptoms (somatic symptoms, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, phobia, paranoia, psychosis) among the spouses of veterans with war-induced PTSD (31). Furthermore, Erbes et al.'s study (2020) demonstrated that internet-based interventions and online education have a positive impact on reducing the caregiving burden for family caregivers of individuals with PTSD (34). Detailed research findings are presented in Table 3.

Discussion

The main objective of this study was to conduct a scoping review of existing studies on healthcare interventions for family caregivers of individuals suffering from war-induced PTSD, aiming to improve the psychological well-being of these caregivers based on research findings. Various researchers have had relatively similar perspectives on the psychological well-being of caregivers of war-induced PTSD individuals (11, 18, 19, 30, 32, 33). long-term life with individuals suffering from PTSD can have deep effects on the family system (42).

Studies have indicated that PTSD in the families of veterans has significant consequences (46). This is because the affected individual may not be able to fully control their

emotions and may transfer them to others (19, 43). Caregivers start to experience burnout gradually (44) and subsequently develop functional impairments. This not only leads to reduced self-confidence and self-efficacy among caregivers but can also affect their quality of life and psychological well-being leading to significant challenges within the family (45). All of the mentioned factors can impact the biological and psychological balance of these caregivers, disrupting their daily life and functional, social, occupational, and behavioral activities (46), and potentially causing serious psychological harm (30). Therefore, these caregivers are considered to be among the at-risk groups in society in terms of mental health (47). Consequently, measures should be taken to enhance their mental well-being. For this purpose, relevant studies in this field were examined. A review of the texts showed that interventions can be categorized into three groups: second-wave, third-wave, and fourth-wave behavioral interventions.

Second-wave therapies were included in the first category of interventions. In the late 1980s and early 1990s, an integrative approach between behavioral therapy and cognitive therapy emerged, known as Cognitive-Behavioral Therapy (CBT), which placed more emphasis on cognitive concepts and less on behavioral principles (48). However, since the content of thoughts is usually directly targeted in second-wave therapies, it implies an inherent logical flaw in the content. This assumption that the form, frequency, or situational sensitivity of thoughts directly leads to emotional and behavioral outcomes suggests that these types of therapies are inherently mechanistic, which eventually led to the development of third-wave behavioral therapies in the

early 1990s (49).

The results of studies regarding second-wave therapies indicated that stress inoculation training as well as training for social skills and interpersonal relationships, had an impact on self-esteem, positive emotions, personality independence, and overall psychological well-being, while they were not effective in enhancing life satisfaction (20, 32). In this regard, it should be noted that given the various psychological pressures that caregivers of veterans with PTSD endure within the family environment, the techniques of this approach, including teaching emotion recognition in groups, deep muscle and deep breathing training, thought-stopping techniques, and cognitive coping skills like focusing on positive aspects and positive self-talk, contribute to the improvement in their psychological well-being (50).

cognitive-behavioral therapy (CBT) is another intervention that can be effective in reducing psychological problems among the caregivers of veterans with PTSD (19). In fact, this approach is effective in reducing and controlling intrusive thoughts and images, avoidance responses, and arousal symptoms. It also helps in reducing symptoms of depression, anxiety, stress, and the frequency of maladaptive attitudes and negative self-beliefs (51). CBT techniques involve cognitive restructuring and changing fundamental cognitive beliefs and thoughts. It also includes the use of techniques such as recording, writing, confrontation, desensitization, expressing emotions and feelings, and performing muscle relaxation exercises in the behavioral aspect. These techniques aim to increase the ability to manage anxiety and the emotional and muscular tension associated with it, thereby reducing the arousal symptoms of individuals (52).

Third-wave therapies are included in the second category of interventions. These therapies have directed behavioral interventions into a new era, increased interest in them, and provided promising evidence for their implementation (40). The results of a study showed that two approaches, Acceptance and Commitment Therapy (ACT) and Mindfulness-Based Cognitive Therapy (MBCT), had a positive impact on improving psychological well-being (18). These findings align with the results of another study that examined the effects of MBCT on reducing symptoms of secondary traumatic stress disorder and psychological problems in the spouses of veterans with PTSD, as it demonstrated that MBCT led to a reduction in psychological problems in the research samples (11). Additionally, the results of a pilot study on the impact of online education on the psychological well-being of families and the initiation of treatment for veterans with PTSD showed that family mindfulness-based therapy had a positive effect on reducing caregiver burden, improving psychological well-being, and enhancing the functioning of caregivers. Therefore, it can be a valuable resource for family members of veterans with PTSD. Although this study utilized an innovative approach to enhance the psychological well-being of caregivers of veterans with PTSD, it had limitations such as a small sample size, self-report data collection, lack of follow-up on the provided education, and not offering education to veterans who were not covered by the Veterans' Affairs Office (34). According to several studies, ACT is effective in

improving coping, reducing stress and anxiety, and enhancing psychological-social well-being (53, 54). The reason for the success of third-wave lies in its focus on behavior change rather than altering the content of thoughts. It utilizes mindfulness skills and acceptance to increase psychological flexibility (55). In this way, it gradually aids individuals in liberating themselves from worry, anxiety, fatigue, depression, and dissatisfaction (56). Third-wave therapies, despite their effectiveness and coverage of the limitations of second-wave therapies, had their own gaps and challenges. These included an increase in the number of therapies, reduced perceived effectiveness, and the absence of compassion-focused therapy, among others. Based on these factors, the fourth wave of behavior therapy emerged (58). In this wave, there is an emphasis on placing a key role on assessing function to identify the problems of clients and appropriate strategies among the available therapies (57).

Fourth-wave therapies have been introduced in the third category of interventions. Generally, the fourth wave seeks to understand and alleviate human suffering. It is based on behavior principles and utilizes various behavior therapy methods and compassion-focused therapy. Although many concepts and objectives of this category of interventions may have some ambiguity due to their novelty (41), the results of several studies have shown that spiritual-religious intervention, hope therapy, and logotherapy lead to a reduction in stress, anxiety, and depression, as well as an overall reduction in psychological symptoms (physical symptoms, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, phobia, paranoia, psychosis), resulting in a positive impact on the reduction of the caregiving burden of family caregivers of individuals with war-induced PTSD (22, 29, 58).

Conclusion

According to the review conducted, most interventions had limitations, including not considering the possibility of comorbid disorders in the caregivers of these patients, such as depression, bipolar disorder, or personality disorders. There were also limitations related to the time gap between the pre-test and post-test, limited access to participants over time, and the fact that most interventions were conducted in lengthy sessions, which could be perceived as a barrier to the participation of these caregivers. These individuals each have unique and unpredictable circumstances, and they may not have the regular, pre-scheduled, and long-term availability to attend sessions. Therefore, the feasibility of conducting such interventions for all these caregivers may not be effective.

Given the multiple psychological pressures that caregivers of individuals with war-induced PTSD endure within the family environment, psychological interventions can indeed play a significant role in providing and strengthening family support, reducing psychological problems, and improving psychological well-being in these individuals. However, the lack of data clearly underscores the need for further research on the psychological health of caregivers of individuals with war-induced PTSD, tailored to the needs of caregivers in various geographic regions.

Since most of the researchers have primarily focused on the initial trauma survivors and family caregivers have often been overlooked, the psychological well-being of these caregivers should be taken seriously.

Overall, one of the strengths of the present study is the use of a comprehensive approach to search for articles from relevant scientific databases, focusing on identifying healthcare interventions for family caregivers of war-induced PTSD individuals.

Limitations

Some limitations of this study include the possibility that despite the inclusion criteria, some relevant studies, including unpublished or paper-printed studies, may not have been included. Additionally, since this study was a scoping review, the quality of the articles was not assessed. Furthermore, this study only reviewed articles published in Persian or English, so there may be studies in other languages that were not considered due to language limitations.

Authors' Contributions

ZM: Conceptualization, literature search, checklist development, screening, analysis, and writing (original draft, review, and editing). ShP: Conceptualization, Checklist development, analysis, funding acquisition, project administration, supervision, and writing .SR: Conceptualization, analysis, and writing (review and editing).RN: Literature search, screening, and writing (review and editing).; All authors read and approved the final manuscript.

Ethical Considerations

Not applicable.

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Conflict of Interests

The authors declare that they have no competing interests.

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