

REVIEW

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An investigation into telemedicine utilization for refugee mental health: a systematic review

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Abstract

Background Telemedicine is mentioned as a technological solution in various fields of medicine and nowadays using telemedicine in the field of mental health in the refugee population, has attracted special attention in the world. This research was conducted with the aim of investigating the usage of telemedicine in the refugee populations mental health.

Methods This study, conducted in 2024, involved a comprehensive search of databases including Web of Science, Cochrane, ProQuest, Ovid, EBSCO, PubMed, and Scopus, up until April 2023. Based on predefined inclusion and exclusion criteria, 12 relevant articles were identified. The quality and methodology of the selected articles were evaluated using the Mixed Methods Appraisal Tool (MMAT) checklist.

Results A total of 12 articles were included in the review. Feasibility and investigation of telemedicine challenges (5 articles) and its evaluation and effectiveness investigation (7 articles) were used. Most of the studies were quantitative (8 cases) and mostly dealt with socio-economic-cultural application issues (5 cases) and screening (2 cases). Most of the studies were purely focused on refugees (5 cases).

Conclusions Results have shown that paying attention to the challenges, disadvantages, and telemedicine required Infrastructure in the field of mental health, will lead to effectiveness, screening, and treatment. This causes positive social, economic, and cultural effects on refugees. However, the need for future studies with more attention to technical and governmental challenges and their issues (security and reimbursement), the refugee population with various ethnicities, and different health fields (prevention, treatment, follow-up, rehabilitation, etc.) seems to be necessary.

Keywords MHealth, Telecare, Telepsychology, Asylum Seeker, Displaced Persons

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Introduction

The phenomenon of human migration is expanding, gaining in complexity and significance [1]. Throughout their entire journey, refugees—who are frequently compelled to escape their homes due to conflict, violence, and violations of human rights—face numerous difficulties [2]. In contrast to other migrants, refugees are forced to flee their homes, communities, workplaces, families, and cultural norms [3].

By mid- 2023, an incredible 110 million individuals have been forcibly dispersed worldwide. This includes 36.4 million refugees, who have crossed international borders because of conflict, persecution, or violence. Certain countries have a disproportionate share of the responsibility for sheltering refugees. Three countries, Iran, Turkey, and Germany, stand out for their generosity. Iran and Turkey each welcome 3.4 million refugees, while Germany houses 2.5 million. Colombia is close behind in fourth position. Notably, statistics show that approximately two-thirds of refugees end up in neighboring countries to their war-torn homelands. During the first half of 2023, almost 400,000 refugees were allowed to return home. Furthermore, nearly 60,000 persons were relocated to new countries, either individually or with the assistance of the United Nations Refugee Agency (UNHCR) [4].

Forced displacement due to conflict, persecution, and violence has a negative impact on refugees' mental health [5]. This has become a pressing issue in worldwide public health. According to the World Health Organization (WHO), refugees are at a significantly higher risk of developing mental health disorders than the normal population. These disorders include post-traumatic stress disorder, depression, and anxiety. Research revealed alarmingly high rates: 31.46% for Posttraumatic Stress Disorder (PTSD), 31.5% for depression, and 11% for anxiety disorders [6]. Supporting refugees' mental health is more than just a humanitarian problem; it is critical for fostering strong and inclusive societies. When refugees have access to mental health services, they are better able to reconstruct their lives and contribute to their new communities [7].

Traditional mental health treatments frequently fail to satisfy the specific needs of refugees, compromising their well-being. A major concern is access. Many mental health disorders go untreated in rural resettlement sites due to a lack of appropriate services [8]. Cultural boundaries also play an important influence. In some cultures, stigma associated with mental health can deter migrants from seeking care, and impede their assimilation into new communities [9]. Language can be another barrier. Refugees may struggle to communicate their experiences and symptoms,

resulting in misdiagnosis and frustration with care [10, 11]. Traditional services frequently lack cultural sensitivity, failing to grasp refugees' diverse origins and experiences. This can leave individuals feeling alienated and misunderstood [8]. Finally, practical barriers such as transportation and childcare can make it much more difficult for refugees to get care [12]. While mental health services are critical, these hurdles hinder many refugees from receiving the care they require. We require a multifaceted approach that includes more accessible services, decreased stigma, culturally responsive care, and support systems for transportation and childcare. Addressing these issues will guarantee that refugees receive the comprehensive mental health care they deserve [10].

Telemedicine applications for refugee mental health are underpinned by the principles of social justice, aiming to reduce inequities in healthcare access [13–16]. In poor host communities, barriers such as limited infrastructure, digital illiteracy, and cultural sensitivities exacerbate these inequities [17–21]. Drawing from frameworks like the Levesque model of healthcare access, telemedicine can address these barriers through culturally tailored, low-cost, and scalable interventions [22]. This study integrates such theoretical perspectives to analyze the feasibility and potential of telemedicine in refugee contexts.

Traditional mental health services are frequently unavailable for refugees due to restricted access, cultural barriers, and stigma. Telemedicine, or the use of technology to provide distant healthcare, is a promising approach [23, 24]. Telemedicine improves accessibility and convenience by allowing home consultations, which can also save money [25]. It also helps migrants avoid mental health stigma in some societies by allowing them to get care secretly [26, 27]. Refugees can receive culturally sensitive care by engaging with competent experts [28]. Telemedicine provides other advantages in addition to mental health. This increases the availability of specialists, reduces expenses, and benefits the uninsured or those living in underserved areas. It decreases illness risk and provides for more flexible appointment dates [25].

Telemedicine allows refugees suffering from PTSD, depression, and anxiety to monitor their symptoms remotely [29, 30]. In general, telemedicine has the ability to transform refugees' mental health, overcoming obstacles while providing several benefits [31]. However, issues remain. Ensuring equal access to the Internet and digital literacy for refugees is critical [32]. Strict precautions are also required to ensure the privacy and security of sensitive patient data [33]. This study analyzed prior research on using telemedicine therapies to treat mental health problems in refugees.

Methods

This study comprises a meticulous systematic review carried out between 2012 and 2023. The systematic review methodology is characterized by a rigorous and exhaustive approach aimed at synthesizing evidence pertaining to particular inquiries [34].

Eligibility criteria

To guarantee the inclusion of the most relevant studies, specific criteria for inclusion and exclusion were established.

Inclusion criteria

The study encompasses a selection of research meeting specific inclusion criteria. Firstly, it includes studies that examine mental health issues among refugees; the eligible study types comprise articles, reviews, randomized controlled trials (RCT), and observational studies. Notably, the inclusion extends to encompass research focused on telemedicine interventions tailored for refugee mental health. Furthermore, the language criterion mandates that articles must be available in English or possess an English translation. The target population is defined as individuals officially recognized as refugees, asylum seekers, internally displaced persons, or those forcibly displaced due to conflict, persecution, or migration – collectively referred to as forced displaced persons. Additionally, the study includes essays exploring remote medical interventions and technologies specifically designed to address mental health challenges within the refugee population.

Exclusion criteria

Conversely, the study applies a set of exclusion criteria to refine its scope. Firstly, it excludes individuals lacking official recognition as refugees, asylum seekers, or internally displaced persons. Studies exclusively concentrating on non-refugee populations, regardless of the cause (war or natural disasters), are not considered. Articles that publish information unrelated to health issues or telemedicine interventions in mental health for refugees will be systematically excluded. Additionally, interventions unrelated to the applications of telemedicine for refugee health, particularly those evaluating non-refugee populations, do not meet the inclusion criteria. Studies lacking clear reporting of health outcomes or relevant data on the impact of telemedicine on refugee health are excluded from consideration. The language criterion extends to exclude articles not in English or lacking available translations. Further exclusions comprise studies conducted before 2012, those with insufficient data on telemedicine programs

or refugee health outcomes, and studies demonstrating poor methodological quality or insufficient reporting of methods and results. Geographical relevance is considered, with exclusions extending to studies focused solely on specific regions without a connection to global trends and innovations. Reports on interventions in areas minimally affected by the refugee crisis or unpublished/non-peer-reviewed literature are also excluded. It is crucial to note that the term "refugee" herein refers to individuals rendered homeless either due to war or natural disasters.

Information sources

An extensive search for articles was conducted utilizing prominent databases, namely Web of Science, Cochrane, ProQuest, Ovid, EBSCO Host, PubMed and Scopus. The search was carried out until the conclusion of December 2023, with the meticulous removal of duplicate references. In addition, supplementary articles were actively sought through a comprehensive search methodology, including the tracking of references and citations within articles. Furthermore, an examination of the academic backgrounds and publications of authors was undertaken to identify additional studies of relevance to enhance the comprehensiveness of the research.

Search strategy

The search criteria involved the inclusion of specific terms from two distinct domains: Refugee and Telemedicine.

For refugees, the terms included: Political Asylum, Seeker, Political Refugee, Internally Displaced Person. For telemedicine, the terms Mobile Health, Telehealth, and eHealth were used. The search strategy in PubMed was as follows:

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(((((("Refugee") OR ("Refugees")) OR ("Political Asylum Seeker") OR ("Political Refugee")) OR ("Asylum Seeker") OR ("Displaced Person") OR ("Internally Displaced Person")) AND (((((((((((("Telemedicine") OR ("Remote Consultation")) OR ("Telepathology")) OR ("Teleradiology")) OR ("Telerehabilitation")) OR ("Telenursing")) OR ("Tele-Referral")) OR ("Tele Referral")) OR ("Tele-Intensive Care")) OR ("Tele Intensive Care")) OR ("Tele-ICU")) OR ("Tele ICU")) OR ("Mobile Health")) OR ("mHealth")) OR ("Telehealth")) OR ("Tele Health")) OR ("eHealth"))
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Process of selection

The screening process adhered to the guidelines delineated in the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist [35, 36].

Upon the identification of relevant articles, a meticulous reference management procedure was executed utilizing EndNote software (Version X7.5, Clarivate). This software facilitated the systematic elimination of duplicate entries. Following this, the titles, abstracts, and full texts of the retrieved studies underwent a thorough and comprehensive screening process.

Process of data collection

Structured data extraction was employed, utilizing a comprehensive form encompassing fields such as author(s) name(s), publication year, country, Objective, Refugee Population Studied, Methods, Diseases, Telemedicine Interventions and Results.

Target population

The target population of this study includes individuals officially recognized as refugees, asylum seekers, internally displaced persons, or those forcibly displaced due to conflict, persecution, or migration. These groups were selected due to their unique vulnerabilities to mental health challenges, including socio-economic disparities, cultural barriers, and limited access to traditional health-care. Most studies included in this review focused on refugees in low- to middle-income settings, such as camps

or host countries neighboring conflict zones, where access to mental health services is often constrained. Additionally, some studies addressed refugees in high-income countries to analyze disparities and the adaptation of telemedicine tools across diverse socio-economic contexts.

Data items

This systematic review explores global trends and innovations in telemedicine interventions for the mental health of refugees, with a primary focus on evaluating and comparing the feasibility and effectiveness of telemedicine programs. The study examines multiple dimensions, including the role of telemedicine in refugee mental health care, its application in mental health interventions, screening processes, effectiveness assessments, socio-economic and cultural considerations, and the overall management of mental health outcomes in refugee populations.

Results

Based on the searches conducted in the investigated databases, 836 articles were extracted, respectively after removing duplicates $n = 495$, dissertation between the title of the article with the research topic $n = 132$ and lack

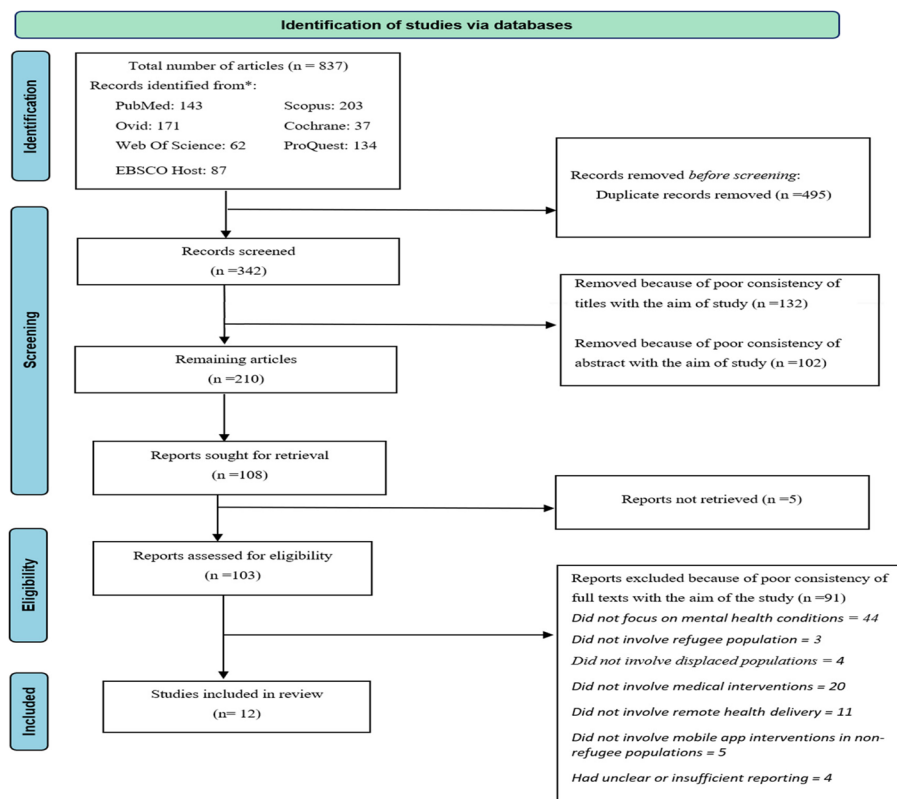


Fig. 1 The PRISMA diagram

of connection between the abstract and the aims of the present study $n = 102$, 108 articles remained. (Fig. 1).

Among these, five studies were not available, so 103 studies were fully and accurately examined. According to the inclusion criteria, 91 studies were excluded and finally, 12 articles were recognized as eligible articles. Full details of the final articles are given in (Table 1).

Demographic and geographic distribution

The reviewed articles encompass a diverse range of refugee populations, including Syrian [38, 42], Afghan [37], Palestinian [37], Central America and the Caribbean [41], Somali-Bantu [44], Nepalese-Bhutanese [44], and Ugandan individuals [44]. While some studies focused exclusively on a single national or ethnic group, others explored broader refugee demographics, capturing a wide spectrum of experiences. The studies were conducted in various geographical contexts, spanning low-to middle-income countries such as Uganda and Turkey, and high-income countries such as Canada and Germany. This geographical diversity highlights the distinct challenges and opportunities in telemedicine for refugee mental health across different socioeconomic settings.

The present research investigates 12 articles published between 2012 and 2023. Geographically, the largest numbers of studies (five) were conducted in Canada, followed by two in the United States, and one each in Turkey, Palestine, Germany, USA, and Uganda. These studies provide a comprehensive view of refugee experiences in different parts of the world.

Regarding research methods, eight of the studies (67%) employed quantitative approaches [37, 38, 40, 42–44, 46, 47], while two (17%) used qualitative methods [41, 48], and another two (17%) adopted a mixed-methods approach [39, 45]. This methodological distribution underscores the varied ways researchers have explored refugee experiences and mental health issues.

By examining refugee experiences across different nationalities and geographies and analyzing the diversity of research methods, the present study offers valuable insights and opportunities for deeper analysis of the existing findings. (Fig. 2).

-Telemedicine interventions

The world of technology and health services is always changing and evolving, and new and modern methods of telemedicine for medical services are constantly being created. This section includes studies that explore telemedicine in mental health interventions, categorized into Virtual Reality, Screening, Investigating Effectiveness, Socio-economic-Cultural Use, Types of Participants, and Using Telemedicine. In mental health interventions, telemedicine has provided a wide range and several studies

[37–40, 42–44, 47] have emphasized on the importance of using health along with telemedicine in mental health. In these studies, various software and systems such as CaPRA, Sanadak [42], computer-assisted psychosocial risk assessment software [37], NESTT [44], and web-based mobile health platforms has been used to provide mental health interventions to patients. These software and systems allow mental health service providers to effectively communicate with their patients, collect relevant data, and provide personalized interventions. Therefore, nowadays m-health plays a very significant role in mental health telemedicine. On the other hand, some studies [41, 43, 45, 48] have investigated the effectiveness of intervention methods such as text, video and audio messages. In these studies, platforms such as Google Meet, WhatsApp, Microsoft Teams, FaceTime and other messaging software have been used to provide therapeutic interventions to patients. These methods can be useful as complementary or alternative methods to mhealth-based interventions, especially for patients who do not have access to these technologies or are unwilling to use them. It is important to notice that there is a great diversity in telemedicine intervention methods for mental health. Therefore, the right method for each patient may be different depending on the needs, preferences and individual conditions. Choosing the optimal method for each patient requires accurate evaluation and consideration of various factors such as the severity of symptoms, the level of access to technology, and the patient's willingness to use technological methods.

Virtual reality

This subsection includes studies on the feasibility, evaluation, and effectiveness of virtual reality (VR) interventions in mental health, focusing on refugee populations [39, 42, 45, 46, 48]. Some studies [42, 46, 48] have dealt with the feasibility, evaluation and effectiveness of computer simulation in mental health. The findings of these articles show the willingness and satisfaction of the participants to use these methods. In one research [45], the integration of virtual care in mental health services for immigrants was used. The results of this study emphasize the potential of this method to facilitate access and remove transportation barriers.

VR refers to 3D computer simulations that people can interact with in real or physical form using certain electronic equipment. This emerging technology is currently receiving attention in various fields including entertainment, education and recently in the field of mental health. Two studies [39, 46] found VR to be effective in reducing mental health symptoms and increasing patient satisfaction. The above researches has shown that using VR could increase patients'satisfaction with the

Table 1 Summary of selected studies on telemedicine interventions for refugee populations

No	Authors/Year	Country	Objective	Population Studied/ Geographical Focus	Methods	Diseases or Condition Studied	Diagnostic Tools
1	Ahmad et al. [37]/2012	Canada	To pilot a computer-assisted psychosocial risk assessment (CaPRA) tool aimed at integrating medical and social care for refugees	Adult Afghan refugees visiting a community/health center in Toronto, Canada	A pilot randomized trial where participants were assigned to either the CaPRA intervention or usual care. Data were collected using exit surveys	Psychosocial risks, including depression and exposure to violence	Computer-assisted psychosocial risk assessment via iPad (CaPRA) ^a
2	Jejee-Bahloul et al. [38]/2014	Turkey	To assess psychological stress levels and openness to telepsychiatry among Syrian refugees	Adult Syrian refugees attending Kilis clinic in Turkey	Quantitative descriptive study, HADStress tool administered verbally in Arabic by medical students	PTSD, psychological stress	HADStress screening tool (assessing stress levels and PTSD symptoms) ^b
3	Ferrari et al. [39]/2016	Canada	Evaluate the ICCAS, a tablet-based tool, for assessing mental health issues among vulnerable populations and exploring patient/provider perspectives	Immigrants and refugees, primarily low-income individuals, in Toronto, Canada	Mixed-methods, randomized controlled trial (RCT) for intervention and qualitative interviews for provider perspectives	Depression, anxiety, PTSD, harmful drinking	PHQ- 9 ^c , GAD- 7 ^d , AUDIT-C ^e , DAST- 10 ^f , PTSD-PC ^g , CAGE screening scales ^h and RE-AIM evaluation framework ⁱ
4	Ben-Zeev et al. [40]/2017	West Bank	To examine whether mHealth approaches for remote mental health treatment are viable alternatives for Palestinians in the West Bank	Palestinian adults in urban, rural, and refugee camp settings in the West Bank	Quantitative cross-sectional study, Surveys conducted by Arabic-speaking surveyors	Depression, auditory hallucinations	Mobile health surveys (community mental health perceptions and mHealth willingness)
5	Green et al. [41]/2020	USA	To assess the feasibility and effectiveness of conducting forensic mental health evaluations for asylum seekers via telephone or video conferencing	Asylum seekers in the United States and Mexico	Qualitative interviews, Pro bono forensic mental health evaluations by telephone or video, coordinated by the Mount Sinai Human Rights Program, conducted between September 2019 and May 2020	Mental health conditions among asylum seekers	Forensic mental health evaluations via telephone or video conferencing
6	Röhr et al. [42]/2021	Germany	Evaluate the effectiveness and cost-effectiveness of Sanadak, a smartphone-based self-help app for Syrian refugees experiencing posttraumatic stress	Syrian refugees residing in Germany, aged 18–65 years	Randomized Controlled Trial (RCT)	Posttraumatic Stress Disorder (PTSD)	PDS- 5 ^j , PHQ- 9 ^k , GAD- 7 ^l

Table 1 (continued)

No	Authors/Year	Country	Objective	Population Studied/ Geographical Focus	Methods	Diseases or Condition Studied	Diagnostic Tools
7	Pogue et al. [43]/2021	USA	To assess clinicians' perspectives on the acceptability, challenges, and opportunities of conducting remote medical evaluations for asylum seekers during the COVID-19 pandemic	Clinicians conducting remote medical evaluations for asylum seekers in the U.S.	Quantitative Descriptive , An online survey distributed to clinicians who conducted remote asylum evaluations between March 15 and October 5, 2020. The survey covered topics like remote interpretation, history taking, rapport building, and conducting psychiatric and physical exams	Mental health conditions among asylum seekers	Remote medical evaluations via telephone or video conferencing
8	Mazzulla et al. [44]/2021	USA	To evaluate the effectiveness of the NESTT mHealth application for reducing trauma-related symptoms and increasing coping skills in refugees	Nepali-Bhutanese and Somali-Bantu communities Refugees resettled	A six-week pilot study with pre- and post-assessments (Quantitative study); group and individual sessions; use of the NESTT mHealth app for trauma symptom management	PTSD, depression, anxiety, somatic complaints, and traumatic stress	RHS-15 ^m , VLQ ⁿ , Investigator generated coping measure
9	Benjamen et al. [45]/2021	Canada	To assess refugee clinicians' perspectives on the accessibility and delivery of mental health care services to refugees and migrants during the first six months of the COVID-19 pandemic	Refugee and migrant populations in Canada	Mixed-methods design: survey distributed to clinicians in a national network caring for refugees and migrants	Mental health conditions among refugees and migrants	Survey instrument assessing clinicians' experiences and challenges
10	Hynie et al. [23]/2022	Canada	To assess the multidimensional nature of access to virtual mental health care for refugee newcomers during the COVID-19 pandemic, using the Levesque Client-Centered Framework	Refugee newcomers residing in four Canadian provinces	108 structured and semi-structured interviews with community leaders (8), newcomer clients (37), and mental health or service providers/managers (63)	Mental health issues among refugee newcomers	Structured and semi-structured interviews

Table 1 (continued)

No	Authors/Year	Country	Objective	Population Studied/ Geographical Focus	Methods	Diseases or Condition Studied	Diagnostic Tools
11	Logie et al. [46]/2022	Uganda	To assess the feasibility and effectiveness of two mental health interventions—Virtual Reality (VR) alone and VR combined with Group Problem Management Plus (GPM+)—in improving mental health outcomes among refugee and displaced youth in Kampala	Displaced, Urban refugee and displaced youth aged 16–24 years residing in informal settlements in Kampala, Uganda	A three-arm cluster randomized controlled trial (cRCT) was conducted in five informal settlements in Kampala, enrolling around 330 adolescents (110 per cluster). Participants were followed for 16 weeks, with data collected at baseline, 8 weeks, and 16 weeks. The primary outcome was depression, while secondary outcomes included mental health literacy, attitudes toward seeking help, coping, mental health stigma, well-being, and functioning	Mental health issues, particularly depression, among refugee and displaced youth	Standardized mental health assessments and scales to measure depression, mental health literacy, coping strategies, stigma, well-being, and functioning
12	Toulany et al. [47]/2023	Canada	To evaluate the relationship between social determinants of health and physician-based mental health care utilization and virtual care use among children and adolescents in Ontario during the COVID-19 pandemic	Children and adolescents aged 3–17 years in Ontario, Canada	A quantitative descriptive study used linked health and demographic data from 2017 to 2021. The population-based, repeated cross-sectional study applied multivariable Poisson regressions with generalized estimating equations to compare outpatient physician-based mental healthcare use during the first year of the COVID-19 pandemic with expected pre-COVID rates. Analyses considered socioeconomic status, urban/rural residence, and immigration status	Mental health concerns and diagnoses among children and adolescents	Physician billing codes based on the International Classification of Diseases, 8th Revision

Table 1 (continued)

No	Sample Size	Telemedicine Interventions	Intervention Duration	Follow-up Period	Statistical Analysis	Results
1	49 Participants	CaPRA tool completed on iPad, with personalized feedback sheets for patients and reports for clinicians to guide referrals to psychosocial services	4 months	Not applicable	Descriptive statistics (means, proportions) and two-group comparisons using Chi-square and Student's t-test	72% in the CaPRA group intended to see a psychosocial counselor vs. 46% in the usual care group; tool well-received with positive feedback on usability and satisfaction
2	354 adult Syrian refugees (≥ 18 years old) who presented to a polyclinic in Kilis, Turkey, seeking primary care. The sample consisted of 186 males (52.5%) and 168 females (47.5%), with 34 (9.6%) reporting being bilingual (Arabic and Turkish)	Telepsychiatry assessments conducted verbally by Arabic-speaking medical students	1 month (4 weeks)	Not applicable	Descriptive analysis, Chi-squared tests, Logistic regression	41.8% had positive HADS stress status. 34% needed psychiatry; of these, 45% accepted telepsychiatry. Women and bilingual individuals were less likely to accept telepsychiatry. Increased awareness of PTSD but challenges in patient uptake for telepsychiatry were observed. Further studies are needed to assess long-term effects and scalability of telepsychiatry interventions
3	74 clients; 9 providers	Interactive Computer-Assisted Client Assessment Survey (ICCAS): touchscreen, tablet-based self-assessment with point-of-care reports for clients and providers	During clinic visits	Not applicable	Descriptive statistics (means, proportions); qualitative thematic analysis	Positive attitudes from clients and providers; enhanced self-awareness, client comfort, and provider ability to identify mental health issues. Privacy and interaction barriers remained unclear. Increased discussions and detection of mental health concerns
4	272 participants, 160 males (58.8%) and 112 females (41.2%)	mHealth approaches: bidirectional texting, smartphone apps, unidirectional support texts, web-based interventions	4 weeks	Not applicable	Descriptive statistics, Mobile phone ownership and usage, Perceived mental health needs, interest in mHealth interventions	93.4% of participants owned mobile phones; 79.9% had smartphones; high access to Wi-Fi (80.9%) and social media (99.6%). 61.4% reported mental health problems in the community. 68.8% were interested in bi-directional texting, and 66.5% in smartphone apps for mental health support

Table 1 (continued)

No	Sample Size	Telemedicine Interventions	Intervention Duration	Follow-up Period	Statistical Analysis	Results
5	32 participants (asylum seekers)	Remote forensic mental health evaluations using telehealth technologies	Not applicable	Not applicable	Qualitative interviews; Descriptive report (without detailed statistical analysis of outcomes)	32 forensic evaluations were successfully conducted across eight U.S. states and Mexico. Telehealth was found to be a viable solution for individuals in immigration detention, particularly during the COVID-19 pandemic
6	133 participants (Refugees)	Sanadak, a cognitive-behavioral therapy-based self-help app in Arabic, providing psychoeducation, symptom management tools, and interactive materials	4 weeks	Assessments were conducted at three time points: baseline (preintervention), postintervention (after 4 weeks), and follow-up (after 4 months)	Analyzing posttraumatic stress symptoms and secondary outcomes using adjusted mixed-effects linear regression models, with intention-to-treat (ITT) and per-protocol (PP) approaches. Assessing cost-effectiveness through adjusted mean costs, quality-adjusted life years (QALYs), cost-effectiveness acceptability curves, and the net benefit method	Sanadak reduced self-stigma significantly but showed no superior effect over psychoeducational reading material for reducing PTSD symptoms. It was unlikely to be cost-effective as a standalone treatment
7	A total of 155 clinicians responded to the survey, with 104 having received referrals for remote evaluations. Of those, 75 clinicians completed at least one remote evaluation	Remote medical evaluations using telehealth technologies, conducting medical asylum evaluations remotely, utilizing platforms such as Zoom, WhatsApp, Doxy.me, Google Meet, Microsoft Teams, and FaceTime	Not applicable	Not applicable	Descriptive statistics summarizing clinicians' experiences and challenges	Clinicians reported positive experiences with remote interpretation (85%), history taking (82.4%), rapport building (81.3%), and psychiatric exams (65.7%). 83.3% expressed concerns about remote physical exams. Technology access challenges were not a major barrier for most clinicians
8	18 participants (10 women and 8 men)	Use of the NESTT mHealth app (language-free, culturally adapted toolkit for trauma-related symptoms)	6 weeks (4 weeks of group sessions, 2 weeks of individual assessments)—The first and last weeks were dedicated to individual assessments, while the middle four weeks involved group sessions where participants were introduced to and practiced using the NESTT app. Each group session lasted 90 min, and participants were encouraged to use the app between sessions	Not applicable (study was completed after intervention)	Paired-samples t-tests; Effect sizes (Cohen's d)	Significant reduction in trauma-related symptoms (anxiety, depression, somatic symptoms); Increase in coping skills

Table 1 (continued)

No	Sample Size	Telemedicine Interventions	Intervention Duration	Follow-up Period	Statistical Analysis	Results
9	77 Clinicians	Virtual care, including technology-assisted psychotherapy	First six months of the COVID-19 pandemic	Not applicable	Descriptive analysis of survey responses	Clinicians reported significant challenges related to access and providing virtual care. Technology-assisted psychotherapy was feasible and acceptable but faced technological barriers, communication issues, global mental health concerns, and privacy issues
10	44 papers and 41 unique interventions/assessment tools	Virtual mental health care services	Not applicable	Not applicable	Deductive qualitative analysis based on the Client-Centered Framework	The analysis identified several overarching themes: challenges due to the cost and complexity of using technology, comfort with virtual mental health outside clinical settings, sustainability of virtual mental health care post-COVID-19, communication and the therapeutic alliance
11	Approximately 330 adolescents (110 per cluster)	The VR intervention focused on mental health literacy and psychological first-aid skills, supplemented with mobile health (mHealth) support via SMS-based bidirectional messages and information. The combined VR and GPM + intervention integrated VR with a group-based psychological intervention	4 months (approximately 16 weeks)	Data collection occurred at baseline, 8 weeks, and 16 weeks post-enrollment	Employed appropriate statistical methods to analyze the effectiveness of the interventions on primary and secondary outcomes	The study was conducted in accordance with CONSORT guidelines and received ethical approval from relevant committees. A qualitative formative phase was conducted using focus groups and in-depth, semi-structured key informant interviews to understand contextual factors influencing mental well-being among urban refugees and displaced youth. The trial launched in June 2022, with the final follow-up survey conducted in November 2022

Table 1 (continued)

No	Sample Size	Telemedicine Interventions	Intervention Duration	Follow-up Period	Statistical Analysis	Results
12	2.5 million children and adolescents aged 3–17 years in Ontario	Virtual care, including telephone and video consultations, as indicated by specific billing codes	First year of the COVID-19 pandemic (March 1, 2020, to February 28, 2021)	Not applicable	Multivariable Poisson regressions with generalized estimating equations	Pediatric physician-based mental healthcare visits were 5% lower than expected among those living in the most deprived areas during the first year of the pandemic, compared to 4% higher than expected rates in the least deprived areas. Immigrants had 14% to 26% higher visit rates compared to expected from July 2020 to February 2021, whereas refugees had similar observed and expected rates. Virtual care use was approximately 65% among refugees, compared to 70% for all strata

Abbreviations: *CaPRA* Computer-Assisted Psychosocial Risk Assessment, *HADStress* Hospital Anxiety and Depression Stress Screening Tool, *PHQ-9* Patient Health Questionnaire-9, *GAD-7* Generalized Anxiety Disorder Scale-7, *PTSD-PC* Primary Care PTSD Screen, *CAGE* Screening tool for alcohol use disorders, *PDS-5* Posttraumatic Diagnostic Scale for DSM-5, *RHS-15* Refugee Health Screener-15, *VLQ* Valued Living Questionnaire, *PTSD* Posttraumatic Stress Disorder

^a Computer-Assisted Psychosocial Risk Assessment (CaPRA); The CaPRA survey had questions on psychosocial risks: substance use, exposure to personal violence, depressive symptoms, food and income insecurity, employment, social network, migration status, and coping

^b HADStress; a somatic symptom screen for posttraumatic stress among refugees

^c Patient Health Questionnaire-9 (PHQ-9)

^d Generalized Anxiety Disorder-7 (GAD-7)

^e Alcohol Use Disorder Identification Test-C (AUDIT-C)

^f Drug Abuse Screening Test-10 (DAST-10)

^g Post Traumatic Stress Disorder-Primary Care (PTSD-PC)

^h Cut—Annoyed—Guilty—Eye (CAGE)

ⁱ Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) evaluation framework

^j Posttraumatic Diagnostic Scale for DSM-5

^k Patient Health Questionnaire-9 (PHQ-9)

^l Generalized Anxiety Disorder-7 (GAD-7)

^m Refugee Health Screener-15 (RHS-15)

ⁿ Valued Living Questionnaire (VLQ)

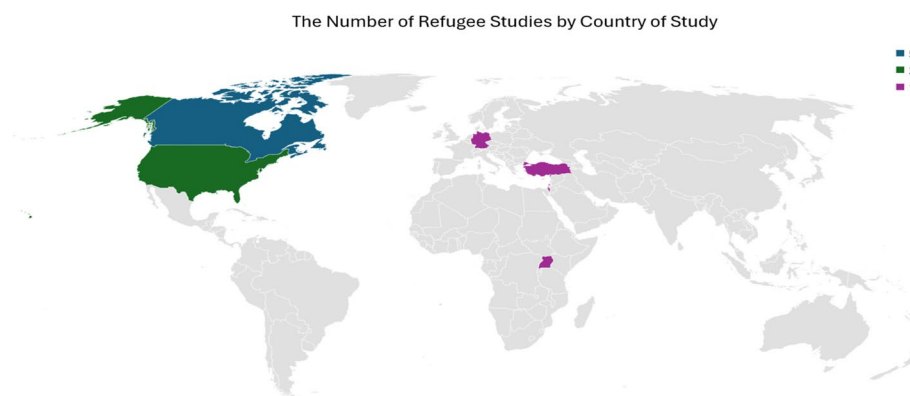


Fig. 2 The number of refugee studies by country of study

treatment process. Therefore, VR can be used as a tool to provide mental health services to people who do not have access to traditional services, such as people living in rural areas or people with physical disabilities. VR has helped to remove transportation barriers for mental health service recipients, especially for disabled patients who have difficulty getting to a doctor's office or clinic. VR can provide safe and controlled environments for patients to face their challenges and anxieties in a non-threatening virtual environment. Moreover, the use of VR can increase the motivation of patients to continue treatment while making treatment methods more attractive and interactive.

Screening

Studies in this subsection focus on tools and methods for mental health screening among refugees and vulnerable populations, including HADStress and iCCAS [38, 39]. Considering that the treatment of mental illnesses is a very complex and time-consuming process. One of the important areas that has been mentioned in the studies is screening methods. Screening refers to the initial evaluation of people according to risk factors and risk factors before the appearance of symptoms and disease. In a study [39] that assesses mental health from the perspective of patients and therapists in a community health center, an innovative university-community screening tool iCCAS in English and Spanish has been designed and evaluated. This tool assessed scales such as post-traumatic stress, social determinants of mental health (such as housing, employment status), depression, pervasive anxiety. The results of this study indicated the usefulness, user-friendliness, ease of use, and non-invasiveness of this tool for mental health assessment. While this tool has not been validated for issues such as interaction with providers (monolinguality and the need for a translator), privacy, optimal conditions for screening.

In another study [38], the use of the HADStress screening tool to evaluate four physical factors in mental health, including sleep problems, appetite changes, dizziness and headaches, was investigated. In this tool, the range of scores from zero to four was used to evaluate the variables. According to the questions of this tool, which have a less "threatening" nature compared to other tools such as the trauma screening questionnaire or the PTSD primary care page, the HADStress tool was accepted and satisfied by the participants and nearly half of the participants (45%) showed more willingness to use remote psychiatry; but bilingual women and individuals with a positive stress level (HADS) showed a lower preference for telepsychiatry. However, the rate of relative acceptability of telepsychiatry in Syrian refugees was reported to be good.

Investigate effectiveness

This subsection includes studies evaluating the effectiveness of telemedicine tools such as Sanadak, WelTel, and NESTT, as well as mobile and virtual interventions [42, 44, 46]. In this section, various interventions are evaluated along with the advantages and limitations of telemedicine tools in mental health in articles. Due to the emerging nature of telemedicine in mental health, these studies have investigated different areas of evaluation, efficiency and methods of upgrade, and optimal use of telemedicine in psychiatry. In a study [46], the effectiveness of two mental health interventions among refugee youth (16–23 years old) has been studied using intervention tools, VR scenarios, text messages, and WelTel system on the mobile phone platform to manage messages. In this study, the state of depression, the level of awareness of mental health, the attitude of people regarding seeking help, adaptive coping strategies, the stigma of mental health, and the performance level of refugees have been investigated. The results of the mentioned

study showed that by using new and low-cost mental health methods, every patient can easily access health information and required strategies, and mHealth tools lead to easier access of patients to information resources. Moreover, the aforementioned study focused on identifying effective intervention approaches and evaluating evidence-based approaches (such as virtual reality) in different age groups of refugees.

Another study [42] was evaluated the effectiveness and cost-effectiveness of the application (Sanadak) in refugees suffering from post-traumatic stress. The results of this study, according to the CONSORT statement and numerous questionnaires, showed that there is no relationship between the frequency of using the software, education, age groups, gender, and the severity of post-traumatic stress symptoms with the reduction of self-stigma. Sanadak was not effective in reducing mild accident post-traumatic stress, however, it showed a significant reduction in stigma. Also, it was not cost-effective based on the average total adjustment costs and per QALY. However, it was reported cost-effective in the analysis of the causes and motivation of the treatment. Based on the findings of this study, Sanadak is considered an auxiliary and useful tool for post-traumatic stress.

In a study [44], the assessment and control of injustice in mental health services was addressed based on a traumatic stress intervention using a language-free application (NESTT). The findings of the mentioned study showed that after completing the NESTT intervention, the life value scores did not change, however, the participants had a significant reduction in overall psychosocial distress (symptoms related to traumatic stress, anxiety, depression, and physical complaints) And it has shown a reduction in trauma-related symptomology. Moreover, their coping skills and functioning had increased. The findings of this review support the point that using mHealth application will improve mental health outcomes in refugees resettled in the United States. By measuring the effectiveness and feasibility of new and low-cost mental health technology, these studies have the necessary potential for policy, informing and research and application in health, education and social development sectors.

Socio-economic-cultural use

This subsection discusses socio-economic and cultural factors influencing the participation, accessibility, and effectiveness of telemedicine interventions for refugees, drawing from studies on tools like NESTT and culturally adapted programs [37, 39, 44, 45, 47].

Socio-economic and cultural factors significantly influence refugees' willingness to adopt telemedicine, impacting their access to technology, trust in healthcare

systems, and communication preferences. Understanding these barriers is key to improving the effectiveness and accessibility of telemedicine interventions for refugee populations. A study by Ahmad et al. [37] explored the psychosocial risks of refugees, particularly focusing on language barriers and socio-economic issues like food insecurity and immigration status. The study found a high willingness (69.6%) among participants to seek psychosocial counseling, emphasizing the importance of culturally adapted tools in facilitating participation. Telemedicine was perceived as reducing social stigma, with patients expressing themselves more openly due to the privacy and accessibility it offered.

While telemedicine offers increased access, several barriers to its utilization persist, particularly in socio-economically disadvantaged groups. Jefe-Bahloul et al. [38] identified key challenges such as language barriers, low literacy levels, and the discomfort some female clients felt when working with male translators. Additionally, socio-economic factors such as financial instability and housing issues were found to impact refugees' mental health, further hindering their access to remote care. These barriers were also observed in a study by Hynie et al. [23], which showed that refugees in deprived areas were less likely to benefit from virtual care compared to those in less deprived neighborhoods, highlighting how socio-economic status and geographic location significantly influence telemedicine use.

Cultural adaptation is crucial for the effectiveness of telemedicine interventions. The NESTT app [44], which used culturally valid visual cues instead of text, was specifically designed with input from cultural experts to accommodate Somali-Bantu and Nepali-Bhutan norms. This adaptation improved the program's acceptance and engagement, demonstrating the importance of culturally relevant content. Furthermore, Ben-Zeev et al. [40] found that cultural and socio-economic factors such as financial income, family dynamics, and social isolation directly impacted mental health and the effectiveness of virtual care. Financial instability, stigma, and reduced access to social services were among the barriers refugees faced, indicating that addressing these factors is essential to improving intervention outcomes.

Telemedicine can potentially reduce health inequalities by increasing timely access to care for refugee populations. However, socio-economic and cultural issues must be considered to maximize its effectiveness. The use of culturally tailored interventions, like the Sanadak app and the iCCAS tool, has demonstrated potential in engaging marginalized refugee populations. These tools have shown that addressing cultural, linguistic, and socio-economic barriers can improve both patient engagement and satisfaction with care. Additionally, improving access

to technology and reducing digital literacy gaps are vital for expanding the reach and effectiveness of telemedicine services.

Types of participants

In refugee health studies, categorizing participants based on their role and expertise provides valuable insights into the perspectives and experiences related to the topic under study. This category generally includes three main groups. Refugees are individuals who have fled their home country due to persecution, war or other dangerous conditions and are currently granted asylum in another country. In the researches [37, 38, 40–42, 44, 46], the feasibility and evaluation of mental health interventions were done exclusively on refugees. These studies focused on the direct experiences and mental health needs of refugees.

Health professionals include doctors, nurses, psychologists, social workers and other experts in the field, are crucial in providing mental health services to refugees. In the studies [39, 43, 45, 47], the participating population included health professionals. These studies investigated professionals' perspectives and experiences of mental health services providers to refugees.

In some studies, both groups of refugees and health professionals were used as participants. Research by Hynie et al. [23] participants included refugees and health care workers. This study sought to gain a deeper understanding of the challenges and opportunities associated with providing mental health services to refugees by examining the perspectives of both groups.

Classifying participants by their role and expertise enhances the understanding of study findings, allowing researchers to examine the differences and similarities between groups. The results can then inform the planning and delivery of mental health interventions that cater to the specific needs of each participant group.

Using telemedicine

This subsection explores the methods and challenges of using telemedicine tools, including feasibility, cost, and security considerations [37, 39–43, 45–48]. In five studies [37–40, 48] feasibility and investigating the challenges (infrastructure, cost, required technology, privacy and security, behavior and social interaction) and Risk assessment, advantages and disadvantages of remote mental health tools have been discussed, while in other studies [41–47] investigation the evaluation and effectiveness of telepsychiatry from the point of view of refugees and doctors with The use of different questionnaires, face-to-face and video interviews, telephone, etc. has been discussed.

Also, studies [41–43, 45–48] have shown that telemental health can be effective in the treatment of a wide range of mental disorders, including anxiety, depression, PTSD, substance abuse, and phobias. Remote psychics can be a suitable alternative or complement to face-to-face services for many people. In the studies [37, 40, 42, 44] it has been stated that telehealth is more acceptable for mental health and its evaluation results show the positive opinion of the participants in the studies.

Practical applications

Telemental health has proven to be an effective solution for refugee populations, particularly in overcoming geographical and logistical barriers to mental health care. However, to maximize its impact, it is essential to design these interventions with a deep understanding of the social and cultural contexts of refugee communities. In underserved host countries, the implementation of telemedicine must address systemic barriers related to social justice. Key strategies include ensuring affordable and reliable internet access, empowering community health workers to provide digital literacy training, and creating multilingual platforms that respect local cultural norms and preferences [17, 49, 50]. Studies, such as the use of the NESTT app with Somali-Bantu and Nepalese-Bhutanese refugees, highlight the importance of culturally sensitive tools in fostering engagement and effectiveness [44]. Moreover, interventions like the Sanadak app and virtual reality-based programs should be scaled and adapted to meet the current health, social, and political climates of both refugee populations and their host countries [42].

Evaluating the quality of articles

In this study, the MMAT checklist was used to evaluate the quality and methodology of the articles due to the different types of studies (Supplementary Material 1). In this study, two qualitative studies with an average (6.5 out of 7), three studies of quantitative randomized controlled trials (average 7 out of 7) the highest score, five quantitative descriptive studies (6.2 out of 7) and two mixed methods studies with an average (6.5 out of 7) was used.

Evaluation methods within articles

In the studies, various methods have been used for evaluation; Questionnaire about mental health: according to different issues (depression, PTSD and domestic violence) from different questionnaires in this field in the study [46] of Patient Health Questionnaire- 9, modified depression literacy scale validated in LMICs and Kidcope and CONSORT guidelines, In the study [39] of the ICCAS survey, in [38] the trauma screening questionnaire or PTSD primary care page, in [42]

the questionnaire (PHQ- 9, GAD- 7, PHQ- 15, GSE, SSMIS-SF, SMIS -AW SMIS-AG SMIS-AP, SSMIS-HS, RS- 13, LSNS- 6, ENRICH, Social Support Inventory, EQ- 5D- 5, EQ-VAS, PGI, EuroQoL 5-Dimension 5), in [44] from Valuable Life Questionnaire (VLQ) was used. In studies [37, 39, 42, 44], the usability of the used software was evaluated with different questionnaires, and in all studies the level of satisfaction with it was reported as "acceptable".

Post-pandemic context

Although most of the studies reviewed were conducted during the COVID- 19 pandemic [37–39, 41], we recognize that the overall situation has evolved. The pandemic accelerated the adoption of telemental health, demonstrating its potential to improve access to mental health services for refugees [40, 42]. However, the dynamics of telehealth utilization in the post-pandemic era may differ. This new landscape presents both challenges and opportunities, including variations in resource availability, changes in refugee settlement patterns, and the need to adapt telemental health services to meet the evolving needs of refugee populations [43, 44].

In the post-COVID era, telemedicine faces significant challenges that demand urgent attention to ensure its sustainable integration into healthcare systems. Key issues include strengthening data security to protect sensitive patient information, establishing robust reimbursement policies to incentivize telemedicine adoption, and addressing disparities in internet access to ensure equitable availability of digital healthcare services. These challenges must be prioritized to expand telemedicine's reach and effectiveness in addressing healthcare needs [51–54].

The findings of this review, largely derived from the COVID- 19 pandemic [46, 47], lay the groundwork for telemedicine in crisis settings. Yet, post-pandemic scenarios require an adaptation of these solutions to address persistent challenges in refugee mental health care [48]. For example, ensuring stable funding for telemedicine infrastructure, bridging the digital divide, and developing policies for cross-border healthcare delivery are essential steps. The lessons learned from pandemic-driven telemedicine offer valuable insights for shaping long-term strategies to ensure equitable mental health care in refugee contexts [45].

Discussion

Ensuring sufficient mental health care for refugee populations is a multifaceted and urgent global concern [55]. Refugees may encounter serious challenges while trying to access conventional mental health services, including language barriers, cultural disparities, and limited access to healthcare facilities [56]. Besides, refugee camps or

settlements are often located far from established health-care facilities, making travel difficult and time-consuming. These obstacles are compounded by geographical barriers, limited availability of mental health professionals, and financial constraint [57, 58]. The critical role of coherence of care in managing refugee mental health is underscored by studies [38, 44–48], as frequent displacement and precarious living situations disrupt traditional in-person services, hindering consistent treatment [23].

Telemedicine has become a viable solution in recent years for delivering mental health treatment, offering the opportunity to provide remote care through digital technologies [59]. Telemedicine has emerged as a promising avenue for improving access to mental health care, particularly for vulnerable populations such as refugees, offering numerous benefits that enhance the accessibility, quality, and efficiency of medical services for this vulnerable population [23]. The COVID- 19 pandemic has brought attention the importance of addressing refugees' mental health needs, emphasizing the need for novel healthcare treatments, with telemedicine providing a viable path for investigation and development [60, 61].

Telemedicine offers a discreet, tactful and convenient way for refugees to access mental health services, including counseling and therapy [48]. This approach is particularly significant given that stigma, cultural barriers, and fears of discrimination frequently discourage refugees from seeking mental health support through traditional in-person settings [62]. Through telemedicine, refugees can receive psychological support in a more private and comfortable environment, encouraging more individuals to seek help [23, 48, 58]. Telemedicine interventions bridge the gap by facilitating ongoing communication between refugees and mental health professionals, fostering continuous monitoring and support, particularly valuable for chronic conditions. It also enables continuous communication with mental health professionals, fostering long-term support, especially for chronic conditions [63]. However, while telemedicine reduces geographical and cultural barriers, it may not fully address the needs of those requiring in-person services [64, 65]. Some therapeutic approaches and culturally sensitive care may be more effective face-to-face, particularly for refugees with severe conditions or low technological literacy [66, 67]. Therefore, a hybrid care model integrating telemedicine with in-person services should be explored [64, 67].

The advantages of telemedicine for refugee mental health are numerous. Telepsychiatry and mobile health interventions have successfully broken-down geographical barriers, allowing refugees in remote places to obtain services. Telemedicine connects refugees with healthcare specialists via digital platforms, ensuring they receive quick consultations, diagnoses, and treatment regardless

of their location. Studies have shown these approaches are feasible and well-accepted among refugee communities [37, 40]. Telemedicine therapies, such as remote evaluations [43], provide a light of hope for refugees who face barriers to mental healthcare access [41]. This technology reduces the need for lengthy and potentially hazardous travel, allowing consultations to take place in the comfort of refugee camps or even homes. This is a game-changer for those dealing with limited mobility, childcare duties, long commutes, or work schedules that conflict with typical clinic hours. Telemedicine also helps overcome the high cost of transportation to distant institutions. By removing these barriers, telemedicine ensures that refugees receive the mental health care they need, regardless of their circumstances [58].

Telemedicine is a mutual-gains solution for both healthcare practitioners and refugees [68]. Telemedicine benefits also include cost-effectiveness and scalability. It is a cost-effective solution that eliminates the need for expensive infrastructure, such as clinics in rural or conflict areas, and reduces travel costs for refugees, allowing them to spend more time with family or work [69]. Telemedicine makes healthcare more accessible to vulnerable groups by lowering financial barriers [68]. Digital platforms offer a scalable and cost-effective alternative to traditional in-person therapies, potentially addressing the mental health needs of refugees on a larger and more sustainable scale [68, 70]. Telemedicine may be efficiently scaled up, as evidenced by Uganda research investigating virtual reality and group therapy for young immigrants [46]. Another benefit of telemedicine platforms is the potential to incorporate language translation services. This bridges the communication gap between refugees and healthcare providers who may not speak the same language, ensuring that everyone is understood and treated appropriately [71].

Telemedicine eliminates the need for physical distance, allowing refugees to interact with mental health practitioners from anywhere. This technology goes a step further, providing services in a refugee's native language and considering their cultural background. Language and cultural barriers can be considerable, but telemedicine offers the ability to bridge them [23]. Studies, such as one on an Arabic-language CBT app for Syrian refugees in Germany, emphasize the relevance of culturally appropriate therapy [42]. This guarantees that refugees are recognized and treated according to their individual needs and experiences. The key to success is culturally responsive design, which promotes trust and participation in the healthcare system by honoring refugees' practices and choices. Studies demonstrate that telemedicine has the potential to improve refugee mental health. Mobile apps such as NESTT [44]

and virtual reality treatment [46] have shown effective in lowering mental health symptoms and improving coping abilities. These therapies have exciting prospects, but further study is needed to determine their long-term efficacy for various refugee groups.

Telemedicine has the potential to improve mental health care for refugees, but there are some difficulties. Key barriers include limited access to technology, unreliable internet connectivity, and insufficient digital literacy, all of which can hinder the effective use of telemedicine services. Research highlights those socio-economic disparities, such as poverty and resource constraints, exacerbate these challenges, limiting access to mental health care regardless of whether it is delivered in-person or online [47, 48]. These societal variables, known as social determinants of health, must be addressed to guarantee that telemedicine benefits everybody. This is where innovative solutions are required to bridge the digital divide and make telemedicine a feasible alternative for migrants.

While telemedicine shows promise, its effectiveness depends on addressing key issues like poverty, technology access, and the digital divide, which can hinder access for some refugees [47]. Socioeconomic characteristics must be considered when developing solutions to ensure equitable access. Language and cultural barriers are also important, as technologies like Virtual Reality (VR) require cultural adaptation to be effective [46]. Additionally, refugees may have concerns about data privacy due to past negative experiences with healthcare systems. Ensuring strong data security and legal protections is essential for maintaining trust and ensuring successful implementation of telemedicine services [33, 72, 73]. These concerns must be thoroughly addressed to maintain user confidence and safety, which is crucial for the successful implementation and adoption of telemedicine services [43].

To make telemedicine genuinely successful for refugees, several crucial aspects must be addressed. Analyzing how refugees use telemedicine, treatment outcomes, and patient satisfaction allows us to enhance services [58, 74]. We also need robust feedback channels that allow refugees to communicate their experiences and concerns [57]. Strong feedback mechanisms are necessary to adapt services to their needs, while sustainable funding through grants and financial programs is essential to keep telemedicine accessible [75]. Refugees need access to technology, such as mobile phones and tablets, which can be facilitated through partnerships with NGOs, governments, and corporations [76]. Reliable internet connectivity, user-friendly platforms, and clear policies are also crucial [77]. Healthcare workers must receive ongoing training in cultural competency, mental health issues

common among refugees, and how to use technology effectively and securely [78, 79].

Telemedicine can help refugees control their health. Mobile apps and platforms can include educational content, prescription reminders, and symptom trackers. This empowers refugees by providing them control over their well-being and encourages proactive health management. By solving these issues, telemedicine has the potential to be a great tool for increasing access to mental health care and empowering refugees [17, 68, 80].

Limitation

This review utilized a comprehensive search of academic databases to identify relevant studies; however, several limitations should be noted. There is a potential publication bias toward positive results, which may overestimate the reported effectiveness of telehealth interventions for refugee mental health. The diversity of methodologies across the included studies poses challenges in drawing direct comparisons or definitive conclusions. Furthermore, the specific refugee populations and resettlement contexts examined may limit the broader applicability of the findings to other refugee groups or settings. A notable gap in the literature is the underrepresentation of research focusing on refugees residing in low-income host countries. This omission could affect the generalizability of the findings to settings where resources and healthcare infrastructure are constrained. Addressing this gap in future research is critical to understanding the full potential of telemedicine in diverse refugee contexts.

Future Recommendations

To fully harness the potential of telemedicine for refugee mental health care, several targeted strategies and research directions should be prioritized. Efforts must focus on bridging the digital divide by addressing disparities in access to technology and internet connectivity. This can be achieved through partnerships among governments, NGOs, and private-sector stakeholders to provide affordable devices and reliable internet access for refugees, particularly in resource-limited settings. Additionally, telemedicine platforms and interventions should be designed with cultural sensitivity in mind. Engaging refugee communities through participatory design processes can ensure these tools are accessible, acceptable, and tailored to the diverse needs of refugee populations. Policymakers should also prioritize updating telemedicine regulations to facilitate cross-border healthcare delivery, address licensure and reimbursement issues, and uphold ethical standards, which are critical for scaling telemedicine in both crisis and resettlement contexts.

Future studies should focus on telemedicine applications tailored for resource-limited environments, addressing infrastructure challenges, cultural acceptance, and accessibility to develop sustainable models suited to these settings. Incorporating qualitative methods, such as focus groups, can provide deeper insights into the practical implementation of telemedicine. Including refugees, international experts, and local practitioners in these discussions can uncover unique barriers, facilitators, and cultural considerations often overlooked by quantitative studies. Besides, research should investigate the long-term effectiveness of telemedicine interventions across diverse refugee populations, ensuring that solutions remain adaptable to varying contexts and evolving needs. Participatory research involving refugees and host communities can guide the development of culturally appropriate telemedicine applications, prioritizing equity and social justice principles to address healthcare disparities, particularly in post-pandemic scenarios.

Conclusion

Telemedicine offers a promising alternative for improving healthcare services to refugees. It enhances access, continuity, and quality of care while being cost-effective and culturally appropriate. This strategy tackles the distinct obstacles that refugees confront, such as limited mobility, language barriers, and specialized mental health needs. It also allows individuals to manage their health more independently. The successful application of telemedicine in refugee mental healthcare requires training, capacity building, fostering fairness and inclusivity, and providing equitable access. As technology progresses, telemedicine will play an increasingly more important role in ensuring refugees receive the thorough and compassionate treatment they require. Despite its potential, telemedicine faces significant technical and governmental challenges that require urgent attention. Issues such as data security, reimbursement policies, and equitable internet access must be prioritized to scale these interventions effectively.

Abbreviations

MMAT	Mixed Methods Appraisal Tool
WHO	World Health Organization
RCT	Randomized controlled trials
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
VR	Virtual reality
PTSD	Posttraumatic Stress Disorder

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12992-025-01119-2>.

Supplementary Material 1.

Acknowledgements

The authors would like to thank the Research Center of Addiction and Behavioral Sciences, Shahid Sadoughi University of Medical Sciences for their great cooperation.

Authors' contributions

Arezo Abasi: Conceptualization, Visualization, Formal Analysis, Validation, Visualization, Writing – Original Draft Preparation, Writing – review & editing. Seyed Ali Fatemi Aghda: Visualization, Conceptualization, Formal Analysis, Investigation, Supervision, Project administration, Writing – Original Draft Preparation, Writing – Review & Editing. Mehdi Zahedian: Formal Analysis, Investigation, Writing – Original Draft Preparation. Zahra Jamshiddoust Miyaroudi: Data curation, Formal analysis, Resources, Software, Writing – Original Draft Preparation. Sajjad Bahariniya: Data curation, Formal analysis, Software, Visualization, Writing – original draft. Benyamin yazdani: Formal Analysis, Validation, Writing – review & editing. Saeed Fallah-Aliabadi: Formal Analysis, Validation, Writing – original draft. Shadi Hazhir: Conceptualization, Methodology, Formal Analysis, Validation, Project administration, Writing – original draft, Writing – review & editing. The authors read and approved the final version of the manuscript.

Funding

There is no fund.

Data availability

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Declarations

Ethics approval and consent to participate

This study was reviewed and approved by the review board and the ethics committee of Shahid Sadoughi University of Medical Sciences.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 7 April 2025 Accepted: 14 April 2025

Published online: 26 May 2025

References

- Douglas, P., M. Cetron, and P. Spiegel. Definitions matter: migrants, immigrants, asylum seekers and refugees. 2019, Oxford University Press. p. taz005.
- Paudyal, P., N. Purkait, and J. Fey. Mental health resilience among refugees and asylum seekers: a systematic review. *European Journal of Public Health*. 2023. 33(Supplement_2): p. ckad160. 1628.
- De Leo A, Cotrufo P, Gozzoli C. The refugee experience of asylum seekers in Italy: A qualitative study on the intertwining of protective and risk factors. *Journal of Immigrant and Minority Health*. 2022;24:1–13.
- Agency, U.T.U.R. Global Trends report. 2023; Available from: <https://www.unhcr.org/global-trends-report-2023>.
- Naous J. The mental health crisis in refugee populations. *Family Medicine*. 2023;55(3):140.
- Patanè M, et al. Prevalence of mental disorders in refugees and asylum seekers: a systematic review and meta-analysis. *Global Mental Health*. 2022;9:250–63.
- Agency, U.T.U.R. Mental health and psychosocial support 2021; Available from: <https://www.unhcr.org/what-we-do/protect-human-rights/public-health/mental-health-and-psychosocial-support>.
- Sim A, et al. Resettlement, mental health, and coping: a mixed methods survey with recently resettled refugee parents in Canada. *BMC Public Health*. 2023;23(1):386.
- Emmelkamp, P.M., Social support and resilience: impact on mental health, in *Mental Health of Refugees: Etiology and Treatment*. 2023, Springer. p. 69-93.
- Organization, W.H. Mental health and forced displacement. 2021; Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-health-and-forced-displacement>.
- Langarizadeh M, et al. Identifying and validating the educational needs to develop a Celiac Self-Care System. *BMC Primary Care*. 2023;24(1):121.
- (USCRI), T.U.S.C.f.R.a.I. Mental Health Awareness Month: Barriers and Access to Mental Health Care. 2024; Available from: <https://refugees.org/mental-health-awareness-month-barriers-and-access-to-mental-health-care/>.
- Whitehead L, et al. Barriers to and facilitators of digital health among culturally and linguistically diverse populations: qualitative systematic review. *Journal of medical Internet research*. 2023;25:e42719.
- Molli VLP. Enhancing Healthcare Equity through AI-Powered Decision Support Systems: Addressing Disparities in Access and Treatment Outcomes. *International Journal of Sustainable Development Through AI, ML and IoT*. 2024;3(1):1–12.
- Sarpourian F, et al. Application of telemedicine in the ambulance for stroke patients: a systematic review. *Prehospital and Disaster Medicine*. 2023;38(6):774–9.
- Langarizadeh M, et al. Design and evaluation of an educational mobile program for liver transplant patients. *BMC Health Services Research*. 2023;23(1):1–8.
- Radu I, et al. Digital Health for Migrants, Ethnic and Cultural Minorities and the Role of Participatory Development: A Scoping Review. *International Journal of Environmental Research and Public Health*. 2023;20(20):6962.
- Coetzer JA, et al. The potential and paradoxes of eHealth research for digitally marginalised groups: A qualitative meta-review. *Social Science and Medicine*. 2024;350:350.
- Budhwani S, et al. Challenges and strategies for promoting health equity in virtual care: Findings and policy directions from a scoping review of reviews. *Journal of the American Medical Informatics Association*. 2022;29:990–9.
- Langarizadeh M, et al. Design and evaluation of a mobile-based nutrition education application for infertile women in Iran. *BMC Medical Informatics and Decision Making*. 2022;22(1):1–9.
- Mirasghari F, et al. Challenges of using telemedicine for patients with diabetes during the COVID-19 pandemic: a scoping review. *J Clin Transl Endocrinol*. 2024;37(1):100361.
- Cu A, et al. Assessing healthcare access using the Levesque's conceptual framework—a scoping review. *International journal for equity in health*. 2021;20(1):116.
- Hynie M, et al. Access to virtual mental healthcare and support for refugee and immigrant groups: A scoping review. *Journal of immigrant and minority health*. 2023;25(5):1171–95.
- Ahmad F, et al. Patient perspectives on telemedicine during the COVID-19 pandemic. *Hand*. 2023;18(3):522–6.
- Guaiana G, et al. A systematic review of the use of telepsychiatry in depression. *Community mental health journal*. 2021;57:93–100.
- Disney L, Mowbray O, Evans D. Telemental health use and refugee mental health providers following COVID-19 pandemic. *Clinical Social Work Journal*. 2021;49(4):463–70.
- Mucic D, Shore J, Hilty DM. The world psychiatric association telepsychiatry global guidelines. *J Technol Behav Sci*. 2023;9:1–8.
- Hinton, D.E. and A. Patel, Culturally sensitive CBT for refugees: key dimensions. *Mental health of refugee and conflict-affected populations: Theory, research and clinical practice*. 2018. p. 201–219.
- Hilty DM, et al. A scoping review of sensors, wearables, and remote monitoring for behavioral health: uses, outcomes, clinical competencies, and research directions. *Journal of Technology in Behavioral Science*. 2021;6:278–313.
- Stoltzfus M, et al. The role of telemedicine in healthcare: an overview and update. *The Egyptian Journal of Internal Medicine*. 2023;35(1):1–5.
- Anawade, P.A., D. Sharma, and S. Gahane, A Comprehensive Review on Exploring the Impact of Telemedicine on Healthcare Accessibility. *Cureus*. 2024;16(3):1–12.
- Parkes P, et al. Telemedicine interventions in six conflict-affected countries in the WHO Eastern Mediterranean region: a systematic review. *Conflict and Health*. 2022;16(1):64.

33. Houser, S.H., C.A. Flite, and S.L. Foster. Privacy and Security Risk Factors Related to Telehealth Services—A Systematic Review. *Perspectives in health information management*. 2023;20(1):1–10.
34. Tawfik GM, et al. A step by step guide for conducting a systematic review and meta-analysis with simulation data. *Trop Med Health*. 2019;47:46.
35. Moher D, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic reviews*. 2015;4(1):1–9.
36. Moher D, et al. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*. 2009;151(4):264–9.
37. Ahmad F, et al. A pilot with computer-assisted psychosocial risk-assessment for refugees. *BMC Medical Informatics and Decision Making*. 2012;12:1–8.
38. Jefe-Bahloul H, Moustafa MK, Shebl FM, Barkil-Oteo A. Pilot assessment and survey of Syrian refugees' psychological stress and openness to referral for telepsychiatry (PASSPORT Study). *Telemed e-Health*. 2014;20(10):977–9.
39. Ferrari M, et al. Computer-assisted client assessment survey for mental health: patient and health provider perspectives. *BMC Health Services Research*. 2016;16:1–15.
40. Ben-Zeev D, et al. mHealth for mental health in the Middle East: Need, technology use, and readiness among Palestinians in the West Bank. *Asian Journal of Psychiatry*. 2017;27:1–4.
41. Green AS, Ruchman SG, Katz CL, Singer EK. Piloting forensic tele-mental health evaluations of asylum seekers. *Psychiatry Research*. 2020;291:1–3.
42. Röhr S, et al. A self-help app for Syrian refugees with posttraumatic stress (Sanadak): randomized controlled trial. *JMIR mHealth and uHealth*. 2021;9(1):e24807.
43. Pogue M, et al. Conducting remote medical asylum evaluations in the United States during COVID-19: Clinicians' perspectives on acceptability, challenges and opportunities. *Journal of forensic and legal medicine*. 2021;84:123.
44. Mazzulla EC, et al. Addressing the disparity in refugee mental health services: A pilot study of a traumatic stress intervention utilizing a language-free mHealth application. *Journal of Technology in Behavioral Science*. 2021;6(4):599–608.
45. Benjamin J, et al. Access to refugee and migrant mental health care services during the first six months of the COVID-19 pandemic: a Canadian refugee clinician survey. *International journal of environmental research and public health*. 2021;18(10):5266.
46. Logie CH, et al. Mobile Health-Supported Virtual Reality and Group Problem Management Plus: Protocol for a Cluster Randomized Trial Among Urban Refugee and Displaced Youth in Kampala, Uganda (Tushirikiane4MH, Supporting Each Other for Mental Health). *JMIR Research Protocols*. 2022;11(12):e42342.
47. Toulany A, et al. Sociodemographic differences in physician-based mental health and virtual care utilization and uptake of virtual care among children and adolescents during the COVID-19 pandemic in Ontario, Canada: a population-based study. *The Canadian Journal of Psychiatry*. 2023;68(12):904–15.
48. Hynie M, et al. Assessing virtual mental health access for refugees during the COVID-19 pandemic using the Levesque client-centered framework: what have we learned and how will we plan for the future? *International Journal of Environmental Research and Public Health*. 2022;19(9):5001.
49. Temesgen, M.W., A Framework for Evaluating Telemedicine-Based Healthcare Inequality Reduction in Ethiopia: A Grounded Theory Approach. 2019, University of South Africa.
50. Kruse CS, et al. Telemedicine use in rural Native American communities in the era of the ACA: a systematic literature review. *Journal of medical systems*. 2016;40:1–9.
51. Drake C, et al. The limitations of poor broadband internet access for telemedicine use in rural America: an observational study. *Annals of internal medicine*. 2019;171(5):382–4.
52. Mustafa A, et al. Telemedicine practice: current challenges of consent and autonomy, patient privacy and data security worldwide. *Journal of Society of Prevention, Advocacy and Research KEMU*. 2024;3(1):47–53.
53. Hand LJ. The role of telemedicine in rural mental health care around the globe. *Telemedicine and e-Health*. 2022;28(3):285–94.
54. Solimini R, et al. Ethical and Legal Challenges of Telemedicine in the Era of the COVID-19 Pandemic. *Medicina*. 2021;57(12):1314.
55. Im H, Rodriguez C, Grumbine JM. A multitier model of refugee mental health and psychosocial support in resettlement: Toward trauma-informed and culture-informed systems of care. *Psychological services*. 2021;18(3):345.
56. Kirmayer LJ, et al. Common mental health problems in immigrants and refugees: general approach in primary care. *Cmaj*. 2011;183(12):E959–67.
57. Sherif B, Awaisu A, Kheir N. Refugee healthcare needs and barriers to accessing healthcare services in New Zealand: a qualitative phenomenological approach. *BMC Health Services Research*. 2022;22(1):1310.
58. Blackstone SR, Hauck FR. Telemedicine use in refugee primary care: implications for care beyond the COVID-19 pandemic. *Journal of immigrant and minority health*. 2022;24(6):1480–8.
59. Sarpourian F, et al. Effectiveness of computer-based telerehabilitation software (RehaCom) compared to other treatments for patients with cognitive impairments: A systematic review. *Digital Health*. 2024;10:1–10.
60. Omboni S, et al. The worldwide impact of telemedicine during COVID-19: current evidence and recommendations for the future. *Connected health*. 2022;1:7.
61. Bokolo AJ. Application of telemedicine and eHealth technology for clinical services in response to COVID-19 pandemic. *Health and technology*. 2021;11(2):359–66.
62. Mohammadifrouzeh M, et al. Factors associated with professional mental help-seeking among US immigrants: A systematic review. *Journal of immigrant and minority health*. 2023;25(5):1118–36.
63. Sandre AR, Newbold KB. Telemedicine: bridging the gap between refugee Health and Health services accessibility in Hamilton. *Ontario Refuge*. 2016;32:108.
64. Daniel KE, et al. Integrated model of primary and mental healthcare for the refugee population served by an academic medical centre. *Family Medicine and Community Health*. 2023;11(2):1–7.
65. Rowley EA, Burnham GM, Drabe RM. Protracted refugee situations: parallel health systems and planning for the integration of services. *Journal of refugee studies*. 2006;19(2):158–86.
66. Sackey D, Jones M, Farley R. Reconceptualising specialisation: integrating refugee health in primary care. *Australian Journal of Primary Health*. 2021;26(6):452–7.
67. Khatoun S. Implementation of telemedicine project in Bhutanese refugee camp in Nepal. *European Journal of Public Health*. 2020;30(Supplement_5):ckaa165.228.
68. Haleem A, et al. Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors International*. 2021;2:1–12.
69. Watch, H.R. A Disaster for the Foreseeable Future. 2024; Available from: <https://www.hrw.org/report/2024/02/12/disaster-foreseeable-future/afghanistans-healthcare-crisis>.
70. Abasi A, et al. Machine learning models for reinjury risk prediction using cardiopulmonary exercise testing (CPET) data: optimizing athlete recovery. *BioData Mining*. 2025;18(1):1–25.
71. Thonon F, et al. Electronic tools to bridge the language gap in health care for people who have migrated: systematic review. *Journal of medical Internet research*. 2021;23(5):e25131.
72. Mangrio E, Sjögren K, Sjögren Forss, Refugees' experiences of healthcare in the host country: a scoping review. *BMC health services research*. 2017;17:1–16.
73. Karami M, Fatehi M, Torabi M, Langarizadeh M, Rahimi A, Safdari R. Enhance hospital performance from intellectual capital to business intelligence. *Radiol Manage*. 2013;35(6):30–5.
74. Philippe TJ, et al. Digital health interventions for delivery of mental health care: systematic and comprehensive meta-review. *JMIR mental health*. 2022;9(5):e35159.
75. Sabie, D. and S.I. Ahmed. Moving into a technology land: exploring the challenges for the refugees in Canada in accessing its computerized infrastructures. in *Proceedings of the 2nd ACM SIGCAS Conference on Computing and Sustainable Societies*. 2019.
76. Agency, U.T.U.R. Connecting Refugees. 2018; Available from: https://www.unhcr.org/innovation/wp-content/uploads/2018/02/20160707-Connecting-Refugees-Web_with-signature.pdf.
77. Tarafdar, M.Z., Software development for a secure telemedicine system for slow internet connectivity. 2019, University of Dhaka.
78. Koly KN, et al. Educational and training interventions aimed at healthcare Workers in the Detection and Management of people with mental health conditions in south and South-East Asia: a systematic review. *Frontiers in psychiatry*. 2021;12:741328.

79. Silver C, Williams S, Forty L. Cultural competency and mental health training for medical students: Learning from refugees and asylum seekers. *Health Education Journal*. 2023;82(6):708–21.
80. Liem A, et al. Digital health applications in mental health care for immigrants and refugees: a rapid review. *Telemedicine and e-Health*. 2021;27(1):3–16.

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