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The Epidemiology of PTSD and Depression in Refugee Minors who have Resettled in Developed Countries

Abstract

Background: With an increasing number of refugees migrating across continents the crisis is very apparent. **Aims:** A literature review of patterns, risk factors and effects of PTSD and depression in refugee minors was carried out involving those who have resettled in a different developed country. **Methods:** Papers were narrowed down by reading the abstracts and methods to ascertain whether the refugee children had resettled in developed countries and to ensure that they had not just been internally displaced. **Results:** High incidences of PTSD and depression were found in refugee minors and poorer mental health was correlated with increased exposure to violence. Factors such as social support and family security were important in reducing the rates of PTSD and depression whereas the implications of age and gender were unclear. Long term effects from these mental illnesses indicated scholastic issues but no further worsening of symptoms. **Conclusions:** Further research is needed regarding the follow-up of refugee minors with PTSD and depression to allow for the establishment of more effective support systems, as long term outcomes become more clearly understood. Few papers discuss the influence of religion which may be an interesting line of future research as refugees move to more secular societies.

Introduction

With ever new outbreaks of war and political unrest across the globe, large populations are forced to undergo trialling situations and endure resettlement in unfamiliar countries. A proportion of these countries involved are developed –

classified by having a high human development index encompassing income, healthcare and education (UN Development Programme, 2015). The term refugees depicts those who are forced to flee their countries, often leaving their homes, possessions and livelihoods. This is very different to migrants, who make the advanced decision to move which often allows time to prepare for life elsewhere. It is also important to note the differences between the legal status of refugees and asylum seekers. The refugee status is achieved through a successful application for asylum whereas the asylum seeker is still waiting on the outcome of their application under the 1951 Refugee Convention (UNHCR, 2016).

Refugees must cope with the memories of past experiences whilst dealing with a new and uncertain life in a foreign country. There are high occurrences of mental health problems such as post-traumatic stress disorder (PTSD) and depression that can manifest in differing forms and to varying extents, especially in developing minors (Almqvist and Brandell- Forsberg, 1997). PTSD is a consequence of experiencing a traumatic event and can include symptoms of hyperarousal, avoidance and re-experiencing events (McCloskey and Southwick, 1996).

Depression is often a comorbidity of PTSD but can present alone with symptoms such as somatisation, suicidal thoughts, and constant low mood (Sourander, 1998).

The Syrian civil war has already produced over 4M refugees, with over half registering under the age of 18 years old (UNHCR, 2015). This statistic is not uncommon and reflects many refugee populations fleeing their home country. Over time, developed countries have seen an increase in the number of refugees within society, many of whom are children with more health issues than others of their own age (UNHCR, 1994). Integrating into a new setting is often challenging for children but even more so for those who have migrated to distant countries and acquired

mental illness. These illnesses have noticeable effects on their long-term mental health, academic progress and social development (Berthold, 2000). However, there is difficulty conducting studies involving refugee minors because of the need to gain parental consent and the families' scepticism upon arrival which often results in small sample sizes. Refugees can also become cautious with the amount of information they are willing to provide due their unstable social situation and their anxiety over legal repercussions (Hjern et al, 1991). Therefore, the prevalence and extent of mental health issues may be under recorded (Huemer et al, 2013).

A thorough systematic review exploring the mental health of displaced and refugee children who had moved to high income countries (Fazel et al, 2012) reported high levels of mental illness. The after-effects of migration from their homeland were found to have wide-ranging and serious consequences. Fazel et al focus on the general mental health of the minors and include some papers which primarily focus on the internal displacement of refugee children.

In this review, the patterns of PTSD and depression in refugee minors who migrated to different developed countries will be explored as well as the effects and indicators of these mental illnesses. This review in part brings up to date the findings of Fazel et al that were published in 2012, but it also differs as it only includes those children who have moved to a different developed country whereas the Fazel et al review included children who had been internally displaced.

Search strategy and selection criteria

Google scholar, Medline, PubMed and FindIt@bham databases were used to search for studies in this review. Terms such as "PTSD", "depression", "mental health", "psychological", and "resilience" were combined with "refugee minors", "refugee

adolescents” and “refugee children”. These searches found 484 studies but not all were relevant. Many of the initial studies included children who had only been internally displaced or had moved to developing countries so were not specific to this review. The studies were narrowed down by reading the abstracts and methods to ensure that the populations within the samples were on average 18 years or younger and had resettled in a different developed country. The developed country aspect to the review was used to focus the research but also to make the review more relevant to the Western world. The studies had different criteria when describing refugees so in this review all papers that referred to their samples as refugees were included.

The final 42 studies chosen to be reviewed included those with refugee children or adolescents who moved to developed regions including: the US, UK, Canada, Scandinavia, Australia, Austria, Slovenia, Belgium, the Netherlands and Greece. The studies assessed the mental health of the minors and found either PTSD or depression, or both. Table 1 (in the appendix) includes summaries of all the studies used in this review.

Mental health symptoms in refugee minors

Studies used in this review indicate that significant proportions of refugee minors who migrate to a developed country experience PTSD or depression. A study looking into the mental health of refugee children in London found that up to 63% scored in a range indicative of PTSD (Heptinstall et al, 2004). In more current research the rates of PTSD were less and typically ranged from 40-60% (Jensen et al, 2014; McGregor et al, 2015; Vervliet et al, 2014). However, the proportion of refugee children with PTSD can be considerably less, with the lowest rates around 5% (Mace et al, 2014). Similarly, depression rates are not consistent between

studies but research in Khmer refugee adolescents resettled in the US highlighted almost two out of three presented with symptoms suggestive of depression (Berthold et al, 2000). Typically, the proportion of refugee minors suffering with depression in studies is lower, ranging from 25-50% (Heptinstall et al, 2014; Montgomery, 2010). Rates of PTSD and depression differ between studies due to the variation in their methodology and samples. The measures of these mental illnesses range from clinical interviews to questionnaires and the populations investigated often have varied past experiences which impact on their presentations (Fazel et al, 2012).

It has also been discovered that PTSD in war- affected populations has an association with other mental illnesses such as depression (Berthold et al, 2000; Betancourt et al, 2012). This highlighted the likelihood of refugee minors developing more than one mental health problem after migrating to a new country. A positive correlation was found between post-traumatic stress and depressive symptoms in Somali adolescents (Kia-Keating and Ellis, 2007), and further supporting evidence from a study involving Bosnian refugee children found the majority of minors who exhibited high levels of depressive symptoms also showed significant extents of post-traumatic stress symptoms (Slodnjak et al, 2002). It is clear that refugee children often present with a variety of psychological issues and symptoms when they arrive into a new country which emphasises the complex effects caused by traumatic experiences. Therefore, unfortunately, due to these complex presentations it can be difficult to find a definitive diagnosis for all the children studied (Betancourt et al, 2012).

In addition, further issues arise with recognising symptomatology, especially in those children who may be suffering with regressive or re-experiencing symptoms in PTSD. These symptoms are the most severe types but typically the most difficult to

diagnose and are subjective (Rothe et al, 2002). Particularly within developed westernized countries challenges are also met with regards to alternative presentations of symptomatology which can make assignment of ICD diagnoses difficult. In these refugee minors from different cultural backgrounds the symptoms may be expressed through physical explanations and many can struggle with the concept of mental health (Majumder et al, 2015).

Indicators of PTSD or depression in refugee minors

Violence

Multiple studies show an association between the exposure to pre-migration trauma and PTSD (Almqvist and Brandell- Forsberg, 1997; Bean et al, 2006; Geltman et al, 2005; Heptinstall et al, 2004; Vervliet et al, 2014; Lincoln et al, 2015). This trauma could have involved the minor being the recipient of violent attacks (Ekblad, 1993) or observing violence targeted at others. In a sample of Middle Eastern refugee minors, the experience of a traumatic event such as the viewing of their mother's torture was found to be a strong predictor of PTSD symptoms (Montgomery and Foldspang, 2006). Higher PTSD scores were also found in children if they had experienced the violent death of a family member (Heptinstall et al, 2004).

A dose-effect relationship between the exposure to traumatic events and PTSD was described in Bosnian refugee minors, indicating that those children who have experienced more trauma will be likely to suffer with more symptoms (Papageorgiou et al, 1999). Similarly, a one-year follow-up of refugee minors in the Netherlands found that a large number of stressful life events was a significant predictor of traumatic stress reactions (Bean et al, 2006). It has also been highlighted that those children who self-report more life events have greater internalizing scores which

suggests that life events can also be linked to more depressive or anxious symptoms (Bean et al, 2006; Vervliet et al, 2014).

Violent attacks directly against the child were also found to increase the chances of developing more severe mental health issues. A study assessing the mental health of Sudanese refugee minors in the US found that being injured as a result of the violence increased the likelihood of developing PTSD (Geltman et al, 2005). These injuries from violent attacks have the opportunity to establish lasting reminders of their traumatic experiences which are potentially hard to overcome. Furthermore, and more specifically, the children involved in the study who had suffered a head trauma were found to have a doubled risk of developing PTSD (Geltman et al, 2005).

Migration and post-migration traumas were also found to be important in the development of PTSD. Experiences of violence during the migration process and in refugee camps on arrival were found to be particular stressors for the refugee children. There was a dose-effect relationship between the number of stressors and the severity of self-reported PTSD symptoms (Rothe et al, 2002). This is consistent with the findings from the study assessing pre-migration trauma and PTSD (Papageorgiou et al, 1999).

Age of the minor

From the studies it is clear there is considerable disagreement over the association between developing PTSD or depression and the age of the minor. Many studies have failed to find any association between age and the development of mental health issues (Angel et al, 2001; Berthold, 1999; Ellis et al, 2008; Hjern et al, 1998; Montgomery, 2010; Tousignant et al, 1999; Vervliet et al, 2014). However, when the gender of the child was also taken into account during a study of Cambodian

refugees, the boys and girls were found to experience their symptoms at different ages. The girls had their highest internalizing symptoms during their early adolescence whereas the boys were presenting with these symptoms later in their adolescence (Rousseau et al, 2003).

Regardless of gender, some research has highlighted that older children are at an increased risk of experiencing depressive symptoms (Liebkind et al, 1993; Papageorgiou et al, 1999). It is theorised those of an older age may internalise their reactions to past experiences due to their higher stage of cognitive development, whereas younger children are more likely to externalise their reactions (Papageorgiou et al, 1999). In addition, a study conducted in the Netherlands involving unaccompanied refugee children discovered the older children had experienced more negative life events (Bean et al, 2006)- a significant risk factor for developing PTSD. Therefore, this correlation would suggest an increased likelihood of suffering with PTSD in older individuals.

In contrast, a study investigating the mental health of refugee minors in Finland found that those of a younger age (6-14 years) tended to exhibit more symptoms of the PTSD criteria (Sourander, 1998). It was thought those who were older had better coping strategies over the younger children however, a significant limitation to this paper is that the questionnaire used to assess the mental health of the refugee minors was too unspecific for clear diagnoses.

On the other hand, the issue with this matter may be due to the difficulty in determining mental health problems in younger children. There has been discussion over the challenge in diagnosing young children of preschool age with mental health issues such as PTSD (Almqvist and Brandell-Forsberg, 1997). Explanations for this

vary from the children having the opportunity to hide their issues by becoming over-dependent on the mother to the child's low social range creating less potential for expression. Interestingly, the study in refugee preschool children observed many who had PTSD presented through re-enacting play behaviour (Almqvist and Brandell- Forsberg, 1997). This was thought to be more unique to the younger age groups due to their lower cognitive development.

Gender of the minor

The relationship between gender and the development of PTSD or depression is unclear and many studies cease to find any association. Previous research has concluded that boys present with more symptoms indicative of PTSD than girls (Almqvist and Brandell- Forsberg, 1997; Papageorgiou et al, 1999). In the study assessing Bosnian refugee children, the boys were found to have significantly higher avoidance scores (Papageorgiou et al, 1999). However, this result cannot show a definitive link between refugee boys and a higher incidence of PTSD because avoidance is only one element necessary for a formal diagnosis. In addition to this, more current research shows higher scores of intrusion and avoidance in girls than boys which could show a greater tendency for girls to suffer with PTSD (Vervliet et al, 2014; Volkl-Kernstock et al, 2014).

Further mental health issues such as internalizing behaviours have also been recorded at higher rates in girls (Bean et al, 2006; Derluyn et al, 2008; Beiser and Hou, 2016). Despite this, associations between depressive symptoms and gender are still unclear because greater internalizing behaviours have equally been described in the male population (Rousseau et al, 2004).

The overall majority of studies did not find conclusive evidence to suggest there are differences between boys and girls with regards to PTSD or depression (Angel et al, 2001; Berthold, 1999; Betancourt et al, 2012; Ellis et al, 2008; Heptinstall et al, 2004; Hjern et al, 1998; Jensen et al, 2014; Rothe et al, 2002). There was no statistical significance between the differences in the mental health of boys and girls from the study investigating refugee children in London (Heptinstall et al, 2004). In addition, the study assessing the effects on War-Affected refugee children found no gender differences when meeting the criteria for PTSD (Betancourt et al, 2012). However, this particular study had limitations because it had small sub-groups of refugee minors due to the issues with language barriers.

Ethnicity of the minor

Over the last few decades, ethnic groups have resettled due to different triggers within their own country of origin. The minors have varied experiences of pre-migration and post-migration stressors not only between but also within ethnic groups. Consequently, there are mixed findings between studies (Rousseau et al, 1998; Tousignant et al, 1999; Ziaian et al, 2012). A study conducted in Australia that assessed the depressive symptomatology in refugee minors found Middle Eastern parents scored their minors the highest on the questionnaires in comparison to other ethnic groups (Ziaian et al, 2012). This highlights the cultural impact on mental health outcomes, and particularly the effects in Middle Eastern minors. Other research also describes higher rates of psychopathology in Central American refugee minors (Rousseau et al, 1998; Tousignant et al, 1999), and greater internalizing scores in the refugee children of Central American parents on low annual incomes (Rousseau et al, 2000). However, in order to form clearer

conclusions over the role of ethnicity in the refugee minor's mental health, further studies need to be completed with multi-ethnic samples of children.

Social support

The support provided in the refugee minor's new environment has been found to be particularly important for their mental health. There is a general consensus across numerous studies to suggest that social support is associated with lower rates of depression or PTSD (Bean et al, 2006; Berthold, 2000; Derluyn et al, 2008; Geltman et al, 2005; McGregor et al, 2015; Montgomery, 2008; Papageorgiou et al, 1999; Ziaian et al, 2012). A study covering the mental health of Sudanese refugee minors in the US found that those without family and in foster care had higher rates of PTSD (Geltman et al, 2005). This highlights that children migrating alone require more support once they have resettled. The careful selection of foster carers was also found to be particularly important for the mental health of the minor. A study involving unaccompanied Indochinese refugee minors described significantly lower rates of depression in those placed with carers of the same ethnicity (Porte and Torney-Purta, 1987). Further studies suggest that displacement from the family either because of war or a support programme created risks of the child developing mental illnesses (Papageorgiou et al, 1999). Not only is the separation detrimental to their mental wellbeing but there is also increased concern over their family's safety in the home country.

A Belgium study focusing on refugee and migrant adolescents found that over half their study population were unaccompanied, and at a higher risk of suffering with depression and PTSD (Derluyn et al, 2008). This is thought to be influenced by the reduced stability available to the child which highlights the importance of parental

accompaniment to lower such mental health problems in minors (Berthold, 2000). Similarly, a paper covering the mental health of unaccompanied refugee children in the Netherlands showed that the minors with another family member had lower internalising scores suggestive of less depression and anxiety (Bean et al, 2006). In comparison, those refugee minors without any family had higher scores, indicative of depression and anxiety (Bean et al, 2006). This study is useful because it involves a one-year follow-up so long term issues could be found. However, it is limited by the fact that only self-report questionnaires were used to score their symptoms. A full diagnostic interview could not be conducted because of the multiple languages.

The formation of friendships was also found to be particularly advantageous for the minor's mental health (Montgomery, 2008). An association between the number of friendships and internalizing symptoms indicated those refugee children with a greater number of friends were less likely to develop internalising problems. It is suggested that the more friends made in school minimised the likelihood of facing discrimination and as a result lowered the risks of anxiety and depression (Montgomery, 2008).

Family circumstances

Even if the family are able to accompany the child in migration to another country there are many factors involving the relatives that can influence the mental health of the child. The family's financial difficulties and unemployment were found to be a significant worry and were associated with higher depressive scores (Heptinstall et al, 2004; Ziaian et al, 2012). It is thought that those families who are more financially secure prior to migration have children with more mental health problems if the family is faced with financial difficulty post-migration (Heptinstall et al, 2004). The

insecurity of family members' asylum statuses was also a factor found to have direct effects on the children's mental state and was linked to higher depressive symptoms (Heptinstall et al, 2004). Further results suggest that the PTSD scores are more significant in children whose family had an insecure asylum status (Heptinstall et al, 2004). It is thought that the parent's anxiety over potential deportation exaggerated the PTSD in the minors. The associations between the parent and child's mental health have also been demonstrated in refugee minors resettled in Canada, where parents with depressive symptoms had children with highly internalized symptoms (Rousseau et al, 1998). In addition, good maternal mental health has been highlighted as a protective factor against poor mental health in children which further emphasises the importance of whole family assessments (Ekblad et al, 1993; Fox et al, 1999).

Refugee children who came from a single parent household have also been found to suffer with higher internalizing symptoms compared to minors with both parents (Rousseau et al, 1998). Similarly, higher depressive scores were reported in the children of widowed mothers resettled in Australia (Ziaian et al, 2012) which indicates the greater instability children can experience in a single parent household. The separation of a nuclear family has additionally been associated with higher rates of PTSD in refugee children (Mace et al, 2014).

Those minors without family in their new country were found to suffer more with mental health problems. The Sudanese minors who were alone in foster care were found to be less involved in group activities and had higher levels of PTSD (Geltman et al, 2005). The isolation was very apparent and highlighted the need for more interventions to be put in place for the children post-migration.

Other factors in a study following Middle Eastern refugee children in Denmark, highlighted the mother's education as a good predictor of less internalising behaviour in the children (Montgomery, 2008). The mothers with higher levels of education could have greater awareness of the systems in place and therefore have better access to resources. This in turn would have provided more stability for their children. Furthermore, the child's Danish proficiency was also associated with less internalising behaviour such as depression (Montgomery 2008). The child's ability to communicate with their peers would have been important for their integration into new environments. Although many of these papers only focus on specific refugee ethnic groups, the family circumstances across these studies have clearly been critical in the readjustment and mental health of the minors.

Religion

It has been found in one study that having an Islamic or Christian faith was associated with fewer internalising problems (Montgomery, 2008). However, there were also a number of children in the same sample group who had chosen to change religion or had belonged to a persecuted faith. This latter result could highlight the potential difficulties of practicing in their new country and being marginalized for their religious beliefs. This study which looked into the long-term effects of violence on Middle Eastern refugee children was limited by the fact that the study assessed their mental health on a self-reported basis, rather than through clinical examinations.

Among some refugee children prayer has been reported as the most helpful and frequently used coping strategy which could prove the positive influence of religion in many resettling minors (Volkl-Kernstock et al, 2014). However, there is not a large

body of evidence assessing the influence of religion on refugee children, so firm conclusions cannot be made. Furthermore, none of the papers researched into the effects of the secularism within many of the developed countries and the influence this could have had on the religious views of the minors.

Effects of PTSD or depression on the refugee minors

School performance

Despite the mixed findings between the papers, there is a general consensus that mental health problems have a negative impact on the refugee child's school performance (Berthold, 2000; O'Shea et al, 2000; Slodnjak et al, 2002). Associations have been observed between referral for educational needs and mental health issues such as PTSD and depression (Mace et al, 2014). These educational needs were a result of concern for the child's development and performance in the classroom. Furthermore, a school-based mental health service in London discovered the majority of those pupils referred with PTSD had either scholastic skill disorders or speech and language developmental disorders (O' Shea et al, 2000). This could suggest that their own personal difficulties with PTSD were interfering with their achievement in school, whether it be through problems expressing themselves or grasping new ideas. Additionally, many of these children may have missed valuable teaching during their migration and with entering into a new education system the expected standards may be different (Mace et al, 2014).

A study assessing the mental health of refugee Khmer Adolescents found that the girls outperformed the boys in school achievements and those who had experienced less violence had a better academic performance in school (Berthold, 2000).

However, in contrast, a paper assessing refugee Bosnian children found those who

had stronger academic performances at school reported higher levels of PTSD (Slodnjak et al, 2002). This may suggest that those who had higher levels of academia were able to explain their experiences and symptoms with greater clarity. In addition to this, the study further highlighted that greater levels of depression in children were associated with a larger impact on their school performance. Those children who showed more signs of depression tended to have poorer success at school which could imply depressive symptoms are more disruptive than stress in education (Slodnjak et al, 2002).

Lower levels of depression and PTSD have also been found in a sample of refugee adolescents in the US when they felt a greater sense of school belonging (Kia-Keating and Ellis, 2007). Therefore, when belongingness is established there may be some resolution of poor performance and difficulties at school. However, if the children do fail academically they have been found to engage in riskier behaviours such as abusing drugs and committing criminal offences (Hawkins et al, 1992).

Long term mental health problems

There is no general consensus between the studies, but the majority suggest that the rates of PTSD decrease over time but not significantly (Almqvist and Brandell-Forsberg, 1997; Jensen et al, 2014), and that the rates of depression are unlikely to decrease over time (Bean et al, 2006; Huemer et al, 2013; Jensen et al, 2014; Liebkind, 1993; Slodnjak et al, 2002; Vervliet et al, 2014). A follow-up study conducted for Iranian families in Sweden found there was a small reduction in rates of PTSD over time but the majority of those who had initially suffered with PTSD were still suffering (Almqvist and Hwang, 1999). There was also a decrease in the number of stress symptoms experienced by the children and particularly a reduction

in re-experiencing behaviour (Almqvist and Hwang, 1999). The results of this study were thorough, but with a small sample of only 9 refugee minors with PTSD at the initial investigation, the findings are perhaps not representative of all refugee children. In contrast, a study focusing on Bosnian refugee children found the rates of reduction in PTSD were more significant than indicated by the previous paper (Slodnjak et al, 2002).

Some of the most recent studies conducted in unaccompanied refugee minors (Jensen et al, 2014; Vervliet et al, 2014) suggest that depression rates may not change and contradict other previous research. A one-year follow-up of refugee minors in Belgium found that time had failed to have an impact on the levels of mental health issues such as depression (Vervliet et al, 2014). In addition to this, Jensen et al revealed there were no significant changes in the symptom scores for depression over time. This result could highlight the uncertainties that refugee minors face in their new country and their ongoing issues of integration. Recently, rates of depressive symptomatology have also increased over time in some refugee minors which may indicate certain cohorts are less resilient to mental health issues (Liebkind, 1993; Huemer et al, 2013).

Although in the most current evidence there has been little indication of improvement in depression rates, a study conducted in the UK found there were fewer internalizing symptoms in refugee minors who had been resettled for greater than two years (Dura-Vila et al, 2012). Furthermore, a 9-year follow-up study conducted in Denmark has found these depressive symptoms do reduce over time (Montgomery, 2010). This could suggest that improvement or resolution may occur in the long-term, however few studies have followed their samples of refugee children over such

a great period of time. More evidence needs to be gathered before any definite conclusions can be established.

Conclusions and recommendations

From these studies there is evidence of a high incidence of PTSD and depression in refugee minors who migrate to developed countries. The extent of exposure to violence has been found to influence the levels of PTSD. However, there was no general agreement among the papers over the influences of age and gender so secure conclusions cannot be made regarding these factors. Further investigations need to be conducted in order to establish whether gender and age are important factors in the development of PTSD and depression. Another potential line of further research could be focused on the effects of religion and the mental health of the refugee minors. Unfortunately, few studies assess the impact of religion on the minors and with ever more refugees migrating to secular societies the results could be interesting. Social support was found to promote lower occurrences of PTSD and depression in refugee minors. This was significantly highlighted in the higher rates of mental health problems in the unaccompanied refugee children (Geltman et al, 2005). Particular family aspects such as financial difficulties and the mother's level of education were found to have a direct effect on the rates of PTSD and depression in the minors. The studies also suggested that PTSD or depression could have effects on the child's later school performance, and highlighted many refugee children struggle not only with basic expression in speech but also writing. Interestingly, despite previous research indicating some of these mental health illnesses reduced with time, more current evidence suggests that depressive symptoms are unlikely to decrease and PTSD reduces marginally in the long term. It is important for future studies to follow up their minors after numerous years so the patterns of PTSD and

depression in refugee children can be better understood. Additionally, many studies would benefit from involving those qualified to formally diagnose participants so clearer conclusions are established. With this information, the long term needs of the refugee minors could be better known which in turn will allow for greater awareness and support.

The Appendix

Author	Date published	Sample	Findings	Measurements
Almqvist and Brandell-Forsberg	1997	50 Iranian refugee children, aged 4-8 years, in Sweden.	Traumatic exposure was associated with PTSD. Re-enacting behaviour was common in the younger age groups.	Semi-structured interviews.
Almqvist and Hwang	1999	39 Iranian refugees, aged 6-10 years, in Sweden.	Re-enacting behaviour reduced over time in children exposed to traumatic stress.	Semi-structured interviews.
Angel et al	2001	99 Bosnian refugee children, aged 6-16 years, in Sweden.	No trends found between age or sex and mental health. Weak reductions in depressive symptoms were seen over time.	Clinical interviews.
Bean et al	December 2006	582 unaccompanied refugee minors, aged 12-18 years, in the Netherlands.	High psychological distress of refugees was severe and chronic in 50%. No signs that depression/anxiety lowered over time.	RATS, HSCL-37A, SLE.
Beiser and Hou	2016	540 children, aged 11-13 years, in Canada.	Higher internalizing scores were seen in refugee girls.	Structured interviews, eight-item and six-item self-report symptom scales.
Berthold	1999	76 Khmer refugee adolescents, with mean age 16 years, in the US.	Found no associations between the age and the mental health of the minors. Associations between gender and mental health were found.	SCECV, LA PTSD Index, CIS.
Berthold	2000	144 Khmer refugee adolescents, with mean age 16 years, in the US.	66% of adolescents had symptoms indicative of depression and 33% had symptoms indicative of PTSD. The social support perceived was associated with better mental states.	SCECV, LA PTSD Index, CES-DC.
Betancourt et al	December 2012	60 war-affected refugee children, with mean age 13.1 years, in the US. They had migrated from: Central and South America, Africa, Eastern Europe, Asia and the Middle East.	High rates of PTSD, somatization, generalized anxiety and other behavioural problems. Academic problems and behavioural difficulties were found.	Clinical interviews.
Derluyn et al	2008	1, 249 refugee and migrant adolescents, aged 11-18 years, in Belgium.	PTSD and depression were found to be at an increased level in the adolescents. The number of post traumatic effects were higher in the migrants than non-migrants.	SLE, RATS, HSCL-37A, SDQ.

Refugee Minors: PTSD and Depression

Dura-Vila et al	2012	102 refugee minors, aged 3-11 years, in the UK.	The internalizing symptoms were higher in those who had most recently resettled in the UK.	Clinical interviews and SDQ.
Ekblad	1993	66 refugee minors, aged 5-15 years, in Sweden.	Risk factors for mental ill health included direct violence and reduced interest in school.	Structured interviews.
Ellis et al	2008	135 refugee adolescents, with mean age 15 years, in the US.	No associations were found between the age of the minor and their mental health.	WTSS, UCLA-PTSD, DSRS.
Fox et al	1999	47 refugee minors, aged 9-15 years, in the US.	Found that good maternal mental health is a protective factor against poor mental health in children.	Structured interviews and CDI.
Geltman et al	2005	304 unaccompanied Sudanese refugee minors, with mean age 18 years, in the US.	Direct personal injury and immediate separation from family was linked with increased chances of developing PTSD.	HTQ-CHQ.
Heptinstall et al	August 2004	27 refugee children, aged 8-16 years, who lived in London.	Correlation between the PTSD scores and the number of pre-migration traumas. Correlation between depression scores and the families' number of post migration stresses. High depression scores were associated with financial difficulties.	Structured parental interviews, IES and DSRS.
Hjern et al	1991	50 Chilean refugee children, aged 2-15 years, in Sweden.	Highlighted the difficulties with interviewing refugees and the association between persecuted children and night terrors.	Adapted Cederblad questionnaire
Hjern et al	1998	63 Chilean refugee children, aged 2-15 years, in Sweden.	No associations were found between the age of the minor and their mental health.	Original questionnaires for organised violence and family stress. Cederblad questionnaire.
Huemer et al	2013	41 unaccompanied refugee minors, aged 15-18 years, in Austria.	Found that rates of depressive symptoms increased over time after their resettlement.	WAI, YSR.
Jensen et al	2014	75 unaccompanied refugees, with mean age 16.5 years, in Norway.	Found no change in the rates of PTSD and depression over two years. Suicidal ideation was found to be high after two years of resettlement.	Semi-structured interviews, HSCL-37A, CPSS.
Kia-Keating and Ellis	2007	76 Somali refugee adolescents, aged 12-19, in the US.	Lower depression levels were seen in those who had greater school belonging. A positive correlation was seen between depressive and post-traumatic stress symptoms.	WTSS, PTSD-I, DSRS.
Liebkind	1993	159 refugee minors, with mean age range 14-20 years, in Finland.	Higher depressive scores in older children and these depressive scores worsened over time.	HSCL-25, Vietnamese Depression Scale.
Lincoln et al	June 2015	135 refugee minors, with mean age 15.4 years, in the US.	Severity of PTSD symptoms were worse if had greater exposure to trauma.	WTSS, UCLA-PTSD, DSRS.

			Acculturative hassles were more detrimental to marginalized adolescents.	
Mace et al	May 2014	332 refugees, aged 4-18 years, in Australia.	Associations were found between referral for educational needs and PTSD. Factors such as family separation and mandatory detention were detrimental to the children's mental health.	Semi-structured interviews.
McGregor et al	June 2015	50 refugees, with mean age 16.6 years, in Australia.	High rates of PTSD were found and there was an association between higher scores and separation from family.	Semi-structured interviews, CPSS, CCSC, YES-R.
Majumder et al	2015	15 refugee adolescents, aged 15-18 years, in the UK.	Refugee adolescents had a tendency to describe their mental health issues through physical explanations.	Semi-structured interviews.
Montgomery	2006	311 refugee minors, aged 3-15 years, in Denmark.	The disappearance of a father and the torture of a mother was found to be predictors of PTSD symptoms.	Structured parent interviews.
Montgomery	August 2008	131 young Middle Eastern refugees, aged 8-9 years, in Denmark.	The mother's education, indicators of adaption and social life in Denmark predicted psychological problems after arrival better than previous traumatic experiences.	Semi-structured interviews, structured parental interviews and YSR, YASR
Montgomery	2010	131 young Middle Eastern refugees, with mean age 15.3 years, in Denmark.	Those children who could overcome their psychological problems were found to be more resilient to stressors in the new country.	Structured interviews, YSR, YASR
O'Shea et al	2000	14 refugee children, aged 7-11 years, in London.	The children faced ongoing socio-economic issues and had disorders related to them. Some of the children had learning and scholastic difficulties.	Clinical interview.
Papa-georgiou et al	November 1999	95 Bosnian refugee children, aged 8-13 years, in Northern Greece.	47% children scored in the clinical range for depression, 23% for anxiety and 28% for PTSD reactions. There was an association between the number of traumatic events experienced and scores for PTSD.	IES, DSRC
Porte and Torney-Purta	1987	82 Indochinese refugee adolescents, with mean age 16 years, in the US.	Placing the refugee children with carers of the same ethnicity was associated with lower depression levels.	CES-DC
Rothe et al	August 2002	87 Cuban refugee children, aged 6-17 years, in the US.	Children were found to suffer with moderate to severe PTSD symptoms. A dose-effect relationship was found.	PTSDRI, CBCL-TRF
Rousseau et al	1998	156 refugee children, with mean age 10 years, in Canada.	More internalizing symptoms were found in central American refugee children, single-parent	CBCL, a separation index and trauma scale.

			households and depressive parents.	
Rousseau et al	2000	158 refugee children, aged 14-15 years, in Canada.	Higher internalizing scores were found in Central American children with parents on low annual incomes.	CBCL, YSR.
Rousseau et al	2003	57 Cambodian refugee minors, with mean age 14 years, in Canada.	Boys and girls were found to experience their highest internalizing symptoms at different ages.	YSR, SES, CSES
Rousseau et al	2004	67 Cambodian refugee adolescents, with mean age 14 years, in Canada.	Parents and adolescence have differing views on the associations of internalizing symptoms.	YSR, CBCL
Slodnjak et al	2002	265 Bosnian refugee children, aged 14-15 years, in Slovenia.	The children showed low extents of depressive symptoms but high post-traumatic stress symptoms. Academic performance was not affected by stress symptoms but possibly by depressive symptoms.	IES, CDI, adapted WTQ
Sourander	1998	46 unaccompanied refugee minors, aged 6-17 years, in Finland.	Older children were less susceptible to emotional distress than older children. Many of the symptoms documented indicated PTSD or anxiety.	CBCL
Tousignant et al	1999	203 adolescent refugees, with mean age 15.7 years, in Quebec.	Higher rates of depression were found in the refugees but no association was found between age and the mental health status.	Semi-structured interviews, DISC-2.25, CGAS
Vervliet et al	2014	204 unaccompanied refugee minors in Norway and 103 unaccompanied refugee minors, aged 14-18 years, in Belgium.	High rates of PTSD and depression were found in this sample of refugee minors.	HSCL-37A, SLE, RATS, HTQ
Volkl-Kernstock et al	2014	41 refugee minors, aged 15-18 years, in Austria.	Girls had greater scores in avoidance and were more likely to develop PTSD. Prayer was a helpful strategy to cope with the mental health issues.	UCLA-PTSD, SCWP, UCLA Trauma Reminder Inventory
Ziaian et al	2012	348 refugee children, aged 7- 17 years, in Australia.	Middle Eastern children had higher depressive scores compared to other ethnic groups.	CDI

RATS- The Reactions of Adolescents to Traumatic Stress, HSCL-37A- The Hopkins Symptom Checklist-37, SLE- The Stressful Life Events checklist, SCECV- Survey of Children's Exposure to Community Violence, LA PTSD Index- Los Angeles Post-Traumatic Stress Disorder Index, CIS- Columbia Impairment Scale, CES-DC- Centre for Epidemiologic Studies Depression Scale for Children, SDQ- Strengths and Difficulties Questionnaire, WTSS- War Trauma Screening Scale, UCLA-PTSD- University of California at Los Angeles Post-traumatic Stress Disorder Reaction Index, DSRS- Depression Self-Rating Scale, CDI- Children's Depression Inventory, HTQ- CHQ- Harvard Trauma Questionnaire-Child Health Questionnaire, IES- Impact of Event Scale, DSRSC- Depression Self-Rating Scale for Children,

WAI- Weinberger Adjustment Inventory, YSR- Youth Self-Report, CPSS- Child PTSD Symptom Scale, HSCL-25- Hopkin's Symptom Checklist-25, CCSC- Children's Coping Strategy Checklist, YES-R- Youth Experience Scale for Refugees, YASR- Young Adult Self-Report, DSRC- Depression Self-Rating Scale for Children, PTSDRI- Post-Traumatic Stress Disorder Reaction Index, CBCL-TRF- Child Behavioural Check List-Teacher Report Form, SES- Rosenberg's Self-Esteem Scale, CSES- Collective Self-Esteem Scale, WTQ- War Trauma Questionnaire, DISC-2.25- Diagnostic Interview Schedule for Children Version 2.25, CGAS- Children's Global Assessment Scale, SCWP- Scales for Children Afflicted by War and Persecution.

Table 1: Summary of studies

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