

**A scoping Review into the use of Blended Therapy for PTSD: Exploring Treatment
Protocols and Guidelines**

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Master's Thesis Psychology
Positive Clinical Psychology and Technology (PCPT)
August 2023

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Abstract

Introduction: The treatment of posttraumatic stress disorder requires innovative approaches since existing PTSD therapies have shortcomings. A promising approach is blended therapy, which combines face-to-face therapy with internet- and mobile-based interventions (IMIs). This scoping review intends to identify treatment protocols and guidelines, investigate barriers for patients and therapists, and explore the evidence quality and integration level of blended therapy for PTSD in varied populations. This study aims to provide an overview of the research status and potential of blended treatments as an alternative treatment option for PTSD by combining insights from recent studies. **Methods:** Using particular search terms, the databases Scopus, Web of Science, and PsycINFO were searched for relevant literature. After a comprehensive search, 9 studies were ultimately chosen and analysed to examine study characteristics, studied populations, standardization, barriers and facilitators, and effectiveness. Data were extracted, summarized, and displayed in tables to give a general summary of the found results. **Results:** The studies included adults with mild or severe PTSD, mostly veterans. With varied sample sizes and age ranges. The majority of the included articles describe protocols or treatment guidelines as standardization of blended therapy for PTSD. The number of sessions and the ratio of IMIs and face-to-face differed between three to twelve face-to-face sessions and five to fifteen IMIs. Mentioned barriers included low patient uptake of the technology-based components and maintaining the therapeutic alliance. However, accessibility, flexibility, and time-saving changes were advantages of blended therapy. The studies that evaluated the efficacy of blended treatment demonstrated success in PTSD symptom reduction and non-inferiority to traditional face-to-face therapy. **Discussion:** Blended therapy shows potential for PTSD treatment results. Future studies should explore its effectiveness in various demographics other than veterans and do a meta-analysis to statistically synthesize the evidence already available. Blended therapy can be more engaging and adhered to if therapists' and patients' negative attitudes and expectations are addressed. To guarantee consistent care, standardization initiatives, such as the creation of evidence-based protocols and treatment manuals, are crucial. We will obtain a deeper knowledge of the viability and advantages of blended therapy for the treatment of PTSD through long-term studies evaluating treatment outcomes, relapse rates, and maintenance of gains.

A scoping Review into the use of Blended Therapy for PTSD: Exploring Treatment Protocols and Guidelines

Untreated psychological disorders continue to be a problem on a global scale (Hunkin et al., 2020; Global Health Organization, 2022). One of the most prevalent psychological diseases is Posttraumatic Stress Disorder (PTSD), which is a mental health condition that can develop after experiencing or witnessing a traumatic event (American Psychiatric Association [APA], 2013). Studies show that treatments such as trauma-focused therapy, psychotherapy, and pharmacotherapy can result in a substantial reduction in complaints (Lee et al., 2016). However, there is also a significant proportion of people whose symptoms do not improve or get even worse after seeing a therapist (McLeod, 2019; Substance Abuse and Mental Health Services Administration [SAMHSA], 2019). This together with the persistent gap in mental healthcare provision due to stigma, waiting lists and limited treatment access necessitates innovative approaches. For example, internet- and mobile-based interventions (IMIs), are also able to significantly reduce PTSD symptoms (Königbauer et al., 2017). But the lack of nonverbal cues makes it more difficult to assess a patient's level of risk and react adequately to situations of crisis, which makes IMIs not suitable for all patients (Baumeister et al., 2014; Ebert et al., 2015).

Therefore, blended therapy is a promising alternative, which blends face-to-face therapy with technology-based components such as IMIs (Erbe et al., 2017; Mathiasen, 2016). This provides the possibility to integrate numerous approaches and deliver more comprehensive and individualized care while maintaining the therapeutic relationship (Kenter et al., 2015). Indeed, the literature on blended therapies has been steadily increasing, underscoring the necessity for a comprehensive scoping review (Sucala et al., 2017).

Therefore, the aim of this review is to explore the quality of evidence regarding the treatment of PTSD through blended therapies in diverse populations and evaluate the level of integration and establish an to get an overview of the current state of research. At last, this scoping review investigates common barriers for patients and providers regarding the use of blended therapies in treating PTSD.

Posttraumatic stress disorder

Posttraumatic stress disorder is an anxiety disorder that can appear after being exposed to a traumatic event. Throughout their lives, everyone encounters traumatic situations, but only some

go on to acquire PTSD. The individual must exhibit a specific set of symptoms that persist for at least one month and cause significant distress or impairment in social, occupational, or other areas of functioning (APA, 2013).

One of the core symptoms of this diagnosis is uncontrollably, involuntarily re-experiencing the traumatic event. This can manifest as flashbacks, nightmares, or intrusive thoughts or memories. To prevent these unpleasant re-experiences from happening trauma-related stimuli are avoided. Individuals with PTSD may also experience negative alterations in mood and cognition and have increased arousal and reactivity, such as exaggerated startle response or hypervigilance. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), PTSD is diagnosed when all of the criteria (intrusions, avoidance, negative changes in thoughts and mood, changes in arousal and reactivity) are met (APA, 2013).

According to the World Health Organization (WHO), approximately 3.6% of persons worldwide are diagnosed with PTSD in any given year (World Health Organization, 2021). The lifetime prevalence in the general population is predicted to be around 7-8% (Koenen et al., 2017), with a Dutch population prevalence of 7.4% (de Vries & Olf, 2009). Certain factors, such as the severity and proximity of the trauma, previous trauma exposure, and pre-existing mental health conditions, can increase the risk of developing PTSD after a traumatic event.

Trauma-focused interventions treat PTSD by directly addressing thoughts, feelings, or memories of the traumatic event, the standard principle is processing the re-occurring traumatic memory (Schäfer et al., 2019). Several evidence-based treatments that are effective in reducing PTSD symptoms are Cognitive Behavioral Therapy (CBT), Prolonged Exposure (PE), and, Eye Movement Desensitization and Reprocessing (EMDR) (APA, 2017; Cuijpers et al., 2020; McEvoy et al., 2016; Lewis et al., 2020). Even though these traditional treatments for PTSD, have been effective for some individuals (McEvoy et al., 2016), many people continue to experience significant symptoms despite these treatments (Foa et al., 2018 McLeod, 2019; SAMHSA, 2019). Although there are effective therapies available, PTSD is undertreated significantly in addition to its relatively high prevalence rate (Sijbrandij et al., 2015). If people with PTSD do not receive appropriate care, this can lead to a range of negative outcomes. These consequences can lead to persistent symptoms in the long term and comorbid mental health disorders, which can result in impairment in daily functioning and overall quality of life (Kessler et al., 2017).

Blended treatments and Posttraumatic Stress Disorder

There has been a growing interest in exploring alternative, potentially more efficient approaches for treating PTSD. Including blended treatments, which refer to the combination of face-to-face interventions with technology-based components to give a comprehensive treatment approach for various mental health issues, including PTSD (Hedman et al., 2020; Socala et al., 2017). Erbe et al. (2018) defined these technology-based components as: “Treatments that combine face-to-face elements with web-based components, in which clients complete some of the treatment modules online, at their own pace, between sessions with their therapist”. While some sources use the term more broadly to include interventions such as virtual reality therapy, telemedicine, or wearable devices (Hedman et al., 2020; Socala et al., 2017), these interventions will not be the scope of the study. In the current study, the term “blended therapy” refers to the integration of face-to-face therapy with internet- and mobile-based interventions (IMIs).

Earlier, randomized controlled trials (RCTs) and meta-analyses already found that internet-based psychological interventions can be used to effectively reduce symptoms for various mental health conditions, including posttraumatic stress disorder (Litz et al., 2007; Benight et al., 2008; Mayo-Wilson & Montgomery, 2013; Andersson et al., 2016; Hadjistavropoulos et al., 2020). The majority of meta-analyses claimed that adding therapeutic guidance to IMIs makes them more effective (Van ‘t Hof et al., 2009; Johansson & Andersson, 2012; Sijbrandij, 2016; Lewis, 2019). The term internet- and mobile-based treatment refers to a particular type of online intervention that uses, texts, videos, and images to interact with the clients while delivering therapeutic material. These modules frequently have a certain number of sequential steps and include psycho-education, in-session exercises, and homework assignments (Erbe et al., 2017; van der Krieke et al., 2021; Koelen et al, 2022).

IMI’s provide several benefits; they may be delivered across vast distances, save traveling time for therapists and patients, permits patients and therapists to work at their own speed and the stigma associated with having a mental ailment or seeing a psychologist or therapist is decreased (Ebert et al., 2015). Disadvantages of blended therapy are that patients need particular abilities such as reading- and writing skills and a greater capacity for introspection and eloquence when describing thoughts and feelings, in contrast to typical therapeutic settings. Furthermore, it makes it challenging for the therapist to appropriately respond to crisis situations, such as suicidality because nonverbal cues are absent (Baumeister et al., 2014). Nonverbal cues provide additional

information when assessing whether a patient may be at risk of harm, and without this information, clinicians may not be able to accurately assess the patient's level of risk. The limitations make stand-alone IMIs not suitable for all patients (Baumeister et al., 2014; Ebert et al., 2015).

Blended therapies may offer a promising approach to address some of the limitations of stand-alone IMIs while increasing access to evidence-based in-person treatments for PTSD (Capezzani et al., 2020; Kneavelsrud et al., 2017). Blended therapies aim to enhance the effectiveness and accessibility of traditional therapy by leveraging technology to increase engagement and promote continuity of care (Kooistra et al., 2014; Wentzel et al., 2016). This approach capitalizes on the strengths of both modalities while minimizing their negative aspects (Mathiasen et al., 2016). Although blended therapy seems a promising innovation in the psychotherapeutic context, is not yet included in the standard procedures (Mathiasen et al., 2016). Possible roadblocks include a lack of knowledge among therapists (Schuster et al., 2018; Titzler et al., 2018), hesitation of healthcare providers (Erbe et al., 2017), hesitation of patients because of concerns about their privacy and confidentiality (Luxton et al., 2016) and, treatment reimbursement policies, as insurance companies have been slow in adapting their policies to cover the treatment (Molfenthaler et al., 2021).

According to the scoping review by Sucala et al. (2017), the level of integration between face-to-face therapy and IMIs can vary. The frequency and methods might fluctuate greatly depending on the needs of the patient. Van der Krieke et al. (2021) found that usually face-to-face sessions take place less frequently than IMIs. Some protocols for blended therapies are already developed and studied. However, according to van der Vaart et al. (2014), only a minority of BT had a clear and well-described protocol.

Current study

The study findings that were previously discussed give a short overview of the literature that has been examined so far regarding blended therapy for PTSD. Blended therapy has gained increasing attention as a treatment for PTSD and technologies are continually being studied and improved. As such, there is a growing body of literature on the topic. Therefore, a scoping review can help identify gaps in the research and guide future studies (Sucala et al., 2017). RCTs have investigated the effectiveness of blended therapies for PTSD, but more research is required to fully grasp the potential benefits (Acierno et al., 2017; Knaevelsrud et al., 2017; Lewis et al., 2019).

Due to the rapid advancement of blended therapies, assessments from earlier years may be out of date and no longer accurately reflect the state of the art. This scoping review aims to find out for which populations and how integrated blended therapies for PTSD are currently used (after 2017) and if there is standardization by treatment protocols, guidelines, or other forms. This review aims to explore barriers and facilitators of these interventions for both patients and providers. Lastly, the effectiveness is examined. By synthesizing the current evidence, this review aims to provide a comprehensive overview of the current research status of blended therapies as a viable alternative treatment modality for individuals with PTSD. Based on the several significant areas of relevance which were identified in the previously listed literature, the following questions are formulated:

- 1) For which population is blended therapy used to treat PTSD?
- 2) What guidelines or protocols guide the standardization of blended therapy for PTSD?
- 3) What are the common barriers and facilitators to accessing and utilizing blended therapies for PTSD for patients and therapists?
- 4) What is the effectiveness of treating PTSD with blended therapy (compared to regular face-to-face therapy)?

Methods

This present literature review is a scoping review. Scoping reviews aim to examine and present the current base of knowledge within a particular area of investigation (van Lotringen et al., 2021). The assessment of the potential amount and range of available research is done systematically and transparently to be easily replicated. Most scoping reviews compile data from relevant research in tabular form and derive conclusions from the literature by evaluating data quantity and quality, to identify gaps in the current literature and make recommendations for future studies (Grant & Booth, 2009). This scoping literature review was carried out following the recommendations for recommended reporting items for scoping reviews (Preferred Reporting Items for Systematic Reviews and Meta-Analyses – Scoping Review [PRISMA-ScR]) (Tricco et al., 2018). This research is intended for a single-person 10 EC (European Credits) Master's Thesis, leaving no second rater involved in the search and process.

Search Strategy

The relevant literature is conducted using three different databases; Scopus, Web of Science, and PsycINFO. The search engines mainly address literature of social and psychological nature and contain a broad scope and high quantity of articles. PsycINFO is aimed at psychological and mental well-being investigation, while Scopus and Web of Science embrace a wider range of areas (van Lotringen et al., 2021). To provide a comprehensive and current state-of-the-art evidence base, every database was searched for publications and the search was repeated numerous times during the duration of the data collecting period including the use of specific search strings based on the research questions (Table 1). All databases enable the use of Boolean operators, which was a necessary component for a well-structured search. Terms associated with the notions of “blended therapy” and “PTSD” were generated and connected to establish a systematic examination of articles using Boolean operators ‘AND’ and ‘OR’. The search was repeated several times throughout the data collection period. Because of the remaining limited relevant hits, the information scientist at the University of Twente has been contacted for guidance in the search process. With this assistance, search terms for blended therapy have been broadened. The search term “e-health” is removed given the large number of irrelevant hits. The final search was conducted on June 9, 2023 and yielded a total of 333 articles.

Table 1

Search String

("blended treat*" OR "blended care" OR "blended therapy" OR "blended intervention" OR "integrative therap*" OR "integrated the*" OR "mixed telehealth" OR "therap* companion app" OR "mental health intervention" OR "mobile therap*" OR "blended training") AND (ptsd OR "post-traumatic stress disorder" OR "post-traumatic stress" OR "traumatic stress")

Eligibility criteria

The following inclusion and exclusion criteria were established prior to the screening process:

Inclusion criteria

1. Only articles published from 2017 onwards are included in the research.
2. The language of used articles are either Dutch or English.
3. The research articles had to report original research (e.g. no literature reviews).
4. The use of blended therapy as defined by Erbe et al. (2018), meaning that treatments combine face-to-face elements with web-based components, in which clients complete some of the treatment modules online, between sessions with their therapist.
5. Both face-to-face therapy and IMIs must be connected (blended) during the treatment.

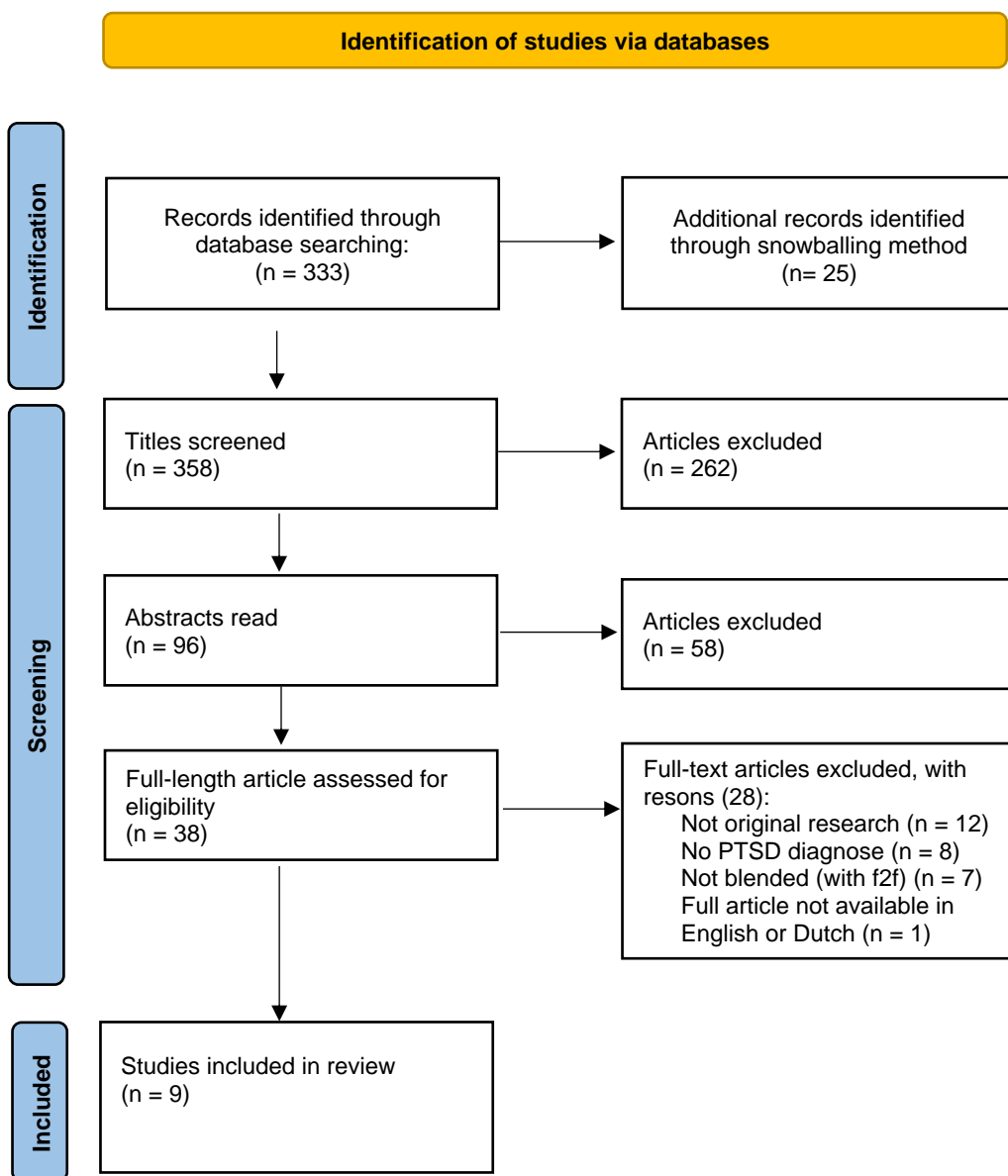
Exclusion criteria

1. Studies with participants without PTSD, the research must invest participants who are being treated for PTSD.
2. Articles that had unclear descriptions of the studied interventions and their frequency.

Study selection

The databases Scopus, Web of Science and PsycINFO are searched for relevant articles. The retrieved articles were first screened by assessing their titles and in the second step on the abstracts. The screening process aimed to exclude the articles that clearly did not meet the predetermined criteria and retain those that potentially addressed the research topic. To facilitate the screening process a screening document was created to record the decisions made during the title and abstract screening. Articles identified as relevant were subsequently screened for other relevant literature, by their references lists and studies that cited the included studies, called backward and forward snowballing (Wholin, 2014). The review management platform Covidence was used to facilitate the organization and tracking of the screened articles. The full-text articles were assessed to determine their eligibility for inclusion. Articles meeting the inclusion criteria were included in the final selection of studies used for the scoping review. In Figure 1, the inclusion and exclusion progress of the articles according to PRISMA is displayed in a flowchart.

Figure 1
PRISMA flow diagram



Data Extraction

The data extraction process involved a thorough examination of the selected articles to extract relevant information related to participants- and study characteristics. The data from the included studies were gathered through the efforts of a single researcher.

The first research question was to find out for which populations blended therapy was used to treat PTSD. This was presented in Table 2, together with the sample sizes and characteristics of the population including gender and mean age. Additionally, the study designs were extracted and added to Table 2, to provide a comprehensive overview of the included studies.

The second research question was to investigate how blended therapies for PTSD are standardized. Information regarding the way of standardization is categorized into three options; protocol, guidelines or other forms. The session contact, the frequency of different types of intervention and used tools are presented in Table 3, together with a short description of the research, to provide a complete overview of the studies.

The third research question was about common barriers and facilitators when using blended therapy for PTSD -treatment. It was investigated which barriers and facilitators were observed by both patient and therapist while using in blended therapy. The incorporated studies were reviewed in order to extract relevant data about these barriers and facilitators. The gathered data was then compiled and tabulated to offer a clear picture of the important elements impacting the implementation and efficacy of blended therapy for PTSD treatment.

The fourth research question was to investigate the effectiveness of blended treatment in treating PTSD in comparison to face-to-face therapy. However, there were just several papers that explicitly compared integrated treatment to traditional face-to-face treatment. As a consequence, the data extraction included not just non-inferiority comparisons but also information on PTSD symptom reduction. Table 3 includes these data, as well as the measurement instruments used, to offer an extensive overview of the studied effectiveness of blended treatment for PTSD.

Results

There are 9 studies included in this scoping review. Table 2 presents the study characteristics, which include the study design, sample size, population, gender and mean age. The listed studies' sample sizes range from 27 to 234. Four of the selected articles were randomized controlled trials, focussed on individuals diagnosed with mild or severe PTSD. The study of Deady et al. (2023) involved clinicians, frontline worker clients, and trauma-exposed frontline workers to detail the development and overarching framework used to create a smartphone app to support PTSD treatment.

Study population

The first point of exploration was about the population. The study population consisted of various groups affected by PTSD, including mostly adults (n=4) and veterans (n=4), there was also one study that focussed on parents with PTSD. The age range of the participants varied across studies, with the mean age ranging from 36.5 to 50.91 years. Additionally, four studies except one showed a predominance of female participants in their sample, while other studies did not disclose the gender distribution of their sample (n=4).

Table 2

Study and Participant Characteristics

	Authors	Study Design	Sample size	Population	Gender	Mean age
1	Cloitre et al. (2022)	Quasi-experimental Comparison study	202	Veterans with PTSD	60.4% female	44.11
2	Reger et al. (2023)	Design and methods of randomized controlled trial	124	Veterans with PTSD	n.a.	Not specified

	Authors	Study Design	Sample size	Population	Gender	Mean age
3	Meijer et al. (2023)	Randomized controlled trial	142	Parents with PTSD	n.a.	n.a.
4	Deady et al. (2023)	Qualitative development study	27	Clinicians and (trauma-exposed) frontline workers	n.a.	n.a.
5	Bisson et al. (2022)	RAPID	196	Adults with PTSD	63.8% female	36.5
6	Lewis et al. (2017)	Randomized controlled trial	42	Adults with PTSD	59.5% female	39.29
7	Possemato et al. (2023)	Randomized Clinical trial	234	Veterans with PTSD	10% female	50.91
8	Nollett et al. (2018)	RAPID: Trial protocol	192	Adults with PTSD	n.a.	n.a.
9	Simon et al. (2023)	Randomized controlled trial	196	Adults with PTSD	63.8%	36.5

Note. n.a. = not available; RAPID = Randomized controlled non-inferiority trial for Post-Traumatic Stress Disorder

Types of Blended Therapy for PTSD

To provide an overview of how blended therapy is structured the literature indicates was divided into three options; protocol, guidelines, or other forms. Table 3 illustrates the extent to which the included studies implemented blended therapy in a standardized manner, considering session contact and frequency.

Among the studies, five utilized guidelines or treatment manuals were found who are specifically designed for blended therapy in PTSD. The detailed guide is used by the therapists to adhere to a structured approach throughout the blended therapy process and to ensure treatments are delivered consistently. In three studies, a protocol was employed, where the framework outlines the broader aspects beyond the therapy itself. To implement the blended therapy and specify guidelines for session structure, integration of technology-based components, and communication between the therapist and the patient. Regarding face-to-face session frequency, six of the studies incorporated more frequent internet-based interventions than face-to-face sessions. Two studies had an equal distribution of IMIs and face-to-face interventions. Three protocols included in-between contact moments between patient and therapist, such as telephone calls or e-mails, to maintain ongoing regular communication in-between sessions, and to address any concerns that may arise. Two studies did not specify any particular protocol or guidelines when it comes to blending IMI together with regular therapies for PTSD.

IMI tools used in blended therapy

Two studies used the smartphone application PE Coach in their research to blend technology-based components with in-person sessions. This treatment companion app is specifically intended to support regular face-to-face delivery of Prolonged Exposure therapy and consists of 15 IMI's which are reviewed together with the therapist. The homework assignments are evaluated, and the therapist provides feedback when needed. Another app that is used in three studies is the Spring Self-help program based on CBT-TF (GSH; Lewis et al., 2013), which follows evidence-based principles to seamlessly integrate face-to-face therapy sessions and provide ongoing support between sessions. The Another, that is used to integrate into regular therapy is the web-based Skills Training in Affective and Interpersonal Regulation (webSTAIR; Fung, 2022) (n=1), which is a Narrative Therapy developed for survivors of childhood abuse and interpersonal trauma. Lastly, the long-standing KopOpOuders-PTSD is used as technology-based component in blended therapy (n=1), this is an adaptation of the existing intervention KopOpOuders Self-Help (Janssen & Van der Zanden, 2015).

Table 3*Blended therapies*

	Authors	Research description	Tool/ Integration ratio	Protocol/ Guidelines/Other	Barriers and facilitators for blended therapy	Measurement instruments/ Findings effectiveness
1	Cloitre et al. (2022)	Comparing two ratios of support within blended narrative therapy	webSTAIR F2F: 10 IMI: 10 vs. F2F: 5 IMI: 10	Guidelines	Barriers: - Completion rates - Dropouts - Crisis situations Facilitators: - Availability - Less time consuming - Same therapeutic alliance - Unique and effective - Flexibility	PCL-5: Noninferiority demonstrated between 5-sessions to 10-session therapist support.
2	Reger et al. (2023)	Prolonged exposure sessions with mobile support.	PE Coach F2F: 15 vs. F2F: 15 IMI: 15	Protocol	n.a.	n.a.
3	Meijer et al. (2023)	Study protocol: 8 sessions within 9 weeks	KopOpOuders-PTSD F2F: 3 IMI: 5	Protocol	Barriers: - Not address every aspect Facilitators: - Clear protocol - Based on theoretical framework (found to be effective).	n.a.

	Authors	Research description	Tool/ Integration ratio	Protocol/ Guideline s/Other	Barriers and facilitators for blended therapy	Measurement instruments/ Findings effectiveness
4	Deady et al. (2023)	Development of a mental health app to support regular PTSD treatment	n.a.	n.a.	Barriers: -Therapeutic alliance - Non-uptake Facilitators: - Availability - Motivation enhancement - Tailoring to individual needs	n.a.
5	Bisson et al. (2022)	Face-to-face therapy compared to blended therapy based on CFT-TF	Spring F2F: 12 vs. F2F: 3 IMI: 8 Telephone call/e-mail: 4	Guidelines	Barriers: - Therapeutic alliance - Treatment length Facilitators: - Flexibility - Accessibility - Structured and consistence - Exposure in real-life	CAPS- 5: Noninferiority demonstrated between F2F and blended therapy
6	Lewis et al. (2017)	Guided internet-based self-help modules compared to a control group	F2F: 3 IMI: 8 Telephone call/e-mail: 3	Guidelines	Barriers: - Non-uptake IMI - Motivation Facilitators: - Structured and consisted - Exposure in real-life	CAPS-5: Significantly reduction of PTSD-symptoms

Authors	Research description	Tool/ Integration ratio	Protocol/ Guideline s/Other	Barriers and facilitators for blended therapy	Measurement instruments/ Findings effectiveness
7 Possemato et al. (2023)	Prolonged Exposure therapy with comparison app compared to regular face-to-face therapy	PE Coach F2F: 4 IMI: 15 vs. TAU	Guidelines	Barriers: - Clients' fidelity Facilitators: - Ability to track homework - Accessibility - Higher engagement rates - Patient satisfaction	CAPS-5/PCL-5: Not superior in reducing clinician-rated PTSD-symptoms Superior of patient-reported PTSD-symptoms, engagement and treatment satisfaction.
8 Nollett et al. (2018)	Trauma-focused guided self-help program compared to face-to-face CBT-TF	GSH program F2F: 12 vs. F2F: 4 IMI: 8 Digital: 4	Protocol	n.a.	n.a.
9 Simon et al. (2023)	Treatment manual for blended therapy compared with regular face-to-face CBT-TF	Spring F2F: 12 vs. IMI: 8 F2F: 5	Guidelines	Barriers: - Negative expectations (patient/therapists) - Dropouts - Non-uptake IMI Facilitators: - Flexibility/Acceptability - Equal patient satisfaction - Higher adherence	CAPS-5: Noninferiority demonstrated between F2F and blended therapy

Note. n.a. = not available; F2F = face to face session; IMI = Internet- or mobile-based intervention; CBT-TF= Cognitive Behavioral Therapy Trauma-Focused; GSH = Guided Self-Help; PC-PTSD = Primary Care PTSD Screen; TAU=Treatment as Usual

Barriers and facilitators for blended therapies in Posttraumatic stress treatment

Seven of the included studies mentioned barriers and facilitators to accessing and utilizing blended therapies for PTSD. The most common barrier is the negative attitude towards the IMI. Four studies identified this patient-based barrier, which is related to negative expectations which might be connected to the low uptake and dropouts. Lewis et al. (2017) found that seventy-five percent of the attritions did so before they logged in to their mobile-based modules. Other studies (n=2) opposed this issue might be related to the patients' low expectancies of the treatment, which affects their motivation because they do not believe their symptoms will improve. The issues related to the therapeutic alliance are mentioned as a common barrier as predicated by therapists (n=2). The study of Bisson et al. (2022) took a shorter period of time for blended therapy compared to face-to-face treatment. Patients felt that the shorter length of treatment hindered the implementation and effectiveness of the therapy.

However, the structured and consistent components of blended therapy in this study were consistently identified as facilitators that promote patient engagement and treatment progress. Five studies found the accessibility and flexibility facilitators mentioned by patients. Therapists especially seem to appreciate the time-saving opportunities (n=2). Lastly, the real-life exposure options, facilitated by the technology-based components, were also mentioned as a facilitator by therapists (n=2), highlighting the unique opportunities for exposure-based interventions in supported by the blended format.

Effectiveness

Four studies compared the outcomes of regular face-to-face therapy with blended therapy when treating PTSD. Two RCTs showed that CFT-TF in a blended approach is non-inferior to face-to-face sessions in reducing PTSD symptoms. Three other studies did not compare the outcome with regular face-to-face therapy but did state that the tested blended therapies seem effective in reducing PTSD symptoms. The randomized clinical trial from Possemato et al. (2023) compared blended therapy with unspecified regular therapy in primary care and found that the blended approach is not superior in reducing clinician-rated PTSD symptoms. However, the findings of the same study also showed that the blended approach was superior in other important outcomes such as improvement of patient-reported PTSD symptoms and higher rates of engagement and treatment satisfaction. The quasi-experimental study of Cloitre et al. (2022)

compared the ratio of face-to-face therapist support in blended therapy and showed noninferiority between the blended model delivered with five or ten therapist sessions. The reduction in therapist time does not lead to a reduction in good outcomes for the patients or relationship, participants obtained significant benefits from both conditions and showed the same strong therapeutic alliance.

In the studies included in this scoping review, various types of measurement instruments were employed to establish PTSD symptoms and evaluate the effectiveness of the different types of blended therapy for PTSD (n=5). The mostly used instrument is the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5; Weathers et al., 2018) (n=4). This is a widely used diagnostic interview that provides a structured assessment of PTSD symptoms based on the criteria outlined in the DSM-5. Thereby is the PTSD Checklist for DSM-5 (PCL-5; Blevins et al., 2015) used (n=2). This is a self-report questionnaire designed to assess the severity of PTSD symptoms in individuals and also correspond to the diagnostic criteria for PTSD as described in the DSM-5 (n= 2).

Discussion

This scoping review aimed to give an overview and summarization of the available research on blended therapies in treating PTSD. A total of nine papers on blended therapy were evaluated. The articles were examined for various participants, study and intervention characteristics, barriers, and the effectiveness of these treatments. Four different points of exploration were used in this review.

The first point of exploration was about for which populations blended therapy was used to treat PTSD. The findings of this review indicate that veterans are the main population that receives blended therapy for PTSD. The prevalence of PTSD is only slightly higher among veterans compared to the general population. Approximately 7% out of every veteran will develop PTSD at some point in their lives, whereas the lifetime prevalence in the general population is 6% (U.S. Department of Veterans Affairs, 2023). This difference does not explain why most blended therapies for PTSD are aimed at veterans, but a possible explanation could be the limited availability of traditional therapy because of logistical barriers. This aspect is particularly crucial for veterans who may reside in remote areas with travel constraints and therefore face difficulties in attending regular face-to-face sessions (Denneson et al., 2017). Also, stigma-related barriers can deter military personnel from receiving regular treatment. Veterans may be hesitant to engage in traditional therapy due to concerns about judgment, confidentiality, or perceived weakness (Mittal et al., 2013; Ebert et al., 2015). The technology-based components in blended therapy represent an innovative way to overcome these barriers, as they may be delivered across vast distances and offer a more discreet and private option (Rogers et al., 2017).

Besides PTSD, anxiety disorders and depression are also much treated by blended therapy (Karyotaki et al., 2018; Carlbring., 2018). Based on information from this study, it cannot be explained why blended therapy is most commonly used for treating these disorders. But, one explanation could be that CBT is the leading treatment for anxiety disorders, depression, and PTSD (Davies et al., 2020). The results show that CBT is also the most used therapeutic modality when looking at the found protocols and guidelines. Which was also earlier found by Davies et al. (2020). Interestingly, the main success factor for CBT is the ability of the patient to put new behaviour into practice. Knowing this, we could argue that blended therapy improves this ability to practice in real life with guidance and psychoeducation nearby because of the IMI which is always available.

The second point of exploration investigates which forms of standardization are used for blended therapy for PTSD. The standardization of blended therapy approaches varied among the studies included in this review. While some studies used protocols or guidelines to ensure consistent delivery of blended therapy, others did not specify any particular protocol or guidelines for treating PTSD. Standardization is an important subject because standardized interventions often have greater effect sizes than non-standardized therapies, which increases treatment efficacy and makes it easier to investigate treatment results (Cristea et al., 2017). However, the study by van der Vaart et al. (2014) found that only a minority of blended therapies had a standardized, clear, and well-described treatment manual. In contrast, most of the included studies which did have provided detailed guidance to therapists. This suggests that standardization in terms of treatment protocols or guidelines is being considered and implemented. The results showed that most studies described a standardization that involved a smaller percentage of face-to-face sessions and greater emphasis on self-management, this is corresponding with the findings of previous research (Sucala et al., 2017; Van der Krieke et al., 2021). Indicating a shift towards incorporating technology-based components more prominently in blended therapy approaches. This might be aligned with economic and workforce availability considerations, knowing that blended treatments have the potential to reduce the burden on healthcare resources and provide access to mental healthcare for a larger population by decreasing the need for in-person sessions.

The amount of guidance given during technology-based interventions continues to be a subject of interest. Research, such as that conducted by Koelen et al. (2022), has examined the effects of various guidance levels on treatment results in blended therapy and showed that technological guidance (e.g. chatbot) was less effective than in-person appointments. The included studies which did use a form of standardization, all started the treatment with an in-person session. This seems an important element, as research from Davies et al. (2020) found that many patients will not access IMIs without a health professional.

The third point of exploration investigated barriers and facilitators when it comes to blended therapy. Addressing potential barriers and leveraging facilitators can enhance the uptake, adherence, and effectiveness of blended treatment approaches in various settings. The uptake of the intervention, which appears to be linked to patients' unfavourable expectations is a barrier mentioned in several studies, aimed at the adoption of the technology-based part of the blended

therapy. Some patients can first be reluctant or sceptical to participate in programs that use technology. This reluctance can be brought on by worries about the effectiveness of the therapy, the privacy and security of individual data, or simply a general lack of experience with such interventions (Kuhn et al., 2017). Patients must be informed and educated on the advantages and efficacy of blended therapy to break down this barrier and clear up any misunderstandings they may have in the process. Additionally, some of the included studies showed that concerns have been raised by psychologists regarding the potential impact of a technology-based intervention on therapeutic alliance in blended therapy. This is an important barrier as effective treatment outcomes depend on the presence of a therapeutic alliance (Sucala et al., 2017; Cloitre et al., 2019). Striking is that some of the included studies have shown that therapeutic alliance in technology-based interventions is non-inferior to traditional face-to-face therapy. This indicates that blended therapy can successfully address issues relating to therapeutic alliances and that the use of technology does not automatically degrade the value of the therapeutic alliance.

This is an important subject of interest because it seems to be about the attitude toward this new approach. Feijt et al. (2018) found a relation between the extent to which psychologists have adopted internet-based interventions and the particular drivers and barriers they experience. In research from Titzler et al. (2018) interviewed therapists reported having a positive attitude toward the new approach but expected their colleagues to be sceptical. Based on those insights, Feijt et al. (2018) developed the Levels of Adoption of eMental Health model (LAMH-model), which is determined by the extent to which specific barriers are overcome and specific drivers are present to support the adoption process for psychologists. Based on their opinions and attitudes towards IMIs, psychologists are categorized into 5 stages of adoption, which acknowledges a systematic relationship between their level of adoption and the motivations and barriers they encounter when integrating technology into their clinical environment. On the other side, blended treatment facilitators for patients and therapists have been discovered. The studies included in this review showed that both patients and therapists appreciate blended therapy's accessibility and flexibility, which can be confirmed by previous studies (Reger et al., 2017; Feijt et al., 2018; Titzler et al., 2018).

The last point of exploration was about effectiveness. The majority of the included studies that reported outcomes about the effectiveness of blended therapy compared it with regular face-

to-face therapy. Researchers may be inspired to compare specifically these approaches because of the earlier found sceptical attitude toward (the effectiveness of) technology-based components which was shared by both therapist and patient (Sucala et al., 2017; Titzler et al., 2018; Koelen et al., 2022). In terms of the effectiveness of treating PTSD with blended therapy, the reviewed studies generally demonstrated non-inferiority compared to traditional face-to-face therapy.

Besides that, blended therapy demonstrates promise and effectiveness in addressing a broader spectrum of mental health disorders. Notably, several studies have provided evidence supporting the efficacy of blended therapy in the treatment of anxiety and depression (Brenger et al., 2018; Karyotaki et al., 2018; Baumeister et al., 2014). However, there remains some ambiguity regarding the ideal amount of guidance (i.e., the number of face-to-face sessions). Cloitre et al.'s (2022) study compared the therapist-time ratio and suggested that reducing in-person therapist time does not necessarily correlate with improved patient outcomes in blended therapy for PTSD. However, several meta-analyses (Sijbrandij et al., 2016; Lewis et al., 2019; Koelen et al., 2022) have consistently reported that the addition of therapist time to IMIs enhances their effectiveness. In addition, research by Koelen et al. (2022) underlined that guided IMIs had attrition rates that were around twice as high as those of face-to-face interventions.

No clear statement can be made on the comparison between stand-alone IMIs and guided IMIs, based on this study. As most of the included studies compared the effectiveness of blended therapy with the traditional face-to-face approach.

Strengths and limitations

This review includes a diverse range of studies, encompassing different study designs, sample sizes, and populations which enhances the breadth of the findings. The inclusion of various measurement instruments used to evaluate the effectiveness of blended therapy for PTSD is another strength. Another strength of this scoping review is that only studies from 2017 or later were examined, which ensures that the comprehensive overview is based on only recent literature. In addition, the present scoping review offers a summary of recent research on the use of blended therapy in the treatment of PTSD. Therapists and other mental health care practitioners may be motivated to adopt blended treatment for PTSD patients as a result of the current findings.

It is important to note the limits of this scoping review. A small number of articles were included in the evaluation, because of the specific topic together with the limited period available for this review. There might be more articles that were overlooked for this review. As a result, the results might not fully reflect the variety of existing research on blended therapy for PTSD. Even though the lack of studies that provide information regarding the standardization of this treatment method, even in 2023, is an important finding in the current state of research in blended therapy for PTSD. Despite the inclusion of studies that utilized protocols and guidelines, the limited number of included studies indicates that their use in the literature is relatively sparse. This hole in the literature currently available makes it difficult to compare and reproduce results across various contexts and groups.

Another notable weakness is that only one researcher is involved, which precluded the assessment of inter-rater reliability. The reliability of the study selection procedure may have been enhanced by including a second researcher in the process.

Directions for future research

An important recommendation for future research is to expand the scope. This should focus on examining the viability and efficacy of blended treatment in populations other than veterans, as this was the dominant population in this research. This might apply to a variety of groups, such as kids, teenagers, and certain subpopulations with special requirements (such as victims of domestic violence, early childhood trauma, or accidents). A more thorough comprehension of blended therapy's benefits and limitations may be attained by looking at how it applies to various populations.

Conducting a meta-analysis would be a wise next move given that the articles under consideration contain four randomized controlled trials. A meta-analysis can offer a quantitative synthesis of the data that is currently available and assist in determining the overall efficacy of blended therapy for PTSD. Potential moderators might also be examined in this investigation, such as population characteristics, specific intervention components, or the kind of traumatic experience which caused PTSD to identify factors that contribute to treatment outcomes.

Despite the relatively small number of barriers that have been found, it is important to look more closely at the specific elements that hinder the implementation and uptake of blended therapy

for both therapists and patients, which seems to be linked to unfavourable expectations and attitudes (Feijt et al., 2018; Titzler et al, 2018). The goal of future studies should be to understand the reason behind therapist and client scepticism, as well as address negative expectations. The design of treatments to enhance therapist and client engagement and adherence to blended therapy can be influenced by understanding the underlying causes of these beliefs. The negative attitude of the psychologist can negatively affect the outcome of the treatment (Feijt et al., 2018). The previous study conducted by Titzler (2018) focused on exploring the barriers from therapists' perspectives toward blended therapy for depression. It would be beneficial to conduct a qualitative pilot study aimed at blended therapy for PTSD, including interviews with both client and psychologist, to adopt a more comprehensive overview.

One of the biggest gaps in the area is the lack of evidence-based protocols and treatment manuals for blended therapy. The creation and validation of standardized practices and recommendations for the use of blended treatment for PTSD should be the subject of further study. Mathiasen et al. (2016) suggested earlier that more effort needs to be done to create standardized procedures for blended treatment. This review shows that in 2023, this is still insufficient. More protocols would make it easier to administer blended therapy consistently and successfully, resulting in high-quality care for PTSD patients.

Although the reviewed studies shed light on the efficiency of blended therapy in easing PTSD symptoms and in comparison, to traditional face-to-face therapy, more research is needed to determine the long-term effects of these treatment modalities. To acquire a deeper knowledge of the advantages and sustainability of blended therapy, it will be helpful to evaluate the persistence of treatment effects, relapse rates, and preservation of gains over time. A longitudinal study with follow-up assessments can offer valuable information on the durability and effectiveness of blended therapy beyond the immediate treatment phase.

Conclusion

In conclusion, this study serves as an inspiration for other mental health professionals and organizations to adopt blended therapy for PTSD as a foundational treatment approach. The findings of this scoping review provide an overview of six current usable protocols and guidelines for blended therapy for PTSD. Furthermore, the findings underscore facilitators and barriers and show that blended therapy is non-inferior compared to face-to-face treatment for treating PTSD.

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(References investigated in this scoping review are marked with an asterisk)

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