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Systematic Review

Bridging the Gap: A Systematic Review and Meta-Analysis of Interventions to Address Barriers in Migrant Mental Health Care Access

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Abstract: Despite their higher risk of mental health conditions, migrants often face barriers to accessing mental health care. This systematic review aims to synthesize the evidence on interventions to improve mental health care access for migrants (protocol CRD42024556575). PubMed, Embase, PsycINFO, and CINAHL were searched for experimental and observational studies on this topic. A narrative summary and a meta-analysis of the study findings are presented, along with a GRADE quality assessment. Eighteen reports, accounting for 3285 migrants, were included in the final selection. There were six randomized controlled trials, nine non-randomized clinical trials, and three observational studies. The interventions consisted of psychoeducation (27.8%), digital tools (22.2%), outreach programs, counseling, peer support (each 11.1%), and miscellaneous approaches (16.7%). There was marked heterogeneity in the intervention structure and outcome measure across the studies. Nevertheless, all studies reported a positive effect of the interventions on mental health care access. Still limited by few studies providing data suitable for the pooled estimate, the meta-analyses found a significant effect in reducing stigma and improving mental health literacy. Overall, this review identified promising interventions for improving migrant mental health care access. Future research is needed to validate interventions that can be applied sustainably across different contexts and migrant populations.

Keywords: migrants; refugees; mental health; health service access; meta-analysis

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1. Introduction

Migrant populations represent a heterogenous and growing group in many countries. Understanding the migration phenomenon is challenging due to its multifactorial nature and the complex interplay of so-called "push and pull" factors [1]. Migrants can be broadly classified as either "voluntary" or "involuntary", depending on whether the movement is intentional or forced [2]. Migration motivations range from socio-economic to environmental factors, each representing different push and pull dynamics that evolve over time and influence migration patterns. For example, human migration driven by climatic change has a well-documented historical precedent, yet the impact of anthropogenic climate change on human migration is a relatively recent phenomenon and is progressively intensifying [3].

Migrants often face unique challenges that can cause and exacerbate mental health conditions [4–6]. Although prevalence rates differ among various migrant categories (immigrants, asylum seekers, refugees, and resettled refugees), they generally face a higher risk of developing mental illness than the local population, particularly mood and stress

disorders. For instance, estimates suggest that up to 25% of refugees suffer from post-traumatic stress disorder (PTSD), compared to 7% in the general population [7,8]; 4–6% suffer from major depression [9], and 18% present suicidal ideation [10].

Risk factors for mental health among immigrants and refugees begin before arrival in the host country, often due to traumatic events experienced before and during migration, especially among refugees [5,11]. Such events can include exposure to war (both directly and indirectly), economic hardship, life-threatening situations, and physical harm. After arrival in the host country, risk factors are mainly related to resettlement challenges, including poor living conditions, social isolation, unemployment, and acculturation difficulties [12].

It is important to highlight that addressing mental health can positively impact physical health, as these two aspects are deeply interconnected [13]. Mental disorders are frequently comorbid with chronic physical conditions, such as cardiovascular diseases, metabolic syndrome, or cancer, having reciprocal influences and leading to increased mortality [14–16]. Notably, individuals with mental disorders often face difficulties in effectively communicating and managing their physical health needs [17]. Therefore, integrating mental health care within broader health strategies can have wider implications for migrants' health. There are then non-medical factors capable of influencing health outcomes, which the World Health Organization (WHO) identifies as the "social determinants of health" [18]. In the context of migration, this framework effectively emphasizes how several social factors, such as income, employment, housing, social networks, and access to services, further compound health challenges among migrants [19,20]. Importantly, social determinants and mental health also exert a reciprocal impact [21], further shaping migrants' bio-psycho-social complexity.

In spite of the higher risk of mental health conditions among migrants, their challenges are often compounded by encountering barriers to accessing mental health care [22–24]. While these barriers contribute to the gap between the prevalence of mental disorders and their treatment in the general population [25], the migrant status might interact with other vulnerabilities resulting in even greater challenges. For example, elder or minor migrants, those belonging to racial/ethnic minorities, those from the lesbian, gay, bisexual, and trans (LGBT) groups, or those living in socio-economically disadvantaged and rural areas face even greater challenges for mental health and to access mental health care services [26–28].

Byrow et al. [29] conducted a systematic review analyzing the key perceived barriers that impede refugees and asylum seekers from seeking mental health assistance. The authors categorized these barriers into three main groups: (1) cultural barriers, predominantly comprising stigma and low mental health literacy; (2) structural barriers, primarily including language and logistical factors; and (3) refugee-specific factors affecting beliefs, notably a lack of trust stemming from prior traumatic experiences.

Interventional studies, which include targeted programs, policies, and practices, are crucial for improving access and the effectiveness of mental health care for migrants. These interventions can be designed to overcome specific barriers, promote awareness, and provide appropriate cultural and linguistic support [30,31].

Although several studies have examined strategies to improve mental health care access for migrants, there is a lack of a systematic and comprehensive synthesis of the interventions tested and their impact. A panoramic evaluation of the long-term effectiveness of the interventions and their scalability across different settings and migrant communities is missing, although these aspects are crucial for the planning and application of future interventions.

This systematic review aims to provide a descriptive synthesis of trends and characteristics in research on interventions to improve mental health care access for migrant populations. As such, this review addresses the following questions: Which interventions prove most effective in enhancing access to mental health care for migrants? What key features characterize successful interventions? And lastly, what areas within this field require further research?

2. Materials and Methods

This systematic review and meta-analysis was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [32]. The protocol of this study was registered with PROSPERO (CRD42024556575).

2.1. Search Strategy and Selection Criteria

We searched the PubMed (Medline), CINAHL, PsycINFO, and EMBASE databases until 31 March 2024 using the strategy outlined in Supplemental Table S1. No restrictions regarding the language of publication or publication date were set in the initial search; however, in the eligibility, only English full texts were considered. To be eligible for the review, a study had to meet the following pre-specified criteria for population, intervention, control, outcome, and study design (PICOS).

Population. We considered migrants as people moving from a home country to another, different country. "Migrant" is a broad term that includes both immigrants (i.e., individuals who choose to move from one place to another) and refugees (i.e., individuals who are forced to migrate) [33]. We included studies on a sample of migrants of any gender, age, and cultural background, tolerating a percentage < 10% of non-migrant participants when the interventions were not exclusively directed at migrants but also at the local population. If this percentage of non-migrant participants was higher and extracting information on the migrant subsample was not possible, the study was excluded. Studies on internal migrants (i.e., people moving within the same country) were also excluded.

Intervention. Any intervention aimed at improving mental health care access was eligible for this review.

Comparator. Any control group as applied in the primary study, including no intervention or the condition before the implementation of the intervention.

Outcome. For our primary outcome, we considered the effect on mental health care access, as measured in the primary studies. Where available, we also considered as secondary outcomes the pre-post treatment change in mental health symptoms, measured with validated psychometric tools.

Study design. We included observational and experimental studies with any study design, but we excluded qualitative studies, case reports, case series, and reviews, although the reference lists of the reviews have been screened to identify any potentially eligible studies that could have been missed during the literature search. We only included studies published in peer-reviewed journals, excluding conference abstracts and dissertations.

If data from the same sample were published in multiple works, we performed deduplication by considering only the study that reported more exhaustive information. Sample overlap was ruled out through a careful check of the registration codes as well as the place and year(s) of sampling.

2.2. Data Extraction

All retrieved articles in the original search were screened independently by two review authors (G.L. and A.D.Y.) for inclusion based on the title and the abstract. This initial screening was followed by the analysis of full texts; G.L. and A.D.Y. working independently evaluated full texts to identify studies for inclusion and recorded reasons for exclusion. All disagreements were discussed with another member of the team (M.M.) until a consensus was reached. For each eligible trial, two review authors (G.L. and A.D.Y.) independently extracted the following information: (1) study characteristics (first author's last name, year of publication, country, study design, number of participants); (2) participant characteristics (age, sex/gender, migration status, ethnic background); (3) intervention details (components of the intervention, comparator used where applicable, number of sessions, duration); and (4) the main findings of each study and, where reported, quantitative outcome measures of interest (as post-intervention means, standard deviations [SDs] for continuous measures, number of events for binary outcomes, and time of data collection).

Extraction sheets for each study were cross-checked for consistency, and any disagreement was resolved by discussion within the research group.

2.3. Strategy for Data Synthesis

If the experimental and control groups appeared similar enough for pooling to make sense, we conducted the meta-analysis to summarize quantitative data among studies. We used inverse-variance models with random effects to summarize both continuous and dichotomous outcome data [34]. For continuous outcome data, we calculated the Hedges' g standardized mean differences (SMDs) and the corresponding 95% confidence intervals (CIs); for dichotomous outcome data, we calculated the pooled odds ratios (ORs) and the corresponding 95% CIs [35]. Standard Q tests and the I^2 statistic (i.e., the percentage of variability in the estimates attributable to heterogeneity rather than sampling error or chance, with values of I^2 75% indicating high heterogeneity) were used to assess between-study heterogeneity [36]. The results were summarized using forest plots. If the meta-analysis included at least 10 studies [37], we would perform funnel plot analysis and the Egger test to test for publication bias. If analyses showed a significant risk of publication bias, we would use the trim and fill method to estimate the number of missing studies and the adjusted effect size [38–41].

The analyses were performed using the meta and metafor packages in R version 4.4.0 [42,43]. Statistical tests were two sided and used a significance threshold of $p < 0.05$. In addition, a narrative synthesis of each study's findings was performed by grouping interventions with similar components and synthesizing their reported effect on mental health care access. A pragmatic approach was adopted, considering the characteristics of the intervention, the study aims, and the main findings of each study, as reported in the original publications. The grouping of interventions was performed independently by two review authors (G.L. and A.D.Y.) and subsequently discussed with a third review author (M.M.) until a consensus was reached.

2.4. Risk of Bias Assessment

Bias risk in the included studies was independently assessed by two reviewers (M.M. and G.L.) using the Cochrane risk of bias tool [44]. All disagreements were discussed within the research group until a consensus was reached. Each item on the risk of bias assessment was scored as high, low, or unclear, and the grading of recommendations assessment, development, and evaluation (GRADE) tool was used to assess the overall certainty of evidence [45].

3. Results

3.1. Study Characteristics

As shown in Figure 1, of the 1754 records screened on the title and abstract, 57 (3.2%) full texts were analyzed. The review process led to the selection of 18 (1.0%) studies [46–63] referring to 18 independent samples, corresponding to a total of 3285 migrants, which were included in the final selection and data synthesis. The reference list of the full texts excluded and the reason for their exclusion are available in Supplementary Table S2.

Most of the selected studies were conducted in the United States of America (USA, $n = 8$; 44.4%), followed by Australia ($n = 3$; 16.7%), Canada ($n = 2$; 11.1%), Malaysia, Germany, Denmark, the United Kingdom (UK), and South Africa (each $n = 1$; 5.56%). The median age of participants was 39 years old (range 16–80), and the percentage of females across the studies ranged from 0 to 100%. Concerning the migrant status of the study's participants, nine studies (61.1%) enrolled regular immigrants, whereas seven (38.9%) involved refugees. Table 1 summarizes the main characteristics of the participants in each study included in this review.

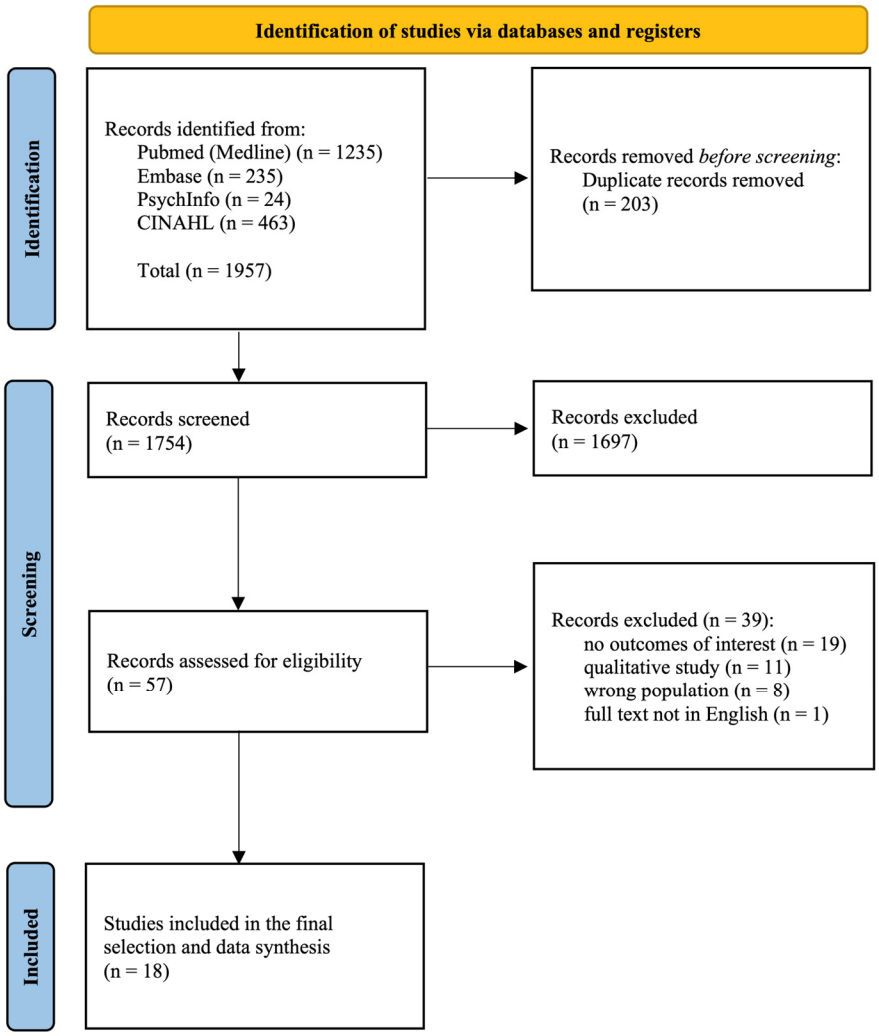

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram. Legend: Percentages in the left-hand-side boxes represent the proportion relative to the number in the box directly above. Percentages in the right-hand-side boxes represent the proportion relative to the number in the box directly to the left.

Table 1. Characteristics of the participants in each study.

Author, Year	Country	Setting	N	Gender	Mean Age (SD) or Range	Migrant Status	Cultural Background
Ahmad et al., 2017 [46]	Canada	Community health center	147	Female: 61%; male: 36%; transgender: 6%	37.0 (12.4)	Regular immigrants	Latin America, South Asia, Middle East, and Africa
Andrews et al., 2022 [47]	USA	Primary care clinics and cultural community centers	20	Female: 90%; male: 10%	37.0 (8.8)	Regular immigrants	Latin America
Blignault et al., 2021 [48]	Australia	Community	271	Female: 87%; male: 13%	16–65	Regular immigrants	Arabic and Bangla

Table 1. *Cont.*

Author, Year	Country	Setting	N	Gender	Mean Age (SD) or Range	Migrant Status	Cultural Background
Denkinger et al., 2022 [49]	Germany	Community	134	Female: 28%; male: 72%; non-binary: 1%	31.1 (8.4)	Refugees	Middle East
Diaz-Perez et al., 2004 [50]	USA	Migrant/ community health center	1553	Female: 52%; male: 44.8%	16–68	Regular immigrants	Mexican
Huang et al., 2023 [51]	USA	Community	71	Female: 51%; male: 48.6%	66.6 (5.2)	Regular immigrants	Vietnamese
Huminiuk et al., 2022 [52]	Canada	Community	74	Female: 59%; male: 35%; transgender: 5%	31–70	Refugees	Middle East
Jang et al., 2014 [53]	USA	Online	14	Female: 57%; male: 43%	80.4 (7.2)	Regular immigrants	Korean
Kiropoulos et al., 2011 [54]	Australia	Online	202	92	65.4 (8.6)	Regular immigrants	Greek and Italian
Martinez et al., 2024 [55]	UK	Online	21	Female: 100%	NR	Regular immigrants	Filipino
Martinez Rodriguez et al., 2022 [56]	USA and Mexico	Community	25	Female: 62%; male: 38%	39.8 (9.5)	Regular immigrants	Mexican
Mucic, 2010 [57]	Denmark	Online	61	NR	NR	Refugees and regular immigrants	Mainly ex-Yugoslavia
Nickerson et al., 2020 [58]	Australia	Online	103	Male: 100%	39.4 (9.9)	Refugees	Arabic
Shaw et al., 2023 [59]	Malaysia	Community	137	Female: 59%; male: 41%	34.4 (10.2)	Refugees	Afghan, Rohingya, and Somali
Sternberg et al., 2019 [60]	USA	Community	44	Female: 77%; male: 23%	45.2 (14.0)	Regular immigrants	Latin America
Tomita et al., 2016 [61]	South Africa	Social service settings	153	Female: 50%; male: 50%	21–59	Refugees	African
Tran et al., 2014 [62]	USA	Community	58	Female: 100%	38.2 (NR)	Regular immigrants	Latin America
Weine et al., 2008 [63]	USA	Community	197	Female: 52%; male: 48%	37.7 (9.8)	Refugees	Bosnian

Abbreviations (in alphabetical order): N: number; SD: standard deviation; UK: United Kingdom; USA: United States of America.

There were six (33.3%) randomized controlled trials (RCTs), four (22.2%) with pre-post comparison, and the remaining eight (44.4%) were non-controlled studies. The study duration ranged from 1 week to 34 months (median 3 months). All the studies evaluated the effect of the tested intervention on mental health care access or help-seeking propensity, and most of them also evaluated changes in the symptoms of depression, anxiety, and mental health distress. Table 2 displays the main characteristics of the studies included in this review.

Table 2. Characteristics of the studies included in this review.

Author, Year	Study Design	Study Years	N Intervention/ Control	Follow Up	Outcomes Reported
Ahmad et al., 2017 [46]	RCT	2013–2014	75/72	NR	Patient discussion on mental health and clinician detection of mental health symptoms.
Andrews et al., 2022 [47]	Open-pilot trial	NR	20/NA	NR	A mixed methods interview regarding patients' perceptions of the treatment; PCL-IV; PHQ.
Blignault et al., 2021 [48]	Pre-post controlled trial	NR	271/271	4 weeks	K10+; DASS21; interview regarding access to mental health care; mental health literacy.
Denkinger et al., 2022 [49]	Convergent parallel mixed methods design	2020	134/NA	3 months	PHQ; PTSD-SS; SSOMI; mental health services access.
Diaz-Perez et al., 2004 [50]	Longitudinal observational study	NR	1553/NA	6 months	Health services utilization; PHQ.
Huang et al., 2023 [51]	RCT	NR	37/34	8 weeks	PDI; HSCL-25; RSES; GSE; PSS; SF-36; BST; number of lishi sessions attended.
Huminiuk et al., 2022 [52]	Naturalistic interventional study with mixed methods evaluation	NR	74/NA	NR	PHQ; GAD-7; HTQ; clients' satisfaction; semi-structured interviews.
Jang et al., 2014 [53]	Open-pilot trial	2012	14/NA	3 months	CSQ; PHQ.
Kiropoulos et al., 2011 [54]	RCT	2006–2009	110/92	1 week	Adapted D-Lit scale; DSS; BDI.
Martinez et al., 2024 [55]	Mixed methods, non-randomized single-group study	2017	21/NA	4 months	IASMHS; MHLS; GHSQ.
Martinez Rodriguez et al., 2022 [56]	Longitudinal study with pre-post single-arm design	2019–2020	25/25	5 months	NPCAQ; MHCSCS; K10+; semi-structured interviews.
Mucic, 2010 [57]	Retrospective survey	2005–2007	61/NA	34 months	A 10-item questionnaire that explored patients' satisfaction and attitude toward the telepsychiatry service.
Nickerson et al., 2020 [58]	RCT	NR	54/49	8 weeks	PC-PTSD; HTQ; PTSD-DS; HSCL-25; SSDS; SSSHS; GHSQ; AHSQ; program usability with a 14-item scale designed for the study.
Shaw et al., 2023 [59]	RCT	2018–2020	66/71	30–70 days	RHS-15; access to services for counseling, legal assistance, education, basic supplies, medical care, and family planning.
Sternberg et al., 2019 [60]	Longitudinal study with pre-post single-arm design	2015	44/NA	14 weeks	SOIS; PSS; PHQ.
Tomita et al., 2016 [61]	Longitudinal cohort study	2013–2014	153/NA	33 days	QIDS.

Table 2. *Cont.*

Author, Year	Study Design	Study Years	N Intervention/ Control	Follow Up	Outcomes Reported
Tran et al., 2014 [62]	Pre–post one-group study	NR	58/NA	NR	CES-D; PATRCDS; PSS; SPSS; brief-COPE.
Weine et al., 2008 [63]	RCT	NR	110/87	18 months	Number of mental health visits in the past 6 months; PCL-IV; CES-D; knowledge about PTSD; family comfort discussing mental health.

Abbreviations (in alphabetical order): AHSQ: actual help-seeking questionnaire; BDI: Beck depression inventory; brief-COPE: brief-coping orientation to problems experienced; BST: balance screening tool; CES-D: center for epidemiological studies scale for depression; CSQ: client satisfaction questionnaire; DASS-21: depression anxiety stress scale short version; D-Lit: depression literacy scale; DSS: depression stigma scale; GHSQ: general help-seeking questionnaire; GSE: general self-efficacy scale; HSCL-25: Hopkins symptom checklist-25; HTQ: Harvard trauma questionnaire; IASMHS: inventory of attitudes towards seeking mental health services; K10+: Kessler psychological distress scale; MHCSCS: mental health and coping skills of college students; MHLS: mental health literacy scale; N: number; NA: not applicable; NPCAQ: nursing professional coping attitudes questionnaire; NR: not reported; PATRCDS: patient attitude toward and ratings of care for depression scale; PCL-IV: PTSD checklist for DSM-IV, civilian version; PC-PTSD: primary care PTSD screen for DSM-5; PDI: pain disability index; PHQ: patient health questionnaire; PSS: perceived stress scale; PTSD: post-traumatic stress disorder; PTSD-DS: PTSD diagnostic scale; PTSD-SS: short screening scale for DSM-IV PTSD; QIDS: quick inventory of depressive symptomatology; RCT: randomized controlled trial; RHS-15: refugee health screening; RSES: Rosenberg self-esteem scale; SF-36: self-reported health survey; SOIS: stress of immigration scale; SPSS: scale of perceived social support; SSDS: self-stigma for depression scale; SSOMI: self-stigma of mental illness; SSSHS: self-stigma of seeking help scale.

3.2. Narrative Synthesis of Studies' Findings About Mental Health Care Access

The studies included in this review explored a variety of interventions designed to improve access to mental health care for migrant populations. These interventions acted on growing awareness of psychiatric disorders, reducing mental health stigma, and enhancing the cultural competence of health care providers working with migrants. For the narrative synthesis purpose, the interventions can be categorized into the following groups: psychoeducation (n = 5; 27.8%), digital tools (n = 4; 22.2%), outreach programs (n = 2; 11.1%), counseling (n = 2; 11.1%), mental health promotion through peer supporters (n = 2; 11.1%), and miscellaneous approaches (n = 3; 16.7%).

3.2.1. Psychoeducation

Psychoeducation aims at educating individuals about psychiatric disorders, their symptoms, and management strategies. The studies on psychoeducation reveal a wide range of possibilities to adapt these programs according to the specificities of the targeted migrant population.

According to Martinez et al. [55], a culturally adapted mental health literacy program significantly increased help-seeking behavior among Filipino migrant domestic workers in the UK. Weine et al. [63] delivered a psychoeducational intervention within multiple-family sessions, resulting in significant improvements in mental health visit frequency and trauma-related mental health knowledge. Such findings suggest that group-based interventions can foster a supportive environment, encouraging individuals to seek help. Shaw et al. [59] examined the Screening, Brief Intervention, and Referral to Treatment (SBIRT) model, a one-session group psychoeducation aimed at promoting emotional well-being and access to health services among refugees in Malaysia. This intervention effectively reduced emotional distress and improved access to services, particularly counseling and legal assistance, highlighting the potential of brief, targeted interventions in addressing the immediate needs of this vulnerable population. Martinez Rodriguez et al. [56] developed and tested a psychoeducational intervention focused on protective mental health factors and coping strategies for Mexican immigrants. The program, consisting of ten 120 min group sessions, was effective in improving knowledge and reducing distress among participants

who attended at least 70% of the sessions, supporting the value of sustained engagement in psychoeducational interventions. Finally, Denkinger et al. [49] introduced an innovative psychoeducational intervention using an animated film titled "Coping with Flight and Trauma", available in English, Arabic, and German. Participants reported reduced self-stigma and increased openness towards accessing mental health services immediately after viewing the film. Moreover, 11% of participants reported starting psychotherapy within four months of watching the film. This intervention shows the potential of psychoeducation and multimedia tools integration.

Collectively, these findings suggest that psychoeducation is a versatile and well-accepted tool for promoting mental health care access among migrants. The main limitation of psychoeducational interventions is related to their high attrition. A key factor in the success of these programs is their cultural adaptation, which ensures that the content is relevant and engaging for the target population. Additionally, many of these programs were facilitated by trained local advisors and delivered in various settings, further enhancing their feasibility and deliverability.

3.2.2. Digital Tools

Digital tools also featured prominently in the reviewed studies, reflecting a growing trend towards leveraging technology to improve access to mental health care [64]. These tools included smartphone apps, websites, and informational videos. Advantages are in their immediacy and capability to reach a large number of individuals, allowing for more frequent and flexible delivery of interventions. For example, Kiropoulos et al. [54] developed a culturally adapted website providing online multilingual information about depression targeting middle- to older-aged Greek- and Italian-born immigrants living in Australia. The website effectively increased users' knowledge of depression and decreased personal stigma. Ahmad et al. [46] explored the use of a digital tool in community health centers in Toronto to improve the detection of common mental disorders among immigrants. The tool, which included validated screening scales, was administered to patients in the general practitioner (GP) waiting room, producing individualized reports for both patients and clinicians. This approach led to an increase in patient–clinician discussions about mental health and a higher frequency of mental health symptom detection. The study demonstrates how digital tools can be integrated into existing health care settings to enhance service delivery. Nickerson et al. [58] took a more interactive approach with their online tool, "Tell Your Story" (TYS), designed to reduce self-stigma related to PTSD and promote help seeking among refugee men. The tool featured videos of Arabic-, Farsi-, and Tamil-speaking men sharing their personal experiences, which helped facilitate social contact and reduce stigma. This intervention did not involve any therapist assistance; however, a computerized algorithm was used to provide feedback on participants' responses to various activities, assisting them in generating a help-seeking plan. The intervention was effective in reducing self-stigma and increasing help-seeking behavior. Mucic [57] focused on teleconsultation, providing bilingual mental health services via videoconferencing to Bosnian refugees. The study found high levels of satisfaction among participants, with many expressing a willingness to use teleconsulting again in the future.

Digital tools offer a promising avenue for expanding access to mental health care, particularly as technology continues to evolve. However, there are also limitations to consider. Access to digital devices and stable internet connections can be a significant barrier for refugees and migrants facing economic hardship or living in remote areas. Additionally, digital literacy, particularly among older migrants, remains a critical challenge. Despite these barriers, the potential for digital tools to reach and support underserved populations is substantial, and further research in this area is likely to yield improvements in mental health care access.

3.2.3. Outreach Interventions

Immigrants often live isolated from major urban centers, where most health services are concentrated. To address this challenge, some researchers have developed outreach interventions designed to bring mental health services and information directly to these remote areas where migrants live and work. For example, Diaz-Perez et al. [50] implemented an outreach program using a mobile unit that traveled to gathering places frequented by Mexican immigrants working in rural Colorado. The mobile clinic provided preventive health care, including mental health services, as well as education and primary care for acute issues. Over six months, the high utilization of this mobile unit highlighted both the need for such services and the effectiveness of bringing care directly to this population. Additionally, approximately 35% of those who received consultations through the mobile clinic followed up with further care in other clinics within the next year. In another study, Tomita et al. [61] explored the use of SMS-based methods to screen for depression risk among refugees living in South Africa. The study found that remote screening tools were well accepted by participants, offering a viable alternative to traditional face-to-face screening methods, particularly for those living in hard-to-reach areas. However, challenges remain in ensuring effective follow-up care and achieving broad coverage through these outreach efforts, highlighting areas for future improvement.

3.2.4. Counselling

Counseling is a mental health intervention aimed at providing support, guidance, and treatment to individuals experiencing mental distress. For migrant populations, culturally adapted counseling is particularly crucial, as it considers the unique cultural, linguistic, and socio-economic factors that affect their mental health. This approach involves a trained counselor working collaboratively with migrants to explore their thoughts, emotions, and behaviors and to develop strategies for coping with mental health issues. Research showed that culturally sensitive counseling can improve mental health outcomes for migrants by fostering comfort and trust in the therapeutic process. For instance, Jang et al. [53] studied a pilot tele-counseling program aimed at addressing the mental health needs of older Korean immigrants who experience linguistic isolation. By connecting these individuals with counselors fluent in Korean, the program overcame significant language barriers, enabling more effective communication and support. Participants in the study reported notable improvements in their mental health and overall well-being, demonstrating the benefits of providing culturally and linguistically appropriate care. In another study, Huminuik et al. [52] examined a pilot program in Canada that integrated mental health services within refugee settlement services. This program employed a culturally responsive, multilingual team to deliver counseling, effectively reducing symptoms of anxiety, depression, and PTSD among refugees. Participants expressed high satisfaction with the accessible and culturally sensitive care they received. However, the one-on-one nature of counseling and the need for multiple sessions to achieve significant benefits can make this approach resource-intensive and challenging to scale.

3.2.5. Mental Health Promotion Through Peer Supporters

Peer supporters, often community health workers (CHWs), play a critical role in improving access to mental health services for migrant populations by bridging the gap between patients and services. Recent studies highlight the effectiveness of community-based interventions led by CHWs. One such program, described by Tran et al. [62], was the promotora (i.e., CHW) program for immigrant Latinas. This intervention resulted in significant reductions in preclinical symptoms of depression and stress among participants. Similarly, Sternberg et al. [60] examined a program where male CHWs, or promotores, provided support to other Latino immigrants through a group-based stress management program. The intervention successfully addressed barriers, such as stigma around seeking care for depression and the lack of access to culturally appropriate, Spanish-language mental health services.

The involvement of peer supporters in mental health care aligns with findings in the broader literature, which emphasize the importance of culturally competent care [65,66]. However, the selection and training of CHWs are crucial factors that can impact the success of these programs. Despite these challenges, the evidence suggests that incorporating peer supporters into mental health care for migrants can improve outreach, understanding, and advocacy for mental health interventions.

3.2.6. Miscellaneous

Recent studies also underscore the importance of culturally tailored interventions in improving mental health outcomes among various migrant communities. For instance, Andrews et al. [47] culturally adapted the Written Exposure Therapy (WET) for Latinx immigrants and found that despite perceived barriers, participants experienced improvements in PTSD symptoms. Additionally, two other studies focused on relaxation approaches to enhance mental health literacy and well-being among migrants. Blingault et al. [48] culturally adapted mindfulness groups for Arabic- and Bangla-speaking immigrants in Australia, while Huang et al. [51] promoted mental and physical health among Vietnamese immigrants by incorporating lishi, a culturally relevant movement exercise. Both studies highlight the positive impact of culturally sensitive, community-based programs in enhancing the well-being of diverse migrant populations.

The main findings of each study are summarized in Table 3.

Table 3. Narrative summary of the studies' findings.

Author, Year	Study Aim	Intervention	Control	Main Findings
		RCTs		
Ahmad et al., 2017 [46]	To study the efficacy of the tool for improving discussion about mental health issues and detection of mental illness in an urban community health center in Toronto.	A digital tool with validated screening scales for common mental disorders administered to patients in the GP waiting room.	Usual care	The tool was effective in significantly increasing the frequency of patient discussions about mental health and the frequency of detection of mental health symptoms.
Huang et al., 2023 [51]	To examine the use of *lishi* in increasing treatment engagement among a sample of Vietnamese old adults.	*Lishi* is a traditional East Asian movement exercise promoting the integration of health and body awareness. *Lishi* sessions lasted 1 h once a week for 8 consecutive weeks.	Waitlist	Increased levels of self-efficacy and physical energy, less bodily pains, and better body balance.
Kiropoulos et al., 2011 [54]	To investigate the effects of Multicultural Information on Depression Online (MIDonline) on depression literacy, depression stigma, and depressive symptoms in Greek-born and Italian-born immigrants to Australia.	MIDonline is a website that provides online multilingual and culturally relevant information about depression and is designed for middle- to older-aged consumers from a non-English-speaking background. The material is available in Greek, Italian, and English.	Semi-structured interviews with a bilingual interviewer asking open-ended questions about depression	The website proved effective in increasing depression knowledge and decreasing personal stigma in non-English-speaking immigrant populations. For perceived interpersonal stigma and depression level, there were no differences between the two groups.

Table 3. *Cont.*

Author, Year	Study Aim	Intervention	Control	Main Findings
Nickerson et al., 2020 [58]	To assess the efficacy of an online intervention in reducing self-stigma related to PTSD symptoms and increasing help seeking.	"*Tell your story*" is an online program to specifically target self-stigma related to PTSD and help seeking amongst refugee men.	Waitlist	The findings suggest that evidence-based stigma reduction strategies are beneficial in targeting self-stigma related to help seeking and increasing help seeking amongst refugees.
Shaw et al., 2023 [59]	This study examines the implementation of a model promoting emotional well-being and access to services.	Screening, Brief Intervention, and Referral to Treatment is a one-session psychoeducational group delivered by refugee facilitators.	Waitlist	The intervention was feasible to implement and effective in reducing emotional distress among Afghan and Rohingya participants and increasing service access among Somali participants.
Weine et al., 2008 [63]	To analyze the effects of a multiple-family group in increasing access to mental health services for refugees with PTSD.	Coffee and Family Education and Support is a time-limited intervention of nine multiple-family group sessions over 16 weeks.	No intervention	The multiple-family group was effective in increasing access to mental health services.
		Clinical trials (non-randomized)		
Andrews et al., 2022 [47]	To culturally adapt WET into Spanish using culturally appropriate language, to assess the perceived barriers and benefits of the intervention, and to test the potential symptom reduction in a sample of Latinx immigrants.	WET consists of five treatment sessions that last approximately 45 min each in which participants, for 30 min, write about the currently most distressing traumatic event they have experienced.	NA	Results suggested WET may reduce PTSD symptoms among Latinx immigrants and appeared to be acceptable and primarily viewed as beneficial among this population.
Blignault et al., 2021 [48]	To establish the efficacy of the group mindfulness program and its transferability to other languages.	Five weekly sessions of culturally adapted group mindfulness.	Pre-intervention	Significant improvements in mental health outcomes facilitated access to mental health care and boosted mental health literacy.
Denkinger et al., 2022 [49]	To evaluate the feasibility and acceptance of a psychoeducational film intervention and to assess changes in self-stigma and help seeking.	A newly developed psychoeducational animated film named "Coping with Flight and Trauma", available in English, Arabic, and German.	NA	Directly after watching the film, participants reported reduced self-stigma and increased openness towards accessing mental health services. At follow up (3.8 months later), these changes were no longer significant, yet 11% of participants reported having started psychotherapy since watching the film.
Huminiuk et al., 2022 [50]	To evaluate the effect of a settlement-integrated model of mental health care for refugees.	Supported referrals and multilingual, trauma-informed, and culturally responsive assessment and counseling.	NA	Culturally responsive mental health services offered within a settlement setting reduced barriers to mental health services and were effective in the reduction of symptoms of anxiety, depression, and PTSD.

Table 3. *Cont.*

Author, Year	Study Aim	Intervention	Control	Main Findings
Jang et al., 2014 [53]	To provide access to mental health services in a real-world setting.	4 weekly tele-counseling sessions (30 min in each) in the client's native language.	NA	A high level of completion (86%) and overall satisfaction with the program were observed. Participants also exhibited a significant reduction in depressive symptom severity shortly after completion of the program.
Martinez et al., 2024 [55]	To assess the acceptability, appropriateness, feasibility, and potential effectiveness in improving the help-seeking behavior of Filipino migrant domestic workers in the UK.	Culturally adapted mental health literacy program.	NA	Preliminary findings lend support for its possible effectiveness in improving mental health literacy and help-seeking propensity.
Martinez Rodriguez et al., 2022 [56]	Developing and pilot testing a mental health promotion intervention for Mexican immigrants.	Ten 120 min psychoeducational group sessions.	Pre-intervention	Increased knowledge and lower distress among those who attended at least 70% of the sessions.
Sternberg et al., 2019 [60]	The intervention addressed barriers of the stigma of seeking care for depression and the lack of access to culturally appropriate, Spanish-language mental health services.	The "*Mentes Positivas*" program is a group-based stress management program with 8 sessions lasting 2 h each in small groups provided by trained community health workers (*promotores*).	Pre-intervention	The results show the potential benefits of training *promotores* to deliver a mental health program to low-income Latino immigrants in community settings. The intervention addressed barriers of the stigma of seeking care for depression and the lack of access to culturally appropriate, Spanish-language mental health services.
Tran et al., 2014 [62]	To evaluate the impact of ALMA intervention offered in three North Carolina counties to improve mental health among Latinas by offering coping skills training.	The intervention trained community-based *promotoras* to conduct outreach to Latina women in their social network.	NA	The findings suggest that *promotora* interventions, such as ALMA, which focus on building self-care strategies, can be valuable in reducing preclinical symptoms and addressing health care disparities that are exacerbated by unavailable or underused mental health services.
		Observational studies		
Diaz-Perez et al., 2004 [50]	To improve access to health care among Mexican immigrants in northern Colorado.	A mobile unit went to gathering places for Mexican immigrants. Services provided included preventive health care (including mental health), education, and primary care for acute problems.	NA	The high utilization of the mobile unit illustrated both the need among the target population and the appropriateness of service delivery.

Table 3. *Cont.*

Author, Year	Study Aim	Intervention	Control	Main Findings
Mucic, 2010 [57]	To improve access to culturally appropriate care providers (i.e., culturally competent, bilingual clinicians) by the use of video conferencing.	Transcultural telepsychiatry sessions (lasting 35–45 min), on average 5.2 per patient.	NA	Patients reported a high level of satisfaction and willingness to use telepsychiatry again and recommend it to others.
Tomita et al., 2016 [61]	To assess the feasibility of SMS-based methods to screen for depression risk among refugees residing within social services settings and to compare their reliability and acceptability with face-to-face consultation.	SMS-based methods to screen for depression.	NA	A fair level of reliability between face-to-face and SMS-based screening methods.

Abbreviations (in alphabetical order): ALMA: amigas Latinas motivando el alma/Latina friends motivating the soul; GP: general practitioner; NA: not applicable; PTSD: post-traumatic stress disorder; RCTs: randomized controlled trials; UK: United Kingdom; WET: written exposure therapy.

3.3. Meta-Analysis of the Effect of the Interventions

Due to the limited availability of quantitative data and the significant variability in both the interventions and measures used to assess mental health care access across the included studies, a meta-analysis on the full set of studies for the primary outcome was not possible. However, six controlled studies provided quantitative measures of mental health symptoms or attitudes toward mental health care after the intervention. Although limited by the small number of studies contributing to each meta-analysis, this investigation found an effect of the interventions in reducing stigma (SMD: −0.56 [95%CI: −0.78; −0.33]) and improving mental health literacy (SMD: 2.18 [95%CI: 1.83; 2.53]), service access (OR: 2.10 [95%CI: 1.09; 4.06]), and depressive symptoms, without evidence of statistical significance (SMD: −0.50 [95%CI: −1.00; 0.01]). The results of the meta-analyses are reported in Table 4 and Supplementary Figures S1–S7.

Table 4. Results of the meta-analyses of the effect of the interventions on mental health symptoms.

Outcome	No. of Studies	SMD (95%CI)/ *OR (95%CI)*	*p*-Value	I^2 % (*p*-Value)
Mental health symptoms				
Depression †	3	−0.50 (−1.00; 0.01)	0.051	89% (<0.001)
Anxiety †	2	−0.49 (−1.20; 0.22)	0.178	88% (0.005)
Stress †	3	−0.59 (−1.25; 0.068)	0.079	88% (<0.001)
Stigma †	2	−0.56 (−0.78; −0.33)	<0.001	0% (0.546)
Attitudes on mental health care				
Mental health literacy ‡	1	2.18 (1.83; 2.53)	<0.001	NA
Help seeking ‡	1	−0.07 (−0.44; 0.30)	0.726	NA
Service access ‡	1	*2.10 (1.09; 4.06)*	0.027	NA

Abbreviations (in alphabetical order): 95% CI: 95% confidence interval; N: number; NA: not applicable; OR: odds ratio; SMD: standardized mean difference. Legend: † lower scores indicate better conditions; therefore, a negative effect size indicates the effectiveness of the intervention; ‡ higher scores indicate better conditions; therefore, a positive effect size indicates the effectiveness of the intervention.

Given the limited number of studies included in the meta-analyses, it was not possible to conduct further investigations into publication bias or perform sensitivity tests, such as subgroup analysis, leave-one-out analysis, or meta-regression.

3.4. GRADE of the Evidence

A summary of the risk of bias in all 18 trials is reported in Table 5, along with an assessment of the quality of the evidence. In the GRADE system, the evidence from RCTs is initially set to high and observational studies are set to low, and there are then criteria that can be used either to downgrade or upgrade. We downgraded by one level when any of the sources of risk of bias were rated as "high" or two were rated as "unclear". Where pooled estimate was calculated, we also considered imprecision and downgraded by one level where the 95% confidence interval included the null value. The quality of the evidence ranged from moderate to very low for RCTs, with concerns related to the participants' selection and blinding procedure, and it was very low for all the other studies that failed to provide a control group and report complete information on the treatment effect and follow-up duration.

Table 5. Risk of bias of included studies and grading of the evidence.

Author, Year	Outcomes Reported	Risk of Bias	Imprecision	GRADE
Ahmad et al., 2017 [46]	Service access	Not serious	Not serious	Moderate
Andrews et al., 2022 [47]	Treatment acceptability; PTSD symptoms	Serious	NA	Low
Blignault et al., 2021 [48]	Mental health literacy; depression; anxiety; stress	Serious	Serious	Very Low
Denkinger et al., 2022 [49]	Service access; self-stigma	Serious	NA	Low
Diaz-Perez et al., 2004 [50]	Service utilization	Serious	NA	Very Low
Huang et al., 2023 [51]	Treatment attainment; depression; anxiety; stress	Serious	Serious	Very Low
Huminiuk et al., 2022 [52]	Patients' satisfaction; depression; anxiety; PTSD symptoms	Serious	NA	Very Low
Jang et al., 2014 [53]	Patients' satisfaction; depression	Serious	NA	Very Low
Kiropoulos et al., 2011 [54]	Mental health literacy	Serious	Not serious	Low
Martinez et al., 2024 [55]	Help-seeking attitudes; mental health literacy	Serious	NA	Low
Martinez Rodriguez et al., 2022 [56]	Knowledge about coping strategies; stress	Serious	Serious	Very Low
Mucic, 2010 [57]	Patients' satisfaction	Serious	NA	Very Low
Nickerson et al., 2020 [58]	Help-seeking attitudes; mental health stigma	Not serious	Not serious	Moderate
Shaw et al., 2023 [59]	Service access	Serious	NA	Low
Sternberg et al., 2019 [60]	Mental health stigma; depression; stress	Serious	NA	Very Low
Tomita et al., 2016 [61]	Depression	Serious	NA	Very Low
Tran et al., 2014 [62]	Help-seeking attitudes; depression	Serious	NA	Very Low
Weine et al., 2008 [63]	Service access; mental health literacy; depression	Not serious	NA	Low

Abbreviations (in alphabetical order): GRADE: grading of recommendations assessment, development, and evaluation; NA: not applicable; RCT: randomized controlled trial; PTSD: post-traumatic stress disorder.

In terms of certainty of the evidence, for outcomes related to service access and utilization, the quality ranged from moderate to very low, with three out of five studies rated low. The evidence for treatment acceptability was rated low, while for treatment

attainment, it was very low. Patient satisfaction was rated low, while mental health literacy was rated low for two studies and very low for one. Of the three studies assessing help-seeking attitudes, one was rated moderate, one low, and one very low. Evidence on knowledge of coping strategies was rated very low, while for mental health stigma, the three studies were rated moderate, low, and very low, respectively. For mental health symptoms, two out of ten studies were rated low, while the remaining eight were rated very low.

4. Discussion

This systematic review provides a comprehensive overview of interventions aimed at improving mental health care access for migrant populations. Collectively, the findings underscore the effectiveness of culturally tailored programs, particularly with peer support (such as CHW), culturally adapted psychoeducation, and digital tools in enhancing mental health service utilization and mental health outcomes for migrants. These interventions resulted in improvements in mental health literacy, a reduction in stigma, and an increased propensity to seek mental health support across the included studies.

The specific benefits reported for each type of intervention in the included studies were as follows. Psychoeducation improved help-seeking attitudes and service access for mental health visits and reduced mental health distress. Digital tools enhanced mental health literacy, discussions with the GP about mental health symptoms, help-seeking attitudes, and patient satisfaction and reduced mental health stigma. Outreach actions facilitated mental health service utilization and detection of mental health symptoms. Counseling improved mental health symptoms, discussion about mental health, and participant satisfaction. Peer support resulted in effective in increasing help-seeking attitudes and reducing mental health symptoms and stigma. The "miscellaneous" category of culturally sensitive or community-based interventions improved mental health literacy and symptoms.

This review also highlights the critical role of cultural competence in designing and implementing mental health interventions for migrant populations. Culturally adapted interventions appeared as the central component of effective mental health strategies targeting migrant groups. The studies reviewed showed that culturally relevant interventions were more likely to foster participant engagement and lead to meaningful improvements in mental health outcomes. This aligns with the broader literature emphasizing the importance of cultural competence in health care delivery [30]. Cultural adaptation in the included studies was primarily achieved by ensuring linguistic and cultural relevance, often through native language delivery and culturally sensitive content. Delivering the intervention in the participants' native languages, such as Spanish or Arabic, ensured that migrants could fully engage with the mental health support being provided [46,47,62]. In addition to language, the use of peer supporters who shared cultural backgrounds with participants emerged as a key strategy for cultural adaptation [60,62]. Other studies integrated culturally relevant practices into community-based interventions, like mindfulness techniques and traditional movement activities [48,51]. Digital tools were also adapted with culturally specific contents and narratives, further enhanced by providing content in multiple languages [54,58]. Taken together, these experiences of cultural adaptation emphasize that while language is a critical component, other factors, such as cultural beliefs, traditions, and the community's historical context, should be integrated to ensure the interventions are not only understandable but also able to resonate with the migrant population's worldview, making them more meaningful and impactful.

Moreover, the success of digital tools in some studies underscores the potential of technology to overcome traditional barriers to care, such as geographic isolation and limited availability of culturally competent health care providers. Digital interventions, particularly those that incorporate elements of psychoeducation and social support, have shown promise in increasing access to care and reducing mental health stigma among migrant populations [46,49,54,57]. However, the effectiveness of these tools is contingent on factors such as digital literacy, access to technology, and the appropriateness of the

content for the target population. This suggests that while digital tools can be powerful, they should be carefully tailored and supported by broader efforts to ensure accessibility and cultural acceptance [67].

This review also emphasizes the importance of comprehensive training for health care providers, operators in the social service, and community organizations. Such training is crucial for enhancing the cultural competence of professionals, enabling them to better understand and address the unique mental health needs of migrant populations. This includes raising awareness of common mental health concerns, recognizing culturally specific expressions, and developing effective communication strategies [68]. The potential for partnerships between health care providers and peer supporters could be an important opportunity to co-develop training programs for professionals. In addition, fostering a sustained collaboration with members of the target population can also lead to practical gains, such as in bridging cultural and linguistic gaps, thereby improving the relevance and acceptability of interventions [69]. These partnerships can also help to build trust between health care providers and migrant communities, which is essential for intervention planning and ongoing adaptation [70]. Future research should focus on examining sustainable models for training and integrating peer supporters into the migrants' health care.

Finally, migrant populations are a multifaceted group, and this review highlights the importance of considering the broader socio-economic and political contexts in which these interventions are implemented. Many migrants face significant challenges, including economic hardship, legal uncertainties, and social isolation, all of which intersect with identity factors such as gender, age, and parental status. These intersecting factors can ultimately exacerbate mental health issues and complicate access to care [71]. Interventions that fail to address these broader determinants of health may be limited in their effectiveness. Therefore, a tailored approach that integrates mental health care with other forms of social support and advocacy is likely to be more effective in addressing both these intersecting factors and the diverse needs of migrant communities. For instance, mental health services should be integrated with other support services, such as legal aid, housing, and employment assistance, to address the broader determinants of mental health and promote a more holistic approach to care. Additionally, training professionals who work with migrants on mental health issues and local service structures can help bridge the gap between the need for care and access to services, facilitating help seeking and timely access to appropriate care.

This review also highlights limitations and challenges that need to be addressed for a nuanced understanding of the potential of these interventions. First, the heterogeneity of the studies included in this review is a double-edged sword. On one hand, it provides a broad overview of approaches and insights, reflecting the diversity of migrant populations and the specificities of their cultural backgrounds, which should be considered to optimize engagement in the programs and effectively target their mental health needs. On the other hand, this diversity complicates efforts to draw generalizable conclusions. This challenge is particularly evident when considering the applicability of interventions across different cultural groups. For example, an intervention that was effective for Latino communities in the United States may not be directly transferable to Middle Eastern or African migrant populations, whose cultural perceptions of mental health and stigma might differ significantly [59,72]. Second, the wide range of methodologies, target populations, and cultural contexts across the included studies made it difficult to determine which interventions were most effective across different settings. Furthermore, this review highlights the need for more rigorous and standardized research methodologies in this field. The variability in study designs, outcome measures, and reporting limited the ability to quantitatively compare the findings across the studies. Future research should prioritize the development of standardized outcome measures for health care access to provide more robust evidence on the effectiveness of different interventions. Third, the number of studies included in the meta-analyses was less than ten, precluding a meaningful assessment of the publication bias [37]. Fourth, this review included studies with a full text published

in English, potentially introducing a selection bias. Fifth, most of the included studies were conducted in high-income countries, particularly in the USA, Australia, and Europe, limiting the possibility of capturing the challenges and needs of migrant populations in low- and middle-income countries, where access to mental health care is often more limited and resources for interventions are even scarcer [73]. A broader global dissemination of this research is necessary to help bridge this gap. Finally, while many of the included studies reported positive outcomes, none provided detailed analyses of the costs associated with implementing and sustaining these programs. Future research should focus on understanding the cost effectiveness of these interventions to provide policymakers with critical information to allocate resources effectively.

5. Conclusions

This review identified several promising interventions for improving access to mental health care among migrants. Overall, the main benefits were improvements in help-seeking attitudes and reductions in mental health stigma and distress. Cultural adaptation, including the provision of culturally and linguistically accessible information, appeared of paramount importance. This was most effectively achieved through the involvement of peer supporters (key persons selected from the target community) and the use of digital technologies. Other community-based approaches incorporated culturally sensitive meditation or movement techniques. Digital technologies, in particular, showed significant potential for broad application, including in counseling and psychoeducation, due to their reach and scalability. This review also underscored the unique needs arising from different cultural backgrounds and different settings, calling for more rigorous and contextually sensitive research to develop and validate interventions that can be applied sustainably across different contexts and migrant populations. Ongoing training for health care providers and collaboration with representatives from migrant communities are crucial opportunities to enhance the relevance, acceptability, and effectiveness of these interventions.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/psychiatryint5040060/s1, Table S1: Search strategy and number of hits per database (current to 31 March 2024); Table S2: Reference list of the studies excluded from full text analysis and reasons for exclusion; Figure S1: Forest plot of depression among intervention and control groups; Figure S2: Forest plot of anxiety among intervention and control groups; Figure S3: Forest plot of stress among intervention and control groups; Figure S4: Forest plot of stigma among intervention and control groups; Figure S5: Forest plot of health literacy among intervention and control groups; Figure S6: Forest plot of help seeking among intervention and control groups; Figure S7: Forest plot of service access among intervention and control groups.

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