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Invited review

Mental health of unaccompanied refugee minors in Europe: A systematic review

Andrea Daniel-Calveras^a, Nuria Baldaquí^b, Inmaculada Baeza^{a,c,d,e,*}^a Universitat de Barcelona, Barcelona, Spain^b Psychiatry and Psychology Department, Hospital Clínic de Barcelona, SGR-881 Barcelona, Spain^c Child and Adolescent Psychiatry and Psychology Department, Hospital Clínic de Barcelona, Barcelona, Spain^d Centro de Investigación Biomédica en Red de Salud Mental, CIBERSAM, ISCIII, Spain^e Institut d'Investigacions Biomèdiques August Pi Sunyer (CERCA-IDIBAPS), Barcelona, Spain

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ABSTRACT

Background: Nearly half of the refugee and asylum seeking population in Europe is under the age of 18, and many of these individuals are unaccompanied children and adolescents.

Objective: The aim of this systematic review is both to summarize findings regarding the prevalence of mental health disorders among unaccompanied refugee minors (URM) in European countries since the last available systematic review (October 2017), and to describe associated risk factors.

Methods: Five databases were systematically searched for articles published between October 1, 2017 and May 1, 2022.

Results: The findings from 23 studies conducted in 9 countries which examined 80,651 child and adolescent URM are explained. Afghanistan was the most common country of origin in the majority of studies and >75 % of the subjects were boys. Most of the studies ($N = 13$, 56.5 %) assessed posttraumatic stress disorder (PTSD) prevalence. We found a high prevalence of mental health disorders among URM children and adolescents, which varied considerably between studies, ranging from 4.6 % to 43 % for (PTSD), 2.9 % to 61.6 % for depression, 32.6 % to 38.2 % for anxiety and 4 to 14.3 % for behavioral problems. Two studies looking at suicide attempts and deaths, also observed higher rates in URM compared to the host population of the same age. The studies looking at mental health risk factors suggest that levels of social support in the host country, rearing environment, and other factors are associated with psychopathology. Moreover, a meta-analysis of four studies regarding PTSD in URM and accompanied refugee minors (ARM) showed a lower prevalence among ARM: -1.14 (95%CI: -1.56 — -0.72).

Conclusions: PTSD, depression and anxiety are the most prevalent problems among the URM population in Europe. Early intervention in host countries is needed in order to improve mental health outcomes for this vulnerable population and avoid possible neglect.

* Corresponding author at: Department of Child and Adolescent Psychiatry and Psychology, Institut Clínic de Neurociències, Hospital Clínic Universitari, Barcelona, Villarroel, 170, Barcelona 08036, Spain.

E-mail address: ibaeza@clinic.cat (I. Baeza).

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1. Introduction

According to the United Nations (UN) Refugee Agency (UNHCR, 2021), at the end of 2020, 74.4 million people were forcibly displaced worldwide as a result of persecution, conflict, violence, or human rights violations. This included 26.4 million refugees, 40 % of which were estimated to be children. That same year, there were 2,657,199 refugees in Europe (0.4 % of the total European population, 0.6 % if looking only at countries in the European Union), with 141,000 asylum seekers under the age of 18. Nearly 10 % of this latter group (13,600) was unaccompanied minors (European commission, 2021).

In the period from 2010 to 2020, on average 15.4 % of first-time asylum applicants in Europe were unaccompanied minors; although this reached 25.5 % in 2015 with the so-called “migration crisis”. During this period, most of the unaccompanied minors came from Afghanistan (38 %), Syria (13.9 %) and Eritrea (5.9 %). According to the European Commission, Slovenia (70.6 %), Italy (48.5 %), Bulgaria (37 %) and Sweden (33.4 %) are the countries with the most asylum applicants (Eurostat, 2022).

For the refugees, the main reasons for leaving their country are: sociopolitical (persecution because of one's ethnicity, religion, race, politics or culture, war, armed conflict and human rights violations), demographic and economic migration (labor standards, unemployment and the overall health of a country's economy) and environmental factors including natural disaster (floods, hurricanes and earthquakes) (News European Parliament, 2020). However, the living situation in European host countries is not easy for Third-country nationals: they have a greater risk of poverty and social exclusion (45.3 % vs. 19.6 % for nationals of the country), not completing their schooling (28.2 % vs. 8.6 % for nationals) and unemployment (17 % vs. 6.6 % for nationals). Moreover, obtaining citizenship in a host country is not easy, and the overall number of such approvals has decreased in recent years (EMN, 2021).

Regarding migration policies, it has to be taken into account that these vary among European countries. For example, the Scandinavian countries, after the large influx of asylum seekers in 2015, reviewed their migration policies. In Sweden and Norway, residence permits became temporary, while in Denmark it was decided not to receive refugees until 2019, when they were welcomed again for temporary stays. Once the temporary permit expired, the residence permit was renewed if a situation of vulnerability persisted. During the asylum period, refugees are offered courses to learn the language and culture of the country (Hagelund, 2020; Ministry of Immigration and Integration Denmark, n.d.; Migrationsverket, n.d.; UNHCR Resettlement Handbook, 2021). In Germany, asylum seekers are transferred to reception centers. If the asylum application is accepted, a 3-year residence permit is granted, and this can be extended if economic means and knowledge of German are demonstrated (UNHCR, 2021). In the Netherlands, refugees are transferred to centers, and within 6–9 months they receive a response to their application; if it is accepted, a 5-year residence permit is granted (Government of the Netherlands, n.d.).

Among asylum seekers and refugees, the most vulnerable group is children and adolescents. URM children and adolescents are forcibly displaced people under the age of 18 who have been separated from their families and are travelling alone with no adult to take care of them (UNHCR, n.d.). These children and adolescents find themselves in a particularly vulnerable situation and are at high risk of social exclusion. Moreover, these individuals' experiences in reception facilities in the host country may be associated with physical or emotional abuse, neglect or institutional violence (Zijlstra, Menninga, van Os, & Kalverboer, 2020). It is important that resettlement services' staff be trained to prevent or minimize such experiences (Im & Swanm, 2020). In this context, Europe has elaborated new strategic guidelines for migration and asylum including an EU Strategy on the Rights of the Child (2021–2024), which provides the framework for EU action to better promote and protect children's rights, including children in migration (European Commission, 2020).

It is known that being a refugee minor has a negative influence on mental health and increases the risk of developing mental health disorders (Lázaro, 2020; Vervliet, Lammertyn, Broekaert, & Derluyn, 2014). A previous systematic review (Kien et al., 2019) assessed the prevalence of mental health disorders among URM youngsters in European countries. The review, looking at 47 studies which included 24,786 refugee and asylum-seeking children and adolescents, showed that minor refugees present a prevalence between 19.0 % and 52.7 % for posttraumatic stress disorder (PTSD, median: 35.5 %), between 10.3 % and 32.8 % for depression (median: 20.7 %), between 8.7 % and 31.6 % for anxiety disorders (median: 15.0 %) and between 19.8 % and 35.0 % for emotional and behavioral problems (median: 25.2 %). Subsequently, another review about mental health in URM with more recent articles was published, though it did not focus exclusively on Europe (Bamford, Fletcher, & Leavey, 2021). These authors confirmed the high levels of PTSD and posttraumatic stress symptoms (PTSS), depression, anxiety and behavioral problems in URM. Taking into account that, worldwide, according to the World Health Organization, 10 % to 20 % of children and adolescents experience mental disorders, refugee minors present higher levels of psychological distress (WHO, 2020).

Additionally, certain factors are associated with increased risk for developing mental health problems in URM. Some studies have shown that being unaccompanied, having been exposed to pre-migration violence and trauma, and being a female, are the main risk factors for developing poor mental health among these minors (Fazel, Reed, Panter-Brick, & Stein, 2012). A higher number of stressful life events and low-support accommodation have also been associated with worse mental health in a systematic review of studies of refugees all over the world (Höhne, van der Meer, Kamp-Becker, & Christiansen, 2020). Moreover, apart from the previous risk factors mentioned, being older (among minors) has also been associated with poor mental health outcomes in another systematic review (Bamford et al., 2021).

The main aim of this study is to systematically review articles reporting data on the prevalence of mental health disorders in URM children and adolescents in Europe since the last systematic review on this topic was published by Kien et al., 2019. The number of URM who have come to Europe has increased considerably since this previous review, and new studies in the field have offered additional insights into this vulnerable population. The secondary aim is to describe the risk factors reported in the studies found in this systematic review.

2. Methods

We performed a systematic review protocol according to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines (Shamseer et al., 2015). The systematic review protocol was registered in the International Prospective Register of Systematic Reviews PROSPERO with the number: CRD42020182161 and is available from https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=182161. We followed the PRISMA statement to develop this systematic review.

2.1. Inclusion criteria

The criteria used to select the articles were (1) original articles; (2) written in English or Spanish; (3) published between October 1, 2017 and May 1, 2022; (4) conducted in European countries; (5) investigating the prevalence of mental health disorders or problems of URM children and adolescents who were under the age of 18 when they arrived in the host country.

2.2. Literature search strategy and data systematization

A systematic literature search was conducted in Web of Science, PubMed, Scopus, Dialnet, and MEDES databases, using the following terms: ((asylum seek* OR (refugee) AND (unaccompanied) AND ((mental health) OR (mental disorder) OR (psychopathology)) AND ((minor) OR (children) OR (adolescent) OR (child)) AND Europe. The literature search was conducted in two steps. First, two researchers (ADC and IB) conducted the electronic search. Second, ADC, NB and IB manually reviewed the references from the selected articles and looked for other articles from the citations of the selected articles. Both ADC and IB extracted the information from the articles included in the review.

2.3. Quality of assessment

The quality of assessment was evaluated with the Newcastle-Ottawa scale for cohort studies (Wells et al., 2013), adjusting one item according to Pozzi et al. (2020) (Supplementary material, Table 1).

2.4. Statistical analysis

We conducted a meta-analysis when the studies reviewed met the following criteria: three or more studies (Baglioni et al., 2016) measuring the prevalence of the same disorder in a sample with URM where another comparison group was included, and the reported results included the number of subjects with the disorder. As a result, only meta-analyses for studies of PTSD in URM vs. accompanied refugee minors (ARM) were performed. The random-effects model was used to calculate the summary estimates and their SD, taking into account the between-study variability. Statistical heterogeneity among the studies was evaluated using the Cochran Q test. Risk of bias was assessed with funnel plots, and Egger's tests were used to assess the asymmetry of the funnel plots. Statistical analyses were carried out using R statistics version 3.6.3 (<http://www.r-project.org>), using library *metafor* for V.24–0. A p value $< .05$ was considered statistically significant.

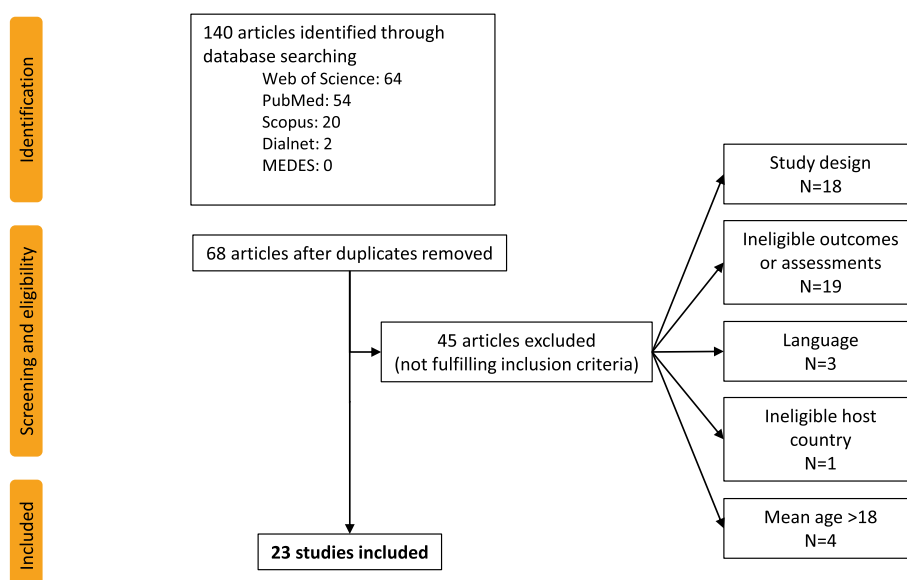


Fig. 1. Flowchart of the study selection process.

3. Results

3.1. Description of included studies

Of 140 articles retrieved, 23 articles describing 21 independent studies met eligibility criteria and were reviewed in depth. Fig. 1 shows the flowchart of the reviewed articles and the reasons for exclusion.

The included articles describe original cohort and cross-sectional studies conducted in Germany ($N = 7$, Laukamp, Prüfer-Krämer, Fischer, & Krämer, 2019; Müller, Büter, Rosner, & Unterhitzberger, 2019; Müller et al., 2019; Sierau, Schneider, Nesterko, & Glaesmer, 2019; Hanewald et al., 2020; Höhne et al., 2021; Pfeiffer et al., 2022), Sweden ($N = 5$, Hjern & Kling, 2019; Sarkadi, Bjärtå, Leiler, & Salari, 2019; Björkenstam et al., 2020; Mittendorfer-Rutz, Hagström, & Hollander, 2020; Solberg et al., 2020); Denmark ($N = 2$, Norredam, Nellums, Nielsen, Byberg, & Petersen, 2018; Amiri et al., 2021). The Netherlands ($N = 2$, van Os, Zijlstra, Knorth, Post, & Kalverboer, 2018; Zijlstra et al., 2019), Norway ($N = 2$, Jensen, Skar, Andersson, & Birkeland, 2019; Oppedal, Ramberg, & Røysamb, 2020), the United Kingdom ($N = 2$, Ehntholt et al., 2018; Armitage et al., 2022), France ($N = 1$, Bergevin et al., 2021), Greece ($N = 1$, Giannopoulou, Mourloukou, Efstathiou, Douzenis, & Ferentinos, 2022) and Switzerland ($N = 1$, Genton, Wang, Bodenmann, & Ambresin, 2019).

Table 1 summarizes the population characteristics, assessments and outcomes of the included studies, which reported information on 80,651 URM children and adolescents. The studies included more males than females (mean of 75 % vs. 25 %, respectively). The mean age of the participants varied between 9.6 (SD = 3.8) and 21.6 (2.0) years when they were assessed, although all arrived <18 years to the host country. The most common countries of origin of the participants were Afghanistan, Eritrea, Iraq, Syria and Somalia. The methods used to diagnose the mental health disorders were heterogeneous, with only one study using a structured interview (Structured Clinical Interview for DSM-IV disorders-SCID-IV) (Ehntholt et al., 2018); three using clinical evaluation without a structured interview (Genton et al., 2019, Hjern & Kling, 2019, Laukamp et al., 2019), four citing information through population-based registers (Amiri et al., 2021; Björkenstam et al., 2020; Mittendorfer-Rutz et al., 2020; Norredam et al., 2018), and fifteen articles using self-administered questionnaires such as the Child and Adolescent Trauma Screen-CATS, Refugee Health Screener-RHS, etc. (Armitage et al., 2022; Bergevin et al., 2021; Giannopoulou et al., 2022; Hanewald et al., 2020; Höhne et al., 2021; Jensen et al., 2019; Müller, Büter, et al., 2019; Müller, Gossmann, et al., 2019; Oppedal et al., 2020; Pfeiffer et al., 2022; Sarkadi et al., 2019; Sierau et al., 2019; Solberg, Vaez, Johnson-Singh, & Saboonchi, 2020; van Os et al., 2018; Zijlstra et al., 2019).

3.2. Prevalence of mental health problems and disorders

All of the included studies reported a high prevalence of mental health disorders among URM children and adolescents. We have classified the results from these studies according to the 5 psychopathological categories followed by Kien et al., 2019: PTSD, depression, anxiety disorder, suicidal ideation and behavior, and emotional and behavioral problems, while also adding “others” as an additional category.

3.2.1. Posttraumatic stress disorder

We found 13 studies (56.5 %) assessing the prevalence of this disorder or symptoms among unaccompanied minors: six with a cross-sectional design (Armitage et al., 2022; Ehntholt et al., 2018; Giannopoulou et al., 2022; Hjern & Kling, 2019; Laukamp et al., 2019; Müller, Büter, et al., 2019; Sierau et al., 2019; Solberg, Vaez, et al., 2020, and van Os et al., 2018), three prospective longitudinal studies (Björkenstam et al., 2020; Jensen et al., 2019; Pfeiffer et al., 2022) and one retrospective study following a one-year follow-up (Genton et al., 2019).

In the cross-sectional studies, the prevalence of PTSD ranged from 4.6 % (Laukamp et al., 2019) to 81 % (Giannopoulou et al., 2022).

The 1-year follow-up study by Genton et al., 2019, looking at the mental health problems of 109 unaccompanied minor asylum seekers found symptoms of PTSD in 13.8 % of the subjects, while the long-term study evaluating the mental health status of 95 URM upon their arrival in Norway and over the following 5 years, described a prevalence of posttraumatic stress symptoms (PTSS) of 63.2 % 6 months after arrival, 56.6 % at 2 years, and 41.9 % 5 years after arrival. Moreover, in a longitudinal study with three assessment points (baseline, 8 and 21-months) in 3 different countries (Belgium, Greece and Italy), there was a small but significant decrease of PTSS over time (Pfeiffer et al., 2022).

Using national population-based registers, the mental health outcomes of a population of 710,170 Swedish-born individuals were compared with a group of 33,501 refugee minors. URM were found to have an 8-fold higher risk for PTSD (adjusted hazard ratio, aHR: 8.40, 95 % CI 6.16–11.47) compared to Swedish-born subjects (Björkenstam et al., 2020).

3.2.2. Depression

Ten articles (43.5 %) reported new data on the prevalence of depression among URM (Björkenstam et al., 2020; Ehntholt et al., 2018; Genton et al., 2019; Giannopoulou et al., 2022; Höhne et al., 2021; Jensen et al., 2019; Laukamp et al., 2019; Müller, Büter, et al., 2019; Oppedal et al., 2020 and Sierau et al., 2019).

The cross-sectional studies found a prevalence of depressive disorder among URM between 2.9 % and 9 % (Ehntholt et al., 2018; Laukamp et al., 2019) while 40 % and 81.4 %, respectively of them scored above the clinical cut-off for depression on different scales (Giannopoulou et al., 2022; Höhne et al., 2021; Müller, Büter, et al., 2019; Oppedal et al., 2020; Sierau et al., 2019) (Table 1).

In the 1-year follow-up study, 17.4 % of a group of URM were diagnosed with depression (Genton et al., 2019). The 5-year follow-

up study conducted in Norway revealed a prevalence of depression of 21.3 % 6 months after arrival, 25.6 % 2 years after arrival, and 15.2 % at 5 years (Jensen et al., 2019). However, Björkenstam et al., 2020 found that, years after their arrival, URM had a lower risk of treated major depressive disorders than Swedish-born youth.

Moreover, a study conducted with data from the Danish Psychiatric Central Register found an Incidence Rate Ratio (IRR) adjusted by age at arrival and sex of 1.33 (0.89–2.01) for any affective disorder (F30–39, International Classification of Diseases, ICD-10) (Norredam et al., 2018).

3.2.3. Anxiety disorder

Five articles (21.7 %) published new data on the prevalence of anxiety disorders/symptoms among unaccompanied migrant minors (Björkenstam et al., 2020; Jensen et al., 2019; Müller, Büter, et al., 2019; Norredam et al., 2018; Sierau et al., 2019).

One cross-sectional survey reported that 38.2 % of these individuals scored above the clinical cut-off for anxiety disorders (Müller, Büter, et al., 2019) while another study found that 23.8 % reached the cutoff for generalized anxiety disorder (Sierau et al., 2019). A long-term study analyzing the mental health status of URM upon their arrival in Norway and over the following 5 years revealed a prevalence of anxiety symptoms of 32.6 % 6 months after arrival, 31.2 % at 2 years and 24.4 % 5 years after arrival (Jensen et al., 2019). Looking at anxiety disorders as a whole (diagnoses F40-F49 from the ICD-10, which, thus, includes PTSD), the study using data from the Danish Psychiatric Central Register obtained an adjusted IRR for the sample of 1.67 (1.32–2.13) (Norredam et al., 2018). Comparing URM vs Swedish-born youngsters, lower risk of treated anxiety disorders were found in URM years after their arrival (Björkenstam et al., 2020).

3.2.4. Suicidal ideation and behavior

Three studies reported data about this issue (Amiri et al., 2021; Armitage et al., 2022; Mittendorfer-Rutz et al., 2020). Using aggregate data from Danish national administrative registers from 2015 to 2019, URM (<18 years) had 1164.7/100.000 suicide attempts vs. 82.9/100.000 for peers in the general population. (Amiri et al., 2021). Data regarding URM who attended three health services in the UK showed that 8 % of these subjects explained self-harm or suicide attempts (Armitage et al., 2022).

Looking at deaths by suicide among URM (aged 14–18 years) in Sweden, Mittendorfer-Rutz et al. (2020) described a rate of 40.7/100.000 compared to 7.6 in the general population, a five-fold difference. This contrasts with Amiri et al. (2021) who found no suicide deaths among URM.

3.2.5. Emotional and behavioral problems

Behavioral problems assessed with the Strengths and Difficulties Questionnaire (SDQ) were found to be high in URM (14.3 %) compared to the general population (4.6 %) in one study (Sierau et al., 2019). In contrast, a Dutch study using the same questionnaire reported rates of only 4 % for conduct problems and for hyperactivity (Zijlstra et al., 2019). This study also described emotional problems in 29 % of URM (Zijlstra et al., 2019). One newer study also used the SDQ, but did not specifically explain the results obtained from this questionnaire (Armitage et al., 2022).

Another study found externalizing symptoms above the cut-off in 10.3 % of URM, using the subscale of the Hopkins Symptom Checklist-37 for Adolescents (HSCL-37A) (Müller, Büter, et al., 2019).

3.2.6. Others

The study based on the Danish Psychiatric Central Register found an adjusted IRR for psychotic disorders (F20–29) of 1.29 (0.89–1.86) (Norredam et al., 2018).

Two studies used the instrument RHS-15 to screen for symptoms of depression, anxiety and PTSD without differentiating between symptoms and found that 43.6 % (Hanewald et al., 2020) and 61.6 % (Höhne et al., 2021) of participants rated positive, with a high probability of having at least one disorder. Assessed with a shorter version of the same instrument (RHS-13), 72 % of refugees in Sweden were found to rate positive, while 55 % had severe symptoms of emotional distress (Sarkadi et al., 2019).

3.3. Mental health predictors and associated factors

3.3.1. Exposure to trauma

Five studies (21.7 %) have evaluated the role of trauma as a predictor of mental health problems (Ehnholt et al., 2018; Giannopoulou et al., 2022; Jensen et al., 2019; Müller, Büter, et al., 2019; Pfeiffer et al., 2022). The number of traumatic experiences has been associated with mental health outcomes in most of the studies: PTSS (Giannopoulou et al., 2022; Jensen et al., 2019; Müller, Büter, et al., 2019), anxiety and depression (Jensen et al., 2019; Müller, Büter, et al., 2019). However, one study found that the pre-migration trauma load and daily stressors at baseline did not significantly effect PTSS rates either at baseline or longitudinally (at 8 and 21 months) (Pfeiffer et al., 2022).

One study assessed the number of traumatic events experienced by unaccompanied and accompanied minors, and concluded that all participants had experienced at least one traumatic event and that, on average, participants reported 8.8 (SD = 3.0) different traumatic experiences (Müller, Büter, et al., 2019). The most frequently reported traumatic event was a migration-related “dangerous journey or transport” (96.6 % of the minors). The next most frequently reported events were having witnessed someone in the community get slapped, punched or beaten up (78.6 % of participants), attacked, stabbed, shot at, badly hurt or killed (76.5 %), and having experienced a lack of food or water for several days (76.5 %). When comparing between groups, URM reported significantly more traumatic experiences than ARM even when controlling for age. In this study, the total number of traumatic experiences was

Table 1

Description of the articles included in the review.

Study/Country Setting	Study design	Year	Mean age (years) (SD)	Sample size N	Sex N (%)	Country of origin N (%)	Year of assessment	Assessment	Mental health outcome	Risk and protection factors outcome
Amiri et al./Denmark/ Danish Research Institute for Suicide Prevention	Retrospective cohort study	2021	Not reported	7020	Mainly male (percentage not reported)	Syria, Afghanistan, Iran and Eritrea (percentages not reported)	2015–2019	Data from national administrative registers	Suicide attempts and suicide deaths	
Armitage et al., /United Kingdom/UCL Great Ormond Street Institute of Child Health	Cross-sectional, retrospective	2022	Median:16.2	101 URM	M: 85 (84) F:16 (16)	Eritrea (28) Sudan (16) Ethiopia (13) Vietnam (9) Others (32)	2016–2019	Clinical data and other documentation available, SDQ	Mental health symptoms, PTSD, deliberate self-harm and suicide attempts	
Bergevin et al./France/ Hospital Robert Debré, Paris	Retrospective observational	2021	Median: 15	107 URM	M: 95 (88) F: 12 (11)	Sub-Saharan Africa 67 (62.6) Northern Africa 14 (13.1) Other 26 (24.3)	2017–2018	Clinical data, CRIES-13	PTSD	
Björkenstam et al. /Sweden/ Uppsala University	Longitudinal cohort study	2020	21.6 (2.0)	710,170 Swedish 3034 URM 30,467 ARM	M: 1100 (36) F: 1934 (64)	Iraq 990 (33) Somalia, Eritrea and Ethiopia 655 (22) Afghanistan 291 (10) Other 1098 (36)	2009–2016	Population-based registers	MDD, PTSD, Anxiety	P: Being an accompanied refugee; duration of formal residency in Sweden (host country), educational attainment R: Exposure to trauma, SLE and detention experience
Ehnholt et al. /UK/ St Pancras Hospital	Cross- Sectional	2018	19.1 (1.1)	35 URM children	M: 21 (60) F: 14 (40)	Afghanistan 11 (31.4) DRC 3 (8.6) Iran 3 (8.6) Uganda 3 (8.6)	2017	SCID-IV, RATS, SLE, DEC-UK	PTSD, MDD.	
Genton, Wang, Bodenmann & Ambresinet/ Switzerland/ University of Lausanne	Retrospective study of a cohort with 1-year follow-up	2019	16.4 (1.2)	109 URM	M: 95 (87.2) F:14 (12.8)	Eritrea 43 (39.4) Afghanistan 35 (32.1) Somalia 11 (10.1) Syria 6 (5.5) Other 14 (12.8)	2015–2016	Clinical evaluation	Functional disorders, depression, PTSS, sleeping disorders.	
Giannopoulou et al./ Greece/Attikon University Hospital	Cross-sectional	2022	16.2 (1.2)	90 URM	M:76 (84.4) F: 14 (15.6)	Syria 46 (47.8) Afghanistan 13 (14.4) Pakistan 9 10 % Other 22 (27.8)	2018	WTQ, DSRS, CRIES-13, CPTCI	PTSS, depression	R:asylum seeking, number of traumatic/stressful experiences, male gender, low levels of social support (continued on next page)

Table 1 (continued)

Study/Country Setting	Study design	Year	Mean age (years) (SD)	Sample size N	Sex N (%)	Country of origin N (%)	Year of assessment	Assessment	Mental health outcome	Risk and protection factors outcome
Hanewald et al. /Germany/ Justus-Liebig-University Giessen	Cross-sectional	2020	17.7 (1.01)	523 URM	M: 390 (74.6) F: 133 (25.4)	Afghanistan 208 (39.8) Eritrea 157 (30.0) Syria 85 (16.3) Somalia 73 (14.0)	2015–2017	RHS-15	PTSD, depression and anxiety.	R: country/area of origin (Afghanistan, Somalia), older age at migration and male gender
Hjern and Kling/Sweden/ Karolinska Institutet Stockholm University	Cross-sectional	2019	10.3 13.4	265 URM 344 ARM	M: 186 (54.1) / 230 (87) F: 158 (45.9) / 35 (13)	Afghanistan 162 (61.1) Syria 40 (15.1) Other 63 (23.8)	2015	Open questions	PTSS, sleeping problems.	P: Being an accompanied refugee
Höhne et al./Germany/ Charité-Universitätsmedizin Berlin	Cross-sectional	2021	All participants except for 8 subjects were < 18 years when they arrived in the host country Mean age at assessment: URM:18.2 (1.5) ARM:18.1 (1.8)	172 URM 52 ARM	M: 191 (85.3) F: 33 (14.7)	Afghanistan 78 (35) Syria 76 (34) Other 70 (31)	2018–19	PHQ-9/PHQ-A, RHS-15, MEHIRA-SQ	Depression, mental distress	R: number of SLE, female gender, fear of deportation P: Weekly contact with a family member, school attendance, and German language skills (the language of the host country)
Jensen, Skar, Andersson & Birkelan /Norway/ University of Oslo	Prospective cohort study	2019	13.8 (1.4)	98 URM	M: 79 (81) F: 19 (19)	Afghanistan 22 (22.4) Other 76 (77.6)	2012–2017	HSCL-37A, CPSS, CSSI-8, SLE, DSSYR, FSSQ.	PTSD, depression, anxiety, externalizing symptoms, somatization	R: Exposure to trauma, daily hassles, higher age at migration P: social support
Laukamp, Prüfer-Krämer, Fischer & Krämeet /Germany/ Bielefeld University	Cross-Sectional	2019	16 (1.89)	346 URM	M: 270 (78) F: 76 (22)	Syria (19.8) Iraq (17.2) Afghanistan (11.7) Other (51.3)	2011–2017	Self-report.	PTSD, depression, other mental and behavioral problems, other health problems.	Suicide deaths
Mittendorfer-Rutz, Hagström & Hollander/Sweden/ Karolinska Institutet	Retrospective cohort study	2020	Range: 10–21 (mean not reported)	23,425	Not reported	Not reported for the whole sample	2017	Data from national agencies and nongovernmental organizations		R: male gender, traumatic events, little or no schooling, long asylum process
Müller, Büter, Rosner & Unterhitzberger /Germany/ Catholic University of Eichstätt-Ingolstadt	Cross-sectional	2019	16.28 (1.69)	68 URM 30 ARM	M: 88 (89.8) F: 10 (10.2)	Afghanistan 54 (55.1) Syria 14 (14.3) Eritrea 11 (11.2) Other 19 (19.4)	2017	CATS (CATS-TL, CATS-SS), HSCL-37A (HSCL-Tot, HSCL-Dep, HSCL-Anx, HSCL-Int, HSCL-Ext), ERSS.	PTSD, depression, anxiety, internalizing and externalizing symptoms.	R: number of traumatic events, low level of German (language of the host country) P: Everyday resources, social support; being an accompanied refugee

(continued on next page)

Table 1 (continued)

Study/Country Setting	Study design	Year	Mean age (years) (SD)	Sample size N	Sex N (%)	Country of origin N (%)	Year of assessment	Assessment	Mental health outcome	Risk and protection factors outcome
Müller et al. /Germany/ Catholic University of Eichstätt-Ingolstadt	Prospective cohort study	2019	17.32 (1.93)	47 URM 25 ARM	M: 65 (90.3) F: 7 (9.7)	Afghanistan: 36 (59) Eritrea: 9 (12.5) Syria: 8 (11.1) Iraq: 7 (9.7)	2017–2018	CATS (CATS-TL, CATS-SS), HSCL-37A (HSCL-Tot, HSCL-Dep, HSCL-Anx, HSCL-Int, HSCL-Ext), ERSS.	PTSD, depression, anxiety, internalizing and externalizing behavior symptoms.	R: Number of traumatic experiences; asylum application status P: Being an accompanied refugee
Norredam et al./ Denmark/ University of Copenhagen	Prospective cohort study	2018	6.9/14.9	1252 URM 11,446 ARM	M: 6050 (52.9) / 919 (73.4) F: 5396 (47.1) / 333 (26.6)	Bosnia-Herzegovina: 4873 (38.4) Somalia 1551 (12.2) Iraq: 1539 (12.1) Palestina 1173 (9.2) Afghanistan: 302 (2.4) Other: 3260 (25.7)	1993–2012	Population-based register	Psychotic, affective and neurotic disorders.	R: Nationality (Afghanistan and Irak) P: Being an accompanied refugee
Oppedal, Ramberg & Røysamb/Norway/ Norwegian Institute of Public Health	Cross-sectional	2020	18.6 (2.6)	895 URM	M: 737 (82.4) F: 158 (17.6)	Afghanistan 456 (51) Somalia 107 (12) Iraq 63 (7) Other 269 (30)	Not reported	CES-D Three items on intrusive PTS symptoms	Depression	P: longer residence and stronger heritage identity
Pfeiffer et al./Germany/ Ulm University/ Study conducted in Belgium, Greece and Italy	Longitudinal	2022	16.8 (2.4)	187 URM	M: 147 (78.4) F: 40 (21.6)	West Africa 53 (29) South Asia (Afghanistan and Pakistan) 53 (29) Other 81 (42)	2017–2020	RATS, SLE, DSSYR	PTSS	R: Gender (female) at baseline
Sarkadi, Bjärtå, Leiler & Salar /Sweden/ Uppsala University	Cross-Sectional	2019	16.6 (1.1)	19 URM 12 ARM	M: 22 (75.9) F: 7 (24.1)	Afghanistan: 18 (62.1) Syria: 7 (24.1) Other: 4 (13.8)	2017	RHS-13, CRIES-8	PTSD, depression, anxiety and trauma symptoms.	P: Being an accompanied refugee
Sierau, Schneider, Nesterko & Glaesmer /Germany/ University of Leipzig	Cross-Sectional	2018	17.3 (1.2)	105 URM	M: 105 (100)	Afghanistan: 62 (59.0) Syria: 36 (34.3) Others: 7 (6.7)	2017	MSSI, LEC-5, PCL-5, PHQ-9, GAD-7, SSS-8, SDQ.	PTSD, depression and anxiety symptoms.	P: Social support
Solberg et al./Sweden/ Swedish Red Cross University College	Cross-Sectional	2020	17.1	304 URM 805 ARM	M: 600 (53.1) F: 529 (46.9)	Syria 574 (50.8) Afghanistan 404 (35.8) Iraq 151 (13.4)	2018	CRIES-8	PTSD	R: Nationality (Afghanistan) P: Being an accompanied refugee

(continued on next page)

Table 1 (continued)

Study/Country Setting	Study design	Year	Mean age (years) (SD)	Sample size N	Sex N (%)	Country of origin N (%)	Year of assessment	Assessment	Mental health outcome	Risk and protection factors outcome
van Os et al./The Netherlands/ University of Groningen	Cross-sectional	2018	9.6 (3.8) / 16.7 (0.8)	16 URM 11 ARM	M: 3 (27) / 14 (88) F: 8 (72) / 2 (13)	Afghanistan: 12 (44.4) Iraq: 6 (22.2) Other: 9 (33.3)	2016–2017	BIC-Q including SDQ, SLE and RATS		R: SLE and trauma P: being an accompanied refugee
Zijlstra et al./The Netherlands/ University of Groningen	Cross-Sectional	2018	16.3 (1.13)	98 URM	M: 69 (70.4) F: 29 (29.6)	Afghanistan 24 (24.5) Somalia 12 (12.2) Eritrea 9 (9.2) Other 53 (54.1)	2012–2016	SDQ, BIC-Q	Emotional, conduct and hyperactivity problems	R: Higher age at arrival in the host country P: good quality of the child-rearing environment; residence status and duration of stay in Netherlands (host country)

SD: standard deviation, n. number of sample, u: unaccompanied, a: accompanied, M: male, F: female.

Sample: ARM: accompanied refugee minors, URM: unaccompanied refugee minors.

Assessments: BIC-Q: Best Interests of the Child-Questionnaire, CATS: Child and Adolescent Trauma Screen, CATS-SS: CATS symptom scale, CATS-TL: CATS trauma list, CES-D: Center for Epidemiologic Studies Depression Scale, CIDI: Composite International Diagnostic Interview, CPSS: Child PTSD Symptom Scale, CPTCI: Children's Post-Traumatic Cognitions Inventory, CRIES: Children's Revised Impact of Events Scale, CSSI-8: Children's Somatization Inventory Short form, DEC-UK: Detention Experiences Checklist-UK version, DRS: Depression Self-Rating Scale, DSSYR: Daily Stressors Scale for Young Refugees, ERSS: Everyday Resources and Stressors Scale, FSSQ: Functional Social Support Questionnaire, GAD-7: Generalized Anxiety Disorder Scale, HSCL-25: Hopkins Symptoms Checklist-25, HSCL-37A: Hopkins Symptom Checklist-37 for Adolescents, HSCL-Tot: HSCL-37A total score, HSCL-Dep: HSCL-37A depression scale, HSCL-Anx: HSCL-37A anxiety scale, HSCL-Int: HSCL-37A internalizing cluster, HSCL-Ext: HSCL-37A externalizing cluster, HTQ: Harvard Trauma Questionnaire, LEC-5: Life Event Checklist for DSM-5 for SLE, MEHIRA-SQ: MEHIRA Screening Questionnaire, MSS: Multi-Sector Social Support Inventory, PCL-5: Posttraumatic Stress Disorder Checklist, PHQ-9: Patient Health Questionnaire 9-item module for symptoms of depression, RATS: Reactions of Adolescent on Traumatic Stress, RHS-13: Refugee Health Screener-13, RHS-15: Refugee Health Screener, SCID-IV: Structured Clinical Interview for DSM-IV, SDQ: Strength and Difficulties Questionnaire for behavioral problems/child's strengths and problems, SLE: Stressful Life Events, SSS-8: Somatic Symptoms Scale, WTQ: War Trauma Questionnaire.

Outcomes: PTSD: posttraumatic stress disorder, PTSS: posttraumatic stress symptoms, SLE: Stressful Life Events.

Risk and Protection factors outcome: R: risks, P: protection factors.

found to be the most robust predictor for PTSS, depression and anxiety (Müller, Büter, et al., 2019).

Other stressful life events reported by a group of URM (Ehnholt et al., 2018) included: unwanted separation from family (87 %), physical abuse (87 %), and believing oneself to be in great danger (84 %). Giannopoulou et al. (2022) found being separated from parents (80 %) as the most frequent pre-flight trauma as well as experiencing kidnapping, robbery or being cheated during the journey to Greece (first country in Europe). Similar results were found in a long-term study conducted in Norway (Jensen et al., 2019). Before arriving in Norway, the subjects had experienced a mean of 5.7 stressful life events, the most prevalent ones being: death of a close person (66 %), witnessing violence (66 %), and war (66 %). During the follow-up, these children and adolescents reported a mean number of 2.7 new traumas after their arrival in Norway. 55 % witnessed violence, 51 % experienced the death or illness of a close person and 33 % witnessed violence where they lived.

3.3.2. Unaccompanied and accompanied minors

Table 1 shows the nine (39.1 %) articles which compare unaccompanied to accompanied minors (Björkenstam et al., 2020; Hjern & Kling, 2019; Höhne et al., 2021; Müller, Büter, et al., 2019; Müller, Gossmann, et al., 2019; Norredam et al., 2018; Sarkadi et al., 2019; Solberg, Nissen, et al., 2020; van Os et al., 2018).

Unaccompanied minors were found to be at far greater risk of experiencing higher levels of psychological distress (Höhne et al., 2021; Müller, Büter, et al., 2019), sleeping problems (Hjern & Kling, 2019), depression (Höhne et al., 2021) and PTSD (Solberg, Nissen, et al., 2020) compared to accompanied minors, although this difference may not exist after controlling for total number of traumatic events, age, and length of stay according to one study (Müller, Büter, et al., 2019). Similar data were obtained through a Danish nationwide register-based cohort study, reporting that 11.3 % of URM, compared to 7 % of ARM had a psychiatric diagnosis. When examining disorders separately, this study reported that URM had significantly higher rates of neurotic disorders than ARM, even when adjusted for age and sex (IRR:1.67, 95 % CI 1.32–2.13), but this difference was not found with any other diagnostic categories (Norredam et al., 2018). Using the RHS scale for screening symptoms of PTSD, depression and anxiety, Sarkadi et al., 2019 found that URM scored significantly higher ($M = 32.06$, $SD = 12.89$) compared to ARM ($M = 7.50$, $SD = 8.22$). However, a 1-year follow-up comparing the mental health outcomes of 47 URM and 25 ARM found no significant differences between the two groups (Müller, Gossmann, et al., 2019).

One cross-sectional study evaluated differences in the number of stressful life events experienced by these minors. The authors found that URM experienced a mean of 7.1 ($SD = 2.0$) stressful life events, while the mean among ARM was 4.1 ($SD = 1.4$) (van Os et al., 2018).

A meta-analysis including the data of the 4 studies which met the criteria measuring PTSD prevalence (Björkenstam et al., 2020; Hjern & Kling, 2019; Müller, Büter, et al., 2019 and Solberg, Nissen, et al., 2020) comparing URM vs. ARM was conducted. The results of the meta-analysis indicate that there was a significant overall difference between the groups: -1.14 (95%CI: -1.56 – 0.72), with a lower prevalence of PTSD in ARM (Fig. 2). Begg's funnel plot was drawn for the meta-analysis and it showed no suggestions of asymmetry. Egger's test was performed, without significant asymmetry (Supplemental Fig. 1).

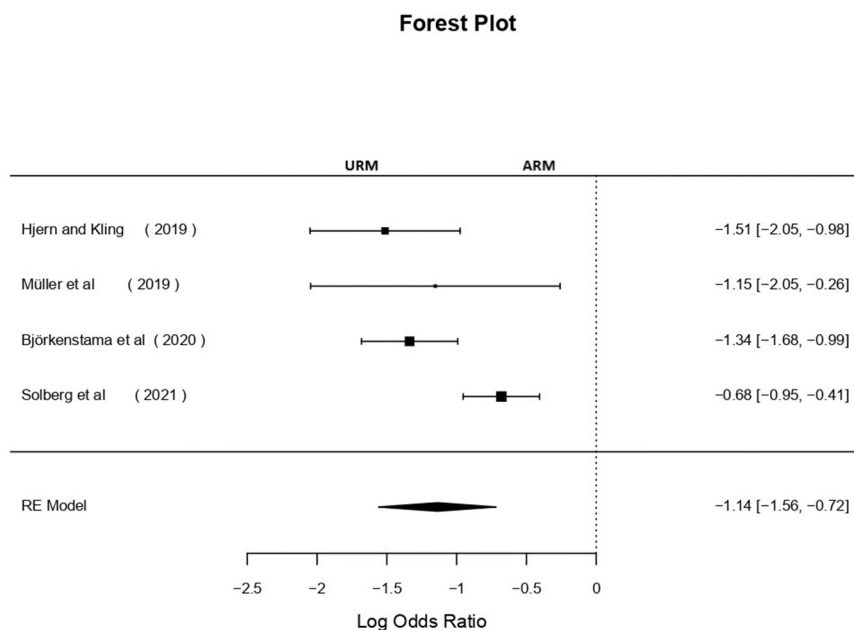


Fig. 2. Forest plot of the prevalence of Post-Traumatic Stress Disorder (PTSD) among Unaccompanied Refugee Minors (URM) and Accompanied Refugee Minors (ARM).

3.3.3. Sex

Five of the studies (21.7 %) evaluated differences in mental health problems according to the sex of the participants and showed opposite results (Giannopoulou et al., 2022; Hanewald et al., 2020; Laukamp et al., 2019; Mittendorfer-Rutz et al., 2020; Pfeiffer et al., 2022).

In a cohort study including 399 male and 124 female URM, males were found to carry a higher burden of symptoms and more positive screening results (RHS median = 10; positive RHS-15 = 58.9 %) compared to females (median = 5.5; positive RHS-15 = 48.4 %) (Hanewald et al., 2020). These findings are in direct contrast to a cross-sectional study that included 270 males and 76 females and found no significant differences regarding the prevalence of mental health disorders between the groups (Laukamp et al., 2019). Moreover, in a longitudinal multicentric study conducted in 3 European countries, females reported higher PTSS than males at baseline, but sex did not influence the longitudinal trajectory of PTSS over time (Pfeiffer et al., 2022).

Other articles analyzed the possible role of sex as a predictor of the severity of mental health problems. There was found to be an association between male gender and both PTSS (Giannopoulou et al., 2022) and death by suicide (Mittendorfer-Rutz et al., 2020). In contrast, female gender predicted higher mental distress among URM in the study by Höhne et al., 2021.

3.3.4. Age at migration

Three studies (13 %) analyzed the influence of subjects' age at the time of migration (Jensen et al., 2019; Hanewald et al., 2020; Zijlstra et al., 2019). A cohort study found a significant association between age and degree of mental impairment, showing a higher burden of mental health disorders among older URM (Jensen et al., 2019). Also, a higher age at the time of arrival in the host country was found to help predict emotional problems in a cross-sectional study (Zijlstra et al., 2019). Furthermore, a 5-year follow up study showed that a higher age at migration was associated with less change in symptoms of depression and PTSD over time (Hanewald et al., 2020).

3.3.5. Social support and placement type

Several studies ($N = 5$, 21.7 %) have assessed the impact of social support in the host country on the risk for developing mental health disorders among unaccompanied minors (Giannopoulou et al., 2022; Jensen et al., 2019; Müller, Büter, et al., 2019; Sierau et al., 2019 and Zijlstra et al., 2019).

Low levels of social support and high levels of daily hassles have been associated with increased levels of anxiety, depression, externalizing, and PTSD (Giannopoulou et al., 2022; Jensen et al., 2019; Müller, Büter, et al., 2019; Sierau et al., 2019). Specifically, 60 % of the URM followed for 5 years claimed that they had received less social support than they would have wanted. Moreover, they reported experiencing “much” or “very much” the following daily hassles: too little money (27 %), feeling unsafe (22 %), feeling unsure about the future (20 %), and difficulties getting documents from the authorities (17 %) (Jensen et al., 2019). Assessing URM living in different placement types (foster families, small living groups, small living units and campuses) in the Netherlands, it was found that children living on campuses and in small living groups experienced significantly more emotional problems than those living in foster families. Furthermore, URM living in large reception centers experienced the lowest quality of rearing environment, the highest incidence of mental health problems, and poorest access to mental health care (Zijlstra et al., 2019).

3.3.6. Asylum application status

Asylum application status was examined in 4 (17.4 %) of the reviewed studies (Giannopoulou et al., 2022; Mittendorfer-Rutz et al., 2020; Müller, Büter, et al., 2019; Sarkadi et al., 2019). A follow-up study revealed that participants whose applications were still pending or rejected at follow-up showed significantly more symptoms than participants whose asylum applications had been accepted between assessments. The strongest association was found regarding internalizing disorder symptoms, followed by depression symptoms, anxiety symptoms and PTSD symptoms (Müller, Gossmann, et al., 2019). Similarly, a cross-sectional study found that the prevalence of severe symptoms (including depression, anxiety and PTSD symptoms) was twice as high among individuals still awaiting a decision for their asylum application compared to those having received a residence permit (Sarkadi et al., 2019). In Greece, one of the gateway European countries for asylum to the EU, a study reported that seeking asylum through the family reunification procedure predicted higher levels of depressive symptoms, PTSS and negative cognitions (Giannopoulou et al., 2022).

Regarding suicide deaths, all such cases reported in 2017 in the Swedish study had applied for asylum 2 years earlier (Mittendorfer-Rutz et al., 2020).

Moreover, fear of deportation accounted for 3 % of the variance of a regression model to predict mental distress in URM (Höhne et al., 2021).

3.3.7. Schooling and level of proficiency with the language of the host country

Two studies have looked at the influence of schooling and educational attainment in the mental health problems of URM (Björkenstam et al., 2020; Höhne et al., 2021). In both studies, school attendance and educational attainment in the host country were protective factors of mental health problems (Björkenstam et al., 2020; Höhne et al., 2021), and the risk of common mental disorders decreased with increasing education (Björkenstam et al., 2020).

Moreover, among URM who died by suicide in Sweden in 2017, the available information indicates that 67 % of them had little or no schooling (Mittendorfer-Rutz et al., 2020).

Regarding these subjects' level of proficiency with the language of the host country, low skills in German were associated with higher levels of psychological distress in URM (Höhne et al., 2021; Müller, Büter, et al., 2019).

3.3.8. Others

Different patterns of mental health symptoms according to subjects' specific language cohort were found by [Hanewald et al., 2020](#), where Somali and Farsi (from Afghanistan) speakers reported more symptoms than speakers of Arabic (mainly from Syria, Irak, Algeria and Morocco) and Tigrinya (from Eritrea).

When comparing groups of URM according to these individuals' country of origin, minors from Afghanistan had higher prevalence of PTSD than those from Syria ([Solberg, Nissen, et al., 2020](#)). However, another study found that URM subjects' country of origin did not predict mental distress ([Höhne et al., 2021](#)).

4. Discussion

The prevalence of PTSD, depression and anxiety was found to be high among unaccompanied refugee children and adolescents who came to Europe in the 23 studies included in this review. The studies reported a prevalence between 4.6 % and 43 % for PTSD, between 2.9 % and 61.6 % for depression, between 23.8 %, 38.2 % for anxiety disorder/symptoms and between 4 % and 14.3 % for behavioral problems. Moreover, two studies pointed out the higher prevalence of suicide attempts and deaths of URM compared to the general population of the host countries.

These results are similar to what was found in the previous systematic review looking at mental health problems of URM in Europe: 35.5 % for PTSD (95 % CI 19.0–52.7 %), 20.7 % for depression (95 % CI 10.3–32.8 %) and 15 % for anxiety disorders (95 % CI 8.7–31.6 %), with a median prevalence of 5 % for suicidal ideation and behavior ([Kien et al., 2019](#)). Other reviews focusing on URM all over the world have also highlighted the high prevalence of PTSD, PTSS, depression, anxiety and behavioral problems among URM ([Bamford et al., 2021](#); [von Werthern, Grigorakis, & Vizard, 2019](#)). Data were less conclusive for other disorders/problems, however it seems clear that, compared to the general population under the age of 18, URM are at a higher risk of presenting PTSD, depression and anxiety. Overall, the prevalence of mental health disorders in URM are significantly higher than the worldwide prevalence among all children and adolescents which has been reported to be 2.6 % for any depressive disorder (CI 95 % 1.7–3.9), 6.5 % for any anxiety disorder (CI 95 % 4.7–9.1) and 5.7 % for any disruptive behavior (CI 95 % 4.0–8.1). ([Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015](#)).

The studies included in this systematic review showed high variability in the quality of assessment scale, with around 21 % of the studies scoring in the low range (<3). Significantly different results regarding the prevalence of mental health disorders were reported across the studies, which may be due to several factors. For instance, different study designs were used (i.e., cross-sectional vs longitudinal studies) as were different methods for diagnosing mental health problems (i.e., diagnostic criteria vs. symptom scales). Additionally, certain studies did not examine all of the diagnostic categories, while some were conducted with a small sample. All of these points should be taken into account when analyzing the results both of this review and of earlier ones examining this issue ([Bamford et al., 2021](#); [Kien et al., 2019](#); [von Werthern et al., 2019](#)).

When looking at all of the studies included in this review, Afghanistan was the most common country of origin of the refugees, although this was not always the case. For instance, in the Danish register study, most URM came from Bosnia-Herzegovina. However, this difference could be due to the specific time period examined in that study (1993–2010) which overlapped with periods of extreme political instability and war in that region ([Norredam et al., 2018](#)). Political conflicts around the world, regardless of their distance from Europe, have tended to lead to immigration of minors to this continent, and Afghanistan has been an unstable country for >20 years ([Council on Foreign Relations, 2021](#)). According to Eurostat, the statistical office of the European Union, Afghanistan was, in 2019, the main country of origin, in terms of the citizenship of asylum seekers considered unaccompanied minors in the EU Member States ([Eurostat, 2020](#)). Citizens of Afghanistan comprised 30 % of the total number of unaccompanied minors registered.

One important point when looking at these statistics is that there is a significant percentage of URM minors who applied for asylum and subsequently withdrew their applications. It has been suggested that this could be an indicator of trafficking of children ([Euractiv.com, 2015](#)). A related concern is that, since the collapse of the Soviet Union, there has been considerable movement of individuals across borders in central Asia, and this could include migrant smuggling ([Sengupta et al., 2018](#)). These concerns overlap with another known risk that URM from Afghanistan face, which is sex trafficking ([United States Department of State, 2018](#)).

The studies reviewed indicate that there are more URM boys than girls in Europe (>75 % of the samples), which is consistent with previous reviews ([Kien et al., 2019](#); [von Werthern et al., 2019](#)). Among all unaccompanied minor refugees in Europe who were asylum applicants in 2019, 84.9 % were male ([Eurostat, 2020](#)).

As has been previously reported, URM children and adolescents experienced several types of adverse events and situations before migration (such as war or political conflicts, poverty, etc.), during the process of migration (smuggling, trafficking, etc.) and post-migration in the host country (lack of family or social support, insecurity during the legal process of seeking asylum, cultural changes, language, etc.) all of which may make them particularly vulnerable to mental health disorders ([Bamford et al., 2021](#); [Höhne et al., 2020](#); [Kien et al., 2019](#)). To avoid potential exploitation, abuse or neglect of this minor population, measures must be taken to protect these individuals at all stages of the migration process. International organizations and institutions as well as host countries need to take concrete measures to help ensure these individuals' well-being.

4.1. Mental health predictors and associated factors

Regarding risk and predictor factors for this population, fifteen of the included studies ([Björkenstam et al., 2020](#); [Ehnholt et al., 2018](#); [Giannopoulou et al., 2022](#); [Hanewald et al., 2020](#); [Hjern & Kling, 2019](#); [Höhne et al., 2021](#); [Jensen et al., 2019](#); [Laukamp et al., 2019](#); [Mittendorfer-Rutz et al., 2020](#); [Müller, Büter, et al., 2019](#); [Müller, Gossmann, et al., 2019](#); [Norredam et al., 2018](#); [Oppedal et al., 2020](#); [Pfeiffer et al., 2022](#); [Sarkadi et al., 2019](#); [Sierau et al., 2019](#); [Zijlstra et al., 2019](#)) revealed that sex, age, social support, exposure

to trauma, placement type, the asylum application procedure, schooling and language skills in the host country were the factors that were most commonly associated with mental health outcomes.

4.1.1. Exposure to trauma

Exposure to trauma reported by URM children and adolescents increases the risk of developing mental health problems (Giannopoulou et al., 2022; Jensen et al., 2019; Müller, Büter, et al., 2019), not only during childhood and adolescence, but also in adulthood. But more importantly, a large proportion of these URM report having been exposed to trauma in the host country, including experiencing violence in reception facilities, and this further negatively affects their psychological well-being (Jensen et al., 2019; Zijlstra et al., 2020). Pfeiffer et al. (2022) pointed out that premigration trauma only affect PTSS at baseline assessment, but not in the follow-up visits up to 21 months. Apart from exposure to trauma before and during migration, post-migration stressors related to resettling in a new country or having an insecure visa status can also predict mental health outcomes, as we have detailed above.

It is known that the number of childhood adversities, including trauma, that URM suffer can increase the risk of psychosis (Varese et al., 2012). With this in mind, it is surprising that only one study in the present systematic review reported data on psychotic disorders (Norredam et al., 2018).

4.1.2. Unaccompanied migration

Being unaccompanied has been found to be a strong predictor for higher levels of psychological distress among all refugee minors (Stotz, Elbert, Müller, & Schauer, 2015). The results from the studies in our review provide further evidence to support this idea (Björkenstam et al., 2020; Hjern & Kling, 2019; Höhne et al., 2021; Müller, Büter, et al., 2019; Müller, Gossmann, et al., 2019; Norredam et al., 2018; Sarkadi et al., 2019; Solberg, Vaez, et al., 2020; van Os et al., 2018). Moreover, the results of the meta-analysis confirms that URM had a higher prevalence of PTSD than ARM. One possible explanation for this is that URM are more likely to experience a larger number of traumatic events compared to ARM (Bean, Derluyn, Eurelings-Bontekoe, Broekaert, & Spinhoven, 2007; Hodes, Jagdev, Chandra, & Cunniff, 2008; Höhne et al., 2021; Müller, Büter, et al., 2019; van Os et al., 2018). Additionally, URM are usually older than ARM (Hjern & Kling, 2019; Müller, Büter, et al., 2019; Norredam et al., 2018; van Os et al., 2018), and this could also help explain the higher prevalence of mental disorders in URM. Being with one's family can play an important role in migration, and family cohesion has been reported to be a protective factor associated with lower incidence of mental health disorders in children and adolescent refugees in a recent systematic review (Scharpf, Kaltenbach, Nickerson, & Hecker, 2021). All told, there are a number of factors linked to being an unaccompanied minor that may increase the prevalence of mental health disorders in URM.

4.1.3. Sex

Female URM are at higher risk for developing PTSS and were more likely to present more severe PTSS than male URM according to a systematic review (Mohwinkel, Nowak, Kasper, & Razum, 2018). Female URM also presented higher rates of depression symptoms although no significant gender differences were found related to the prevalence of depressive disorder (Mohwinkel et al., 2018). However, in our review only five studies take sex into account when examining prevalences in their samples, and no conclusions could be drawn due to conflicting results. Males were associated with higher psychological distress, PTSS and suicide deaths by some authors (Giannopoulou et al., 2022; Hanewald et al., 2020; Mittendorfer-Rutz et al., 2020), while others linked females to higher psychological distress and baseline PTSS (Höhne et al., 2021; Pfeiffer et al., 2022). One study found no differences in the prevalence of mental health disorders, mostly PTSD and depression, between sexes (Laukamp et al., 2019). It is important to highlight that most URM are boys (von Werthern et al., 2019). In 2015, for instance, it was calculated that up to 90 % of these immigrants were boys (Euractiv, 2015) and this overwhelming numerical imbalance between genders may limit researchers' ability to identify potential differences between sexes.

In the general population, differences in the prevalence of mental health disorders between male and female minors vary depending on the subjects' age. No significant differences have been found in pre-school children (Egger & Angold, 2006), but there is a higher prevalence of problems among young school-aged boys (Gutman, Joshi, Parsonage, & Schoon, 2015). Later, during adolescence, the higher prevalence shifts to girls, and this difference continues into young adulthood. Looking at specific conditions, depressive and anxiety disorders are more prevalent in girls from an early age, and this difference increases with age. Moreover, girls are more likely to meet criteria for PTSD (Alisic et al., 2014; Tolin & Foa, 2006). Conduct disorders are more prevalent in boys at all ages, although there could be under-diagnosis of this condition among girls. Researchers have suggested that these differences could be the result of biological differences (Choleris, Galea, Sohrabji, & Frick, 2018) and social factors related to gender (Andermann, 2010).

4.1.4. Age

The impact that age at migration has on the risk of mental disorders in URM was assessed by a previous systematic review which concluded that older URM were more likely to develop psychological disorders (O'Higgins, Ott, & Shea, 2018). This is similar to the studies we found, which reported a higher burden of mental health disorders (Hanewald et al., 2020) and emotional problems (Zijlstra et al., 2019) as well as less change in symptoms of depression and PTSD over time (Jensen et al., 2019) among older URM compared to younger URM. The fact that older URM minors had more mental health problems could be partly explained by the fact that younger refugees receive and benefit from higher levels of support and attention by professionals in the host country than do older refugees. Also, the fear of potential deportation from the host country back to one's country of origin after turning 18 (Hanewald et al., 2020) could influence the mental health of the older URM. However, these same variations of prevalence between different age groups are also found in the general population under the age of 18. Disorders such as depression, anxiety and PTSD are also more prevalent during adolescence than during childhood (Polaczyk et al., 2015). The increase in the prevalence of emotional disorders during adolescence may be due to changing social factors during this stage of life, and biological factors associated with neurological

development and maturity. The limbic system and the prefrontal cortex develop during adolescence, and earlier maturation of the limbic system could be responsible for the emotional instability and mood disorders of some individuals (Ahmed, Bittencourt-Hewitt, & Sebastian, 2015).

Another factor to take into account when looking at URM subjects' age at migration is the possible discrepancy between self-reported age and age as assessed by the authorities of certain host countries using biological measures such as dental examination. In a study conducted in Norway, 56 % of self-reported minors were, according to biological indicators, not actually minors (Jakobsen, Meyer DeMott, Wentzel-Larsen, & Heir, 2017).

4.1.5. Social support and placement

In the general population, social support plays an important role in the maintenance of psychological well-being. Such support helps individuals cope with exposure to stress, and effectively decreases its potential impact on mental health (Cohen & Janicki-deverts, 2009; Uchino, 2006), thus reducing the prevalence of PTSS and depression. Evidence suggests that perceived social support has a better correlation with mental health outcomes than actual received social support (Lakey & Orehek, 2011). Among the data reviewed, most of the studies reported that URM were at high risk of experiencing low levels of social support and increased levels of daily hassles, and this was found to be linked to a greater prevalence of anxiety, depression, externalizing, and PTSD (Giannopoulou et al., 2022; Jensen et al., 2019; Müller, Büter, et al., 2019; Sierau et al., 2019). Making an effort to improve the social support received by these individuals could have a positive impact on their mental health outcomes. Sierau et al. (2019) found that URM received the most social support from their families, followed by peers and adult mentors. For URM coming to Europe alone, having contact with the family back in the country of origin had a highly relevant subjective value (Höhne et al., 2021), and this influenced the reception of social support from other networks. Consequently, the study underscored that URM lacking family contact receive less peer and mentor support compared to URM who are with their family (Sierau et al., 2019).

One variable that is linked to the level of social support experienced in the host country is the type of placement these individuals are offered. Foster care and placements that are culturally sensitive have been associated with the highest levels of social support and better mental health outcomes (O'Higgins et al., 2018). In the current review, the quality of the rearing environment was found to be highest in foster families, followed by small living units, small living groups and campuses, and this quality level was found to correlate inversely with the prevalence of psychiatric problems (Zijlstra et al., 2019).

4.1.6. Asylum application status

Awaiting a decision after applying for asylum can be a difficult situation with adverse effects. Individuals still awaiting a decision regarding their asylum application present a higher prevalence of PTSD, depression and anxiety symptoms compared to those who have already received a residence permit (Müller, Büter, et al., 2019; Sarkadi et al., 2019). Additionally, in adults, it has been found that the asylum process, which may include having to recount past traumatic experiences in detail during interviews, might aggravate PTSD (Schock, Rosner, & Knaevelsrud, 2015).

The precarious legal status of a person who is an asylum seeker has important implications that may hinder their integration in the host communities (Procter, Kenny, Eaton, & Grech, 2018). A Greek study found that seeking asylum in Europe predicted greater PTSS severity and negative cognitions (Giannopoulou et al., 2022). Disturbingly, a long asylum-seeking process (at least 2 years) was also found to have been part of the personal history of every URM who died by suicide in 2017 in Sweden (Mittendorfer-Rutz et al., 2020).

4.1.7. Schooling and level of proficiency with the language of the host country

Subjects' level of proficiency with the language spoken in the host country has been associated with psychological well-being in first-generation immigrant children (Cavicchiolo et al., 2020). In URM, lower levels of German language proficiency were associated with higher levels of psychological distress in Germany (Höhne et al., 2021; Müller, Büter, et al., 2019). Similarly, these minors' education level, both when they first arrive in the host country and afterwards, may significantly shape their experience. Previous studies conducted in the Netherlands and Norway found no relationship between education level at the time of arrival in URM and changes in mental health after one and two years of follow-up, respectively (Bean et al., 2007; Jensen, Skårdalsmo, & Fjermestad, 2014). However, some studies included in this review show that better school attendance and greater educational achievements are associated with lower levels of mental health problems (Björkenstam et al., 2020; Höhne et al., 2021). In contrast, a study looking at adults who had arrived in Sweden as URM or ARM, found that subjects who had gone on to attain higher education levels showed increased use of psychiatric care services. This was the opposite of what has been observed among the native Swedish population (Manhica, Almquist, Rostila, & Hjern, 2017).

Higher educational attainment was linked to fewer deaths by suicide in adults in one study (Phillips & Hempstead, 2017), but not in another (Pompili et al., 2013). In URM, males with little or no previous schooling were the group with the highest rates of dying by suicide (Mittendorfer-Rutz et al., 2020). It is worth noting that there may be a cyclical effect: healthy children achieve better educational outcomes, which, in turn, are associated with improved health later in life (Langford et al., 2015). Some URM are far from healthy when they arrive in Europe, and this can have significant implications for their education and long term health.

4.1.8. Other potential protective or risk factors related to mental health

Other parameters may be worthy of further study in the URM population.

The role of faith, religion and spirituality could be a significant parameter. In fact, this has been reported to be one of the most significant enablers of psychological well-being in refugees and asylum seekers living in transitional host countries (Posselt et al., 2019). However, the item "importance of religion" in one questionnaire did not significantly predict psychological distress in URM

(Höhne et al., 2021). More detailed study of specific links between spiritual aspects of these individuals' experience and their mental health could be helpful.

Ethnic and racial discrimination should also be explored as a potential risk factor for mental health disorders in URM. In adults, racial discrimination was associated with PTSD among asylum-seekers in Australia (Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997). In a study of child and adolescent refugees who received care from the mental health system in Greece, these minors received more diagnoses related to their physical health (Z) compared to the Greek population, which had a higher number of psychiatric diagnoses (F). This suggests that refugees may have different needs, or more difficulty accessing public health services compared to natives (Triantafyllou et al., 2018), perhaps due to ethnic differences and a lack of interpreters in health centers. European policies exist to enhance cultural sensitivity and break linguistic barriers which can prevent immigrants from accessing the health care system and these need to be more widely implemented (Gil-Salmerón, Katsas, Riza, Karnaki, & Linos, 2021).

4.1.9. Early intervention in host countries

The psychiatric symptoms presented by refugees are often related to traumatic events during the different stages of their migration, including early post-migratory stressors (Kien et al., 2019). If these symptoms are not treated, this can lead to a chronic condition which can negatively affect these subjects' well-being and functioning (Solberg, Nissen, et al., 2020). Early intervention focused on assessing the mental health status of refugees would help to detect mental health problems and facilitate access to appropriate treatment, thus preventing a chronic condition. It has been suggested that the screening for psychological distress should be done at least twice in the first months after these subjects' arrival in the host country due to the possibility of there being delayed stress which may not be initially detected (Hollifield et al., 2021).

Some studies have described specific interventions which could help vulnerable groups of refugees. For instance, one article described a mobile mental health intervention developed by the World Health Organization which has been used to help Adult Syrian Refugees increase their access to the health systems of host countries (Burchert et al., 2019). In Germany, looking at URM who had spent at least 6 months in that country, a randomized control trial evaluated the trauma focus group intervention program called "Mein Weg" compared to usual care. The results showed an improvement in PTSD and depression symptoms after the intervention and up to 3 months later in the intervention group (Pfeiffer, Sachser, Tutus, Fegert, & Plener, 2019).

4.1.10. Possible differences between a systematic review of URM studies in Europe vs. other countries

Apart from the Kien et al. (2019) review which focused exclusively on European studies, other reviews regarding the mental health of URM have included studies from all over the world (Bamford et al., 2021, with one study conducted in Ethiopia; von Werthern et al., 2019, with one study conducted in the Philippines and another in United States of America (USA). It is important to note that between Europe and other countries, such as the USA, there are currently considerable differences in terms of the asylum process for URM (Council on Foreign Relations, 2022; European Union agency for asylum, 2022), the country of origin of these minors (mainly Afghanistan, Syria and Iraq in Europe vs Central America countries in USA) (Council on Foreign Relations, 2022; Eurostat, 2022) and their reasons for leaving (socio-political factors vs. economic reasons) (European Parliament, 2020).

Some of the European studies reviewed in this systematic review were already included in a previous systematic review: 11/23 (47.8 %) by Bamford et al. (2021). Nevertheless, the goal of this study was to look exclusively at Europe as a way to help minimize the potential effects of regional differences when assessing the prevalence of mental health problems in URM.

4.1.11. Limitations

This review has several limitations. First, cultural differences and the language barrier can be significant obstacles standing in the way of reliable clinical evaluation of this population. Second, there is considerable heterogeneity regarding the refugees' countries of origin: Afghanistan, Syria, Eritrea, Somalia, Iraq, Iran, and Bosnia-Herzegovina, among others. Third, it is worth pointing out that only a few European countries have conducted studies on URM, while other countries where there is a significant URM population, such as Italy and Spain (UNICEF, UNHCR, & IOM, n.d.), did not conduct or publish any study in the time period of our systematic review. URM who arrive in these countries could have a different mental health profile since they tend to come from different countries of origin and emigrate for different reasons: most are from Morocco and Sub-Saharan countries and emigrate to Europe for economic reasons (Bravo & Santos-González, 2017). With this in mind, the generalizability of the findings of this systematic review to other URM populations in Europe is questionable. Nevertheless, our review brings together new information to offer a more complete picture of the mental health challenges currently being faced by a particularly vulnerable population.

4.1.12. Conclusion and outlook

To sum up, URM children and adolescents included in the most recent mental health studies were more likely to experience certain disorders compared to non-migrant children and adolescents. The main diagnoses in this population were PTSD, anxiety and depression, while suicide attempts and deaths were higher than in the host population. Many risk and predictor factors for the mental health outcomes of this population have been identified. Host countries need to take into account these individuals' mental health problems, many of which may be improved through the development of psychological interventions to ensure increased levels of social support and lower levels of daily hassles.

As an additional note, the current COVID-19 pandemic could have a negative impact on children's and adolescents' mental health (Marqués de Miranda, da Silva, Sena Oliveira, & Simoes-e-Silva, 2020; Solerdelcoll, Arango, & Sugranyes, 2021) and this effect is likely to be even worse among vulnerable groups such as URM. It would be helpful for this to be kept in mind by both clinicians as well as those making public policy decisions affecting this population.

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CRedit authorship contribution statement

IB and AD-C had the idea to do this review. All authors participated in the literature search. AD-C wrote the first draft. IB and NB wrote the reviewed version of the manuscript. All of the authors critically revised the work, read and approved the final manuscript.

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Data availability

Data will be made available on request.

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