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POST-MIGRATION STRESS AND MENTAL HEALTH AMONG REFUGEES: A POPULATION-BASED SURVEY AMONG REFUGEES FROM SYRIA RECENTLY RESETTLED IN SWEDEN

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By

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ABSTRACT

Refugees are exposed to several risk factors for mental ill health before, during, and after the migration. While the impact of traumatic experiences on the mental health of refugees is well-known, the effect of adverse experiences and circumstances in the post-migration context have been less investigated, although a shift has been seen in recent years.

The overall aim of this thesis was to increase the knowledge on post-migration stress and its associations with mental ill health among refugees. The thesis is based around a cross-sectional and population-based survey among refugees from Syria who were granted permanent residence permit in Sweden between 2011-2013.

The objective of Study I was to estimate the prevalence of mental ill health and its associations to potential traumas and post-migration stress among refugees from Syria recently resettled in Sweden. A postal questionnaire was sent to a random sample of 4 000 individuals aged 18-64 years drawn from a sample frame containing all eligible participants. Access to registered-based information enabled the construction of non-response weights. Weighted analyses were conducted to calculate prevalence rates and associations, and associations were investigated through a series of logistic regression analyses. Results indicate that prevalence rates for anxiety, depression, PTSD, and low SWB are highly elevated among refugees from Syria with a majority meeting criteria for at least one of the included measures of mental ill health. Furthermore, experiences of potentially traumatic events (PTEs) before and during the migration as well as experiences of post-migration stress were common. Most types of PTEs and post-migration stress were associated with increased risk for mental ill health.

The objective of Study II was to develop and validate the Refugee Post-Migration Stress Scale (RPMS), an instrument for assessing refugee-related post-migration stress. The development was conducted in two phases. In the first phase, a preliminary instrument was developed based on a theoretical model of post-migration stress, covering seven hypothesized domains: *perceived discrimination, lack of host country specific competences, material and economic strain, loss of home country, family and home country concerns, social strain,* and *family conflicts*. In the second phase, the factorial structure of the instrument was investigated in the context of the survey described in Study I, using Confirmatory and Exploratory Factor Analyses. The analyses resulted in a 7-factor model of post-migration stress that showed excellent fit to data. The final version of the RPMS contains 21 items for assessing refugee-related post-migration stress across seven domains.

Experiences of post-migration stress are common among refugees from Syria recently resettled in Sweden, and as the results in this thesis show, post-migration stress is associated with increased risk for mental ill health. In order to facilitate recovery from traumatic experiences, measures should be taken on a societal level to mitigate the adverse effects of post-migration stress among refugees.

LIST OF SCIENTIFIC PAPERS

I. Tinghög P., Malm A., Arwidsson C., Sigvardsdotter E., Lundin A. & Saboonchi F. Prevalence of mental ill health, traumas and postmigration stress among refugees from Syria resettled in Sweden after 2011: a population-based survey. BMJ open. 2017;7.

II. Malm A., Tinghög P., Narusyte J. & Saboonchi, F. The Refugee Post-Migration Stress Scale (RPMS) – development and validation among refugees from Syria recently resettled in Sweden. Conflict and Health. 2020.

SCIENTIFIC PAPERS NOT INCLUDED IN THE THESIS

Sigvardsdotter E, Nilsson H, Malm A, Tinghög P, Gottvall M, Vaez M, et al. Development and Preliminary Validation of Refugee Trauma History Checklist (RTHC)-A Brief Checklist for Survey Studies. International journal of environmental research and public health. 2017;14(10):1175–.

Sigvardsdotter E, Malm A, Tinghög P, Vaez M, Saboonchi F. Refugee trauma measurement: a review of existing checklists. Public health reviews. 2016;37(1):10–10.

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LIST OF ABBREVIATIONS

CFA	Confirmatory factor analysis
CI	Confidence intervals
df	Degrees of freedom
DSM-5	Diagnostic and statistical manual of mental disorders
EFA	Exploratory factor analysis
ESEM	Exploratory structural equation modeling
HSCL-25	Hopkins symptom checklist 25
HTQ	Harvard trauma questionnaire
ICD-10	International statistical classification of diseases, 10^{th} rev.
IDPs	Internally displaced people
IRT	Item response theory
MICE	Multiple imputation by chained equations
OR	Odds ratio
PTE	Potentially traumatic event
PTSD	Post-traumatic stress disorder
RCC	Red Cross treatment center
RPMS	Refugee post-migration stress scale
RTHC	Refugee trauma history checklist
S-Bχ2	Satorra-Bentler scaled chi-square
SCB	Statistics Sweden
SWB	Subjective well-being
TPR	Total population register
UNHCR	United Nations High Commissioner for Refugees
WHO	World Health Organization
WHO-5	WHO well-being index

1 INTRODUCTION

In the past decade, the number of forcibly displaced persons globally has nearly doubled, from 41.1 million in 2010 to an unprecedented 79.5 million at the end of 2019 (UNHCR, 2020). With higher numbers of forcibly displaced people for each year, and with ongoing conflicts across the globe, the crisis for those forced to leave their homes shows no signs of abating. Forcibly displaced people include refugees, internally displaced people (IDPs), asylum seekers, and Venezuelans displaced abroad. A majority of these are IDPs, which means that they remain within the borders of their home country. Of the 26 million refugees, i.e., people who have crossed an international border and are under UN mandate, more than 70% are hosted in neighboring countries. Although only a small fraction of the world's refugees lives in a European country (European Commission, 2021), this still means that there are hundreds of thousands of people in Europe that have been forced to leave their homes and that are now trying to rebuild their lives in societies far – geographically, but often also culturally – from their country of origin.

Several studies have found elevated levels of mental ill health among refugees, both when compared to other migrants (Lindert, Ehrenstein, Priebe, Mielck, & Brähler, 2009; Straiton, Reneflot, & Diaz, 2017) and to host country general populations (Bogic, Njoku, & Priebe, 2015; Fazel, Wheeler, & Danesh, 2005; Steel et al., 2009), a pattern that appears to remain even several years after resettlement (Bogic et al., 2015). Although rates of mental ill health vary between different studies, similar patterns have been seen across different refugee populations in different host country contexts. This is not surprising, given the very nature of experiences that refugees typically have prior to their flight; war, persecution, human rights violations, and significant losses of loved ones, property, and livelihood. However, there is a growing body of evidence that also experiences in the host country may have a negative impact on the mental health of refugees (Laban, Gernaat, Komproe, van der Tweel, & De Jong, 2005; Li, Liddell, & Nickerson, 2016; Porter & Haslam, 2005; Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997).

Research literature on migration commonly distinguishes between different phases of migration. These involve pre-migration, the migration itself (transit), and post-migration (Bhugra & Jones, 2001). Although these phases may not be easily distinguishable in real-life migration, they may still serve as a point of departure for encircling the kind of experiences and challenges that refugees may face in the complex process of migration. Even though refugees share many experiences of similar kind, it needs to be underlined that there is also an enormous diversity in these experiences; regarding living conditions and circumstances leading to the decision to flee, in the length and conditions of the transition itself, and in the host-country societies during the post-migratory phase.

This thesis deals with experiences and circumstances that refugees face in the post-migratory context. Its main objective is to increase the knowledge on post-migration stress among refugees and, in the longer run, to contribute to the understanding of how the negative effects

of post-migration stress among refugees may be mitigated. For this purpose, an assessment instrument for refugee post-migration stress was developed. An additional objective of this thesis is to contribute to a better understanding of the prevalence of and associations between post-migration stress and mental health in a forcibly displaced population with previous experiences of war, human rights violations, and losses.

The study population in this thesis comprised of refugees from Syria, as they represented the largest group of asylum seekers in Sweden in 2015, when preparations for this thesis were made (SCB, 2021a).

2 BACKGROUND

2.1 REFUGEES AND GLOBAL MIGRATION

Global migration has continued to increase over the last decades (Ruist, 2019). While people have always migrated, globalization has made transnational migration easier to pursuit in many aspects; people move temporarily or permanently to study or work abroad, or for marriage, and free movement may be granted through international treaties, e.g., the freedom of movement for citizens within the European Union (Ruist, 2019). At the same time, migration has become more difficult and dangerous for a large proportion of the world's population. With more restrictive immigration policies being implemented in many Western and high-income countries, "legal" migration options are scarce for those who migrate to escape natural disasters, poverty, and harsh living conditions, as well as for those who seek refuge from war, persecution, and human rights violations. This often means that the migration includes a dangerous journey, and great uncertainty regarding the outcome and consequences of the migration (UNHCR, 2017, 2019; Human Rights Watch, 2014).

The study population in this thesis consists of refugees. The term "refugees" has many connotations and may be differently understood depending on the context where it is used, but it typically refers to people who have fled war, conflict, and persecution, and who have sought refuge in another country. According to the 1951 Convention Relating to the Status of Refugees and its 1967 Protocol (commonly referred to as the Refugee Convention), a refugee is defined as a person *"owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or owing to such fear, is unwilling to avail himself the protection of that country; or who, not having a nationality and being outside of the country of his former habitual residence, is unable or, owing to such fear, unwilling to return to it*" (UNHCR, 1967).

In this thesis, the term "refugees" is used in a wider sense than in the UN definition. It refers to people who have been forced to flee from their home country for reasons such as war or conflict, persecution, and human rights violations, or threats thereof. These persons may be viewed as *de facto* refugees, even though some of them may not qualify as refugees according to the Refugee Convention. The term, as it is being used here, also includes asylum seekers and family members who have been granted residence permit on basis of family reunification.

People migrate for various reasons, and many factors on different levels may contribute to the decision to migrate. In migration research, determinants of international migration are often divided into push and pull factors, based on Everett Lee's model on migration (Lee, 1966). Push factors contribute to making an area unfavourable, which make people want to leave that area. This is typically the case for refugees, who migrate in an attempt to escape the extremely negative consequences of war, armed conflict, and persecution. For labour migrants it is more likely that pull factors play a central role in the decision to migrate;

greater possibilities of economic development in the receiving country attract people to move there. Although this model may be criticized for being too simplistic, its coarse division of factors may still be useful for explaining the causes of migration.

The decision to migrate has been described as a calculation of possible benefits, and when the estimated positive consequences of migrating outweigh the consequences of staying, the decision to migrate is made (Borjas, 1989). This may be true for some migrants, in particular for labour migrants with high education and a job offer or even a contract in place before the decision to migrate is made.

For refugees, however, the situation is often more complicated. The assessment of one's situation in the home country may change on a daily basis, and the decision to finally flee is often characterized by desperation rather than by rational calculation. Furthermore, the potential consequences from migration are much more difficult to estimate for someone who's primary concern is to escape harm rather than to move towards a prosperous future. For refugees, the flight typically involves great insecurity regarding the future, and, if the destination is not a neighbouring country, an expensive, long, and dangerous journey.

Rather than a rational calculation of how to maximize one's well-being, the decision to migrate may be seen as being shaped in a complex interaction between structural factors that change over time. Van Hear, Bakewell, and Long (2018) have proposed a framework of factors (conditions that may shape migration) and drivers (activated factors) involving predisposing, proximate, precipitating, and mediating drivers. *Predisposing* drivers form a context in which migration is more likely to occur. These include economic differences between countries and regions, political disparities (including conflict and issues relating to human security), and geographical factors, such as how close and easily accessible the desired destination is. *Proximate* drivers may be similar to the predisposing drivers, but in a more acute sense: deteriorating human rights situation or economic collapse in the home country or improved economic situation or employment conditions in the destination country. *Precipitating* drivers are factors that have a more direct impact on the actual decision to migrate, such as a collapsing health care system, an invasion or an escalation of conflict, or a natural disaster. *Mediating* drivers can either facilitate migration (availability of information regarding the journey and destination, access to transportation, resources for the journey), or constrain it (lack of travel infrastructure, restrictive immigration policies at destination). Existing migration networks in the destination country may also serve as a facilitating driver.

For many refugees, the only viable alternative is to seek temporary safety in a neighbouring country, often under harsh living conditions, perhaps with the hope to be able to return home when the situation stabilizes. However, what was perhaps a temporary solution at first may turn into years or even decades in limbo in refugee camps or as "illegal immigrants" excluded from the benefits of the host country society. As mentioned above, only a small portion of the world's refugees manage to reach remote destinations in Europe or North America, with hopes of re-building their lives in a safe environment. However, legal entry into these countries is often not an option; a visa is generally required, something that is impossible to

acquire for people from countries that "produce" refugees. Consequently, when the EU and other countries close their borders to migrants (including refugees), few or no legal options remain for those who wish to practise their right to seek asylum for reasons of protection, as stipulated in the Refugee Convention. In the European context, control of the EU's external borders in combination with treaties with countries outside the union (e.g., Turkey and Libya) with the purpose to stop migrants from trying to reach the EU, has made migration to Europe more difficult and dangerous, with thousands of migrants drowning in the Mediterranean Sea each year (Ruist, 2019).

The migration legislation of a country will have effect on the composition of its migrant population, as it will attract migrants from different countries with different experiences in their country of origin, but also from the migration itself. The political climate of the host country, as well as attitudes towards refugees and other migrants in the society, will also differ from country to country. Using the typology of John Berry to describe host-country environments (Berry, Berry, Poortinga, Segall, & Dasen, 2002), some host countries could be described as multicultural, which means that migrant groups with various backgrounds can live together with the dominant group and that they are encouraged to maintain their culture of origin. Other countries are categorized as "melting pots", where contact between different groups is valued, but where minorities, because of the dominance of the host country culture, in reality are forced to conform to that culture. In countries characterized by segregation, immigrants may be allowed to keep their culture as long as they live separated from the dominant group. When the resentment towards immigrants and cultural diversity is even more predominant, the society may be characterized by exclusion; immigrants and cultures different from that of the dominant group are unwanted elements in the society, and interaction between different groups is discouraged and avoided.

Altogether, refugees are not a homogenous group, and experiences in refugee populations will differ depending on country of origin and the migration itself. Furthermore, coming to a multicultural society where migrants are welcomed will affect one differently compared to coming to a society where migrants are forced to assimilate or live separated from the rest of the society. Hence, generalizations between different refugee populations must be made with caution.

2.1.1 Refugee migration in the Swedish context

Migration patterns in Sweden have gone through enormous changes in the course of the last 150 years. For the second half of the 19th century, Sweden was a country characterized by a large emigration, primarily to the US. In the aftermath of World War II, Sweden started to receive refugees, but it was not until the 70s that refugee immigration really began. The first refugee groups to arrive in larger numbers came from Chile and other Latin American countries during the 70s and 80s, and from Iran in the 80s. In the 90s, during the Balkan Wars, asylum immigration from the former Yugoslavian republics increased dramatically. A similar situation was seen for Iraqis a few years after the US-led invasion and toppling of

Saddam Hussein, when chaos and civil war caused hundreds of thousands of Iraqis to flee (Westin, 2006).

During a few months of 2015, the situation for people who wanted to seek refuge in the EU changed dramatically. This was, at least partially, due to a decision from Turkey to abstain from stopping refugees within its borders from moving on towards Europe (Ruist, 2019). Hundreds of thousands of migrants crossed the Aegean Sea to Greece, and by the end of 2015 more than one million people had applied for asylum in EU member states (Eurostat, 2021).

In Sweden, the number of asylum applications doubled in 2015 compared to 2014, reaching 162 877. Compared to numbers from the 2010, the year before the conflict in Syria started, the increase was five-fold (Migrationsverket, 2021). This increase in the influx of asylum seekers led the Swedish government to propose that a temporary immigration law be implemented, with the purpose to decrease the number of asylum seekers coming to Sweden. In short, the temporary immigration legislation meant that Sweden went from having one of Europe's most generous immigration laws to having a much more restrictive legislation, with temporary residence permits instead of permanent, and with limited possibilities for family reunification. With the temporary law expiring in July 2021, a new permanent law is being prepared for a vote in the Swedish parliament during the spring of 2021. The proposed new immigration law (Regeringens proposition Justitiedepartementet) has many similarities with the temporary law, in that it also stipulates that all residence permits granted to refugees will be temporary. After 3 years, if fulfilling certain requirements relating to employment and income, a refugee can be granted permanent residence permit. Family reunification will be possible only for permit holders who are able to support themselves and their families financially and who have access to housing large enough for the family (although there are exceptions to these requirements). Sufficient proficiency in the Swedish language and knowledge about the Swedish society has been proposed as additional requirements for permanent residence permits.

2.1.1.1 Syrian refugees in Sweden

According to the World Bank, the now decade-long armed conflict in Syria has killed more than 400 000 people (World Bank, 2021). Furthermore, more than half of the country's pre-war population of about 21 million has been forced to leave their homes. While an estimated 6.7 million Syrians are on flight within the country's borders (as IDPs), about 6.6 million have crossed an international border into another country. The neighbouring countries Turkey, Lebanon, Jordan, and Iraq host more than 5 million of these refugees. Europe has received roughly 1 million refugees from Syria since the start of the war, with Germany and Sweden being the countries within the EU that host the largest numbers (UNHCR, 2021). In 2010, one year before the start of the conflict, there were 20 758 people born in Syria living in Sweden. At the end of 2020, numbers had risen to 193 594, a near tenfold increase. People from Syria now represent the largest foreign-born group living in Sweden (SCB, 2021b).

2.2 MENTAL HEALTH

Mental health is regarded as one of several aspects of the wider concept of health, which implies that health cannot be achieved without mental health. The World Health Organization (WHO) views mental health as "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community" (World Health Organization, 2018).

In this thesis, the term mental ill health is used to describe the absence of mental health. Mental ill health may be viewed as an umbrella term, including both mental illness and mental health problems, where mental illness refers to diagnoseable mental disorders and involves changes in emotion, cognition and/or behaviour, and has a negative impact on the individual's functioning (American Psychiatric Association, 2013) whereas mental health problems also include sub-clinical levels of distress and suffering.

Diagnosing someone with a mental disorder typically involves the use of diagnostic interviews. Fulfilling criteria for a diagnosable mental disorder implies that the individual presents a number of symptoms (out of a list of symptoms, where many combinations of symptoms are possible for the same diagnosis), but also that having these symptoms has a negative impact of the individual's well-being and/or functioning (American Psychiatric Association, 2013).

While it is difficult making accurate assessment of mental health disorders in clinical interviews (Fazel et al., 2005), it is even more so in epidemiological research that often is dependent on self-report measures. Scores above the suggested cut-off on self-assessment instrument does not necessarily imply that the individual would fulfil criteria for a diagnosis. It does, however, indicate that the individual to some extent presents symptoms in accordance with the mental disorder being assessed, thus indicating mental ill health in the same realm. Furthermore, self-assessment instruments rarely address the issue of how daily life functioning is affected by the symptoms presented. Hence, if only experiencing minimal functional impairment, it is fully possible for an individual with symptom scores above cut-off not to meet criteria for a diagnosis. The use of self-report measures has been linked to higher reported prevalence rates (Bogic et al., 2015), but it is nonetheless often the only option when conducting large-scale surveys.

A way of looking at mental ill health, that differs from the symptom and diagnose centred view, is to focus on the subjective well-being of the individual. Berry defines subjective well-being as "a person's cognitive and affective appraisal of his or her life" (Berry et al., 2002, p. 436). Although fulfilling criteria for a mental disorder often means that the person also experiences low subjective well-being, the opposite needs not to be true; a person may very well experience low subjective well-being without suffering from mental illness.

In this thesis, the objective is to capture various types of mental ill health commonly reported among refugees, as well as low subjective well-being.

In the context of refugee mental health, the diagnosis of *post-traumatic stress disorder* (PTSD) holds a central position. This is not surprising considering that refugees per definition have adverse experiences of war, persecution, and human rights violations, self-experienced or witnessed, and that the diagnosis of PTSD is closely linked to experiences of this kind. The PTSD diagnosis requires exposure to death, serious injury, or sexual violence, or to threat thereof, either self-experienced or witnessed in person, or by learning that someone close to you was exposed to trauma. Symptoms presented need to relate to this traumatic experience, and include intrusion symptoms (e.g., nightmares or flashbacks), avoidance of stimuli related to trauma, negative alterations in cognitions and mood, and alterations in arousal and reactivity (American Psychiatric Association, 2013).

Anxiety, depression and PTSD have been found to commonly co-occur in the general population as well as in refugee and migrant populations (Bogic et al., 2015; Carta, Bernal, Hardoy, & Haro-Abad, 2005; Fazel et al., 2005; Merikangas & Kalaydjian, 2007).

There are many types of depressive disorders, but the term *depression* usually refers to major depressive disorder, whereas *anxiety* sometimes refers to anxiety disorders of various kinds, and sometimes to symptoms of anxiety compatible with generalized anxiety disorder. Although being distinctive disorders in the diagnostic manuals such as the DSM-5 or the ICD-10, depression and anxiety have many symptoms in common, e.g., anxiousness, insomnia, difficulties concentrating, irritability, tiredness, and low self-esteem (American Psychiatric Association, 2013; World Health Organization, 1992)

PTSD also shares many symptoms with depression (hopelessness, loss on interest in things and activities, lack of positive feelings, insomnia, irritability, difficulties concentrating), and anxiety (e.g., palpitations, insomnia, difficulties concentrating, irritability). PTSD was previously categorized as an anxiety disorder, but in the DSM-5 it falls under the category *Trauma- and stressor-related disorders* (American Psychiatric Association, 2013).

The difficulties in adequately assessing mental disorders, as discussed above, also tap into the question of how valid the various classifications of mental ill health are in different ethnical and cultural contexts. Put simply, one needs to ask whether it is meaningful to use diagnoses developed in a Western setting for individuals from a cultural context where mental ill health may be expressed in ways that differ from how it is expressed in the Europe or the US. This thesis adheres to a universalistic position on mental ill health (Berry, 1969); while acknowledging that there are cultural idioms of distress, most types of mental ill health can be found in different ethnical and cultural contexts across the globe. However, as mental ill health may be expressed differently in different contexts, partly because of stigma related to mental ill health in many societies, one needs to consider the cross-cultural validity of instruments chosen and make inferences of results with caution (Nichter, 2010).

2.2.1 Mental health among refugees

Several studies have shown elevated prevalence rates for mental health disorders among refugees when compared to the general population of the host country (Blackmore et al.,

2020; Bogic et al., 2015; Fazel et al., 2005; Steel et al., 2009). In particular, elevated rates for depression, anxiety disorders, and post-traumatic stress disorder (PTSD) have been reported. Furthermore, psychotic disorders have been shown to be more prevalent among migrants compared to non-migrants, indicating that migration in and of itself may be a risk factor for developing psychotic disorders (Bourque, van der Ven, & Malla, 2011; Cantor-Graae, Pedersen, McNeil, & Mortensen, 2003). Higher prevalence of psychotic disorders has also been found among refugees, both in comparison to migrants from the same region and compared to host country natives (Hollander et al., 2016).

Prevalence rates for mental ill health among refugees vary considerably between different studies, which is partly attributable to methodological issues, with studies of higher methodological quality typically reporting lower rates of mental disorders (Bogic et al., 2015; Fazel et al., 2005; Steel et al., 2009)

In a systematic review of 20 interview-based surveys on mental disorders among refugees resettled in Western countries, Fazel and colleagues (2005) found that larger studies reported a prevalence of 9% for a diagnosis of PTSD, and a prevalence of 5% for major depression. Reported rates for general anxiety disorder and psychotic illness were 4% and 2% respectively. Four of the included studies provided information on psychiatric comorbidity. Among those who fulfilled criteria for major depression, 71% also met criteria for PTSD. Among those with a diagnosis of PTSD, 44% also had a diagnosis of major depression. Fazel and colleagues found that small sample size was associated with higher rates of PTSD, and that studies with small sample size, non-random sampling, unstructured assessment of depression, and using interviewers from different ethnic group than participant, were associated with higher rates of depression.

Prevalence rates of 30.6% for PTSD and 30.8% for depression were found in a systematic review and meta-analysis including 181 surveys on the association between potentially traumatic events and mental health among war-afflicted and displaced persons (Steel et al., 2009). Reported rates ranged from 0% to 99% for PTSD, and from 3% to 85.5% for depression. Methodological factors including non-random sampling, small sample size, and the use of self-report questionnaires rather than diagnostic interviews were associated with higher rates of mental health problems.

In a systematic review on the long-term effects on mental health of war-refugees, including 29 studies, Bogic and colleagues (2015) reported rates of depression in previous studies ranging from 2.3% to 80%, while rates of PTSD ranged from 4.4% to 80%. Rates for specific anxiety disorders were rarely reported in the included studies, but rates for unspecified anxiety ranged from 20.3% to 88%. However, prevalence rates above 20% were reported for PTSD in over two thirds of the studies, and for depression in 76% of the studies. Reported comorbidity rates were high in the few studies that provided such information, with 68.4% of those diagnosed with PTSD also fulfilling criteria for a diagnosis of depression. Heterogeneity in depression rates were higher in studies with smaller sample size, and that rates of PTSD were lower and less variable in studies with higher methodological quality.

In a more recent systematic review and meta-analysis, Blackmore and colleagues (2020) address the issues of wide variation in prevalence data, aiming at summarizing the accumulated data on the prevalence of mental illness among refugees. Results from the 26 studies included in the meta-analysis were similar to those reported by Steel and colleagues (2009), with a prevalence rate of 31.46% for PTSD, and 31.5% for depression. Prevalence for anxiety disorders was 11%, while the prevalence of psychotic disorders was 1.51%. Higher prevalence rates for PTSD and depression were found in studies with smaller sample size.

The mental health of refugees from Syria has been investigated in several studies in recent years. Peconga and Høgh Thøgersen (2020) conducted a systematic review including 15 studies reporting cross-sectional data from 8176 adult refugees from Syria in 10 different countries. Reported prevalence was 43.0% for PTSD, 40.9% for depression, and 26.6% for anxiety. Heterogeneity was large, in particular for PTSD, with prevalence rates ranging from 23.3% to 83.3% across the studies included in the review.

As results from the reviews described above indicate, psychiatric comorbidity is very common among refugees. Furthermore, it has been found that fulfilling criteria for more than one psychiatric disorder is associated with greater functional impairment compared to if having only one of them (Shakeh Momartin, Silove, Manicavasagar, & Steel, 2004; Palic, Kappel, Nielsen, Carlsson, & Bech, 2014).

Results from the review by Bogic and colleagues (2015) indicate that high levels of mental ill health among refugees persist even a long time after resettlement. Similarly, Blackmore and colleagues (2020) found that duration of displacement had no significant impact in PTSD and depression, as no differences were found between those displaced less than 4 years and those displaced longer. However, prevalence rates for anxiety were higher for those displaced less than 4 years, indicating a decrease in anxiety symptoms over time. Steel and colleagues (2009), however, found an association between relapsed time since resettlement in a safe country and a decline in symptoms of depression, and furthermore a decline in symptoms of PTSD in torture survivors with increased time.

In addition to the impact of methodological factors on the prevalence rates of mental ill health among refugees, as reported in the systematic reviews described above, differences associated with the study population itself also affects prevalence. This highlights the importance of seeing refugees as a highly heterogenous group, with diverse experiences relating to their country of origin, including culture and political situation, conflict, persecution, and experiences in transit and in the country of resettlement.

2.2.2 Risk factors for mental ill health among refugees

With experiences of armed conflict and human rights violations from their countries of origin, refugees typically have been exposed to several types of potentially traumatic events before resettlement in the host country. The association between traumatic experiences and PTSD is well established, but factors contributing to mental ill health among refugees go

beyond war related PTEs. Rather than looking solely at the impact of traumatic experiences, living conditions for refugees could be seen as a continuum of stress (Silove, Tarn, Bowles, & Reid, 1991), including experiences of war and human rights violations in the country of origin, via harsh living conditions in post-conflict zones or during transition, to experiences of daily stress in the country of resettlement. Although the effect of traumatic experiences should not be played down, impact of daily hassles may have a larger impact on mental health in the long run (Miller & Rasmussen, 2010).

Factors associated with mental ill health among refugees can be categorized temporally into sequential time periods that correspond to the phases of the migration process. Below, these risk factors are presented as pre-migration, peri-migration, and post-migration factors. However, other factors associated with an increased risk for mental ill health among refugees that fall outside of these categories have been identified. These include female gender, higher level of education, higher pre-displacement socioeconomic status, and higher (Porter & Haslam, 2005).

2.2.3 Country of origin; pre-migration risk factors

There is robust evidence for the associations between traumatic experiences and mental ill health, in particular PTSD, among refugees. After adjusting for methodological factors Steel and colleagues (2009) found that torture was the strongest predictor for PTSD and also a strong predictor of depression.

Although the UN Convention against Torture stipulates that torture may never be used under any circumstances, the use of torture is still widely spread. According to Amnesty International, the use of torture was reported from 141 countries from every region of the world between 2009-2013 (Amnesty International, 2014). In the systematic review and meta-analysis by Steel and colleagues (Steel et al., 2009), experiences of torture were reported from 29 of 40 countries included in the review, and 21% of the participants reported experiences of torture. Prevalence of torture experiences in refugee populations tends to vary in the same vein as prevalence for mental health problems. In a systematic review of the prevalence of torture experiences among forced migrants, Sigvardsdotter and colleagues (2017) found that rates in this study ranged from 1% to 76% (median 27%). Half of the studies included in the review reported prevalence rates of torture between 20% and 40%.

PTE experienced by refugees typically involve multiple losses. The number of PTE types experienced by refugees has been found to be associated with both mood and anxiety disorders, including PTSD (Bogic et al., 2012). The strongest predictor for depression found by Steel and colleagues (Steel et al., 2009) was PTE adversity ratio (high number of reported cumulative PTEs). They further found that cumulative PTEs was the second strongest predictor for PTSD. The relationship between cumulative PTEs and mental ill health is in line with the previously established evidence for dose-effect relationship between traumatic exposure and PTSD (Cheung, 1994; Jaranson et al., 2004; Mollica et al., 1998).

A high rate of political violence in the country of origin (including high numbers of reported murders, disappearances, and occurrence of torture) has also been found to be associated with higher rates of PTSD (Steel et al., 2009). Conflict zone experiences typically involve exposure to various forms of interpersonal violence, and women in conflict areas are at risk of being exposed to sexual violence (Vu et al., 2014).

2.2.4 Transition: peri-migration risk factors

The peri-migration phase will involve different kinds of experiences depending on, among other things, country of origin, migration route, and destination country where resettlement can eventually take place. This period of transition may include displacement in one's country of origin, brief or prolonged periods in refugee camps, and protracted journeys over long distances.

Internal displacement may involve risk for experiencing the same types of war related PTEs as in the refugee's original area of residence. For refugees in camps in neighboring (typically low- or middle-income) countries, living conditions may involve no or limited access to shelter, food, clean water, toilets, medical care, income or livelihood, and education for children (Semrau et al., 2012). In a study on the role of current perceived needs among Iraqi refugees in Jordan and Bhutanese refugees in Nepal, current needs were found to mediate the relationship between traumatic experiences and distress (Jordans, Semrau, Thornicroft, & van Ommeren, 2012). A similar finding was made among Sudanese refugees in a refugee camp in Chad, where lack of basic needs and lack of safety in the camp fully mediated the association between exposure to conflict-related traumas and PTSD (Rasmussen et al., 2010).

With more restricted migration policies in the EU and in many other high-income countries across the globe, the migration itself has become more difficult and dangerous to undertake. This is mirrored by the high numbers of people drowning in the Mediterranean Sea each year while trying to enter the EU, with estimated deaths passing 20 000 in the last 7 years (International Organization for Migration, 2021). When there are no legal ways to reach desired destinations such as the EU or the US, there may be an increased risk for PTEs along the way, including witnessing or being exposed to physical and sexual violence, being separated from family members and loved ones, and detention and ill-treatment (UNHCR, 2019).

2.2.5 Resettlement: post-migration factors

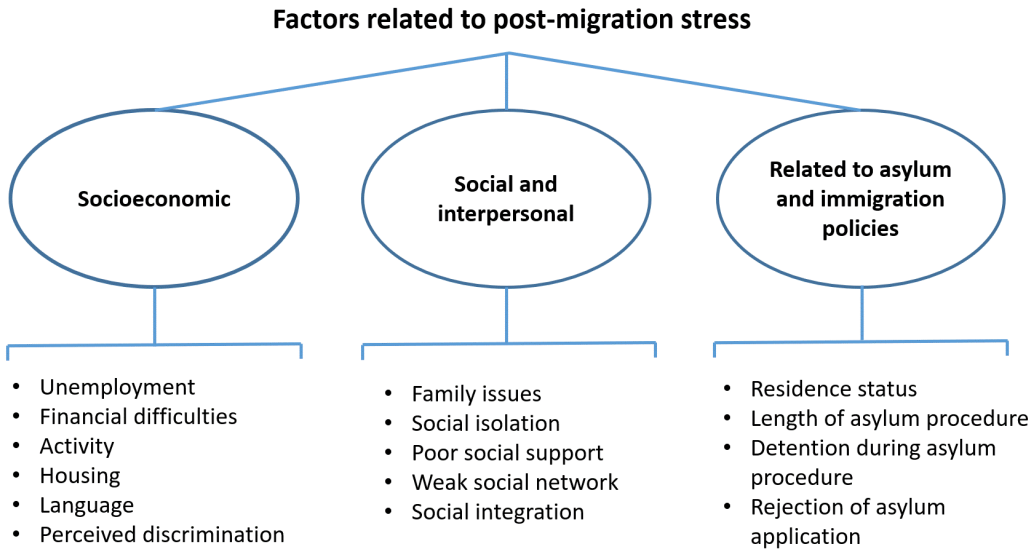
While there is strong evidence for the association between pre-migration traumatic experiences and mental health problems among refugees, less is known about relationship between post-migration factors and mental health. However, more attention has been given to investigating post-migration factors and experiences in recent years, and several factors have been shown to be linked to mental health problems among refugees.

Factors contributing to post-migration stress among refugees can be organized in three broad categories; socioeconomic factors, social and interpersonal factors, and factors related to

asylum procedure and immigration policies (Li et al., 2016). Although there may be factors that fall outside of these groups, this may still serve as a point of departure for describing the available current evidence on the association between factors in the most-migration context and mental ill health among refugees. Factors related to post-migration tress, and how these may be categorized, are presented in Figure 1.

Figure 1.

Factors related to post-migration stress.



2.2.5.1 Socioeconomic factors

Evidence for a link between socioeconomic factors and mental health among refugees has been found in several studies (Bogic et al., 2012; Porter & Haslam, 2005).

Unemployment rates have been found to be higher among refugees compared to natives of the host society (Krahn, Derwing, Mulder, & Wilkinson, 2000; Lundborg, 2013). Given the importance of work not only for financial reasons, but also for one's identity and as a means of becoming part of a social context and of society as a whole, it is not surprising that unemployment is associated with mental health problems among refugees (Kim, 2016; Teodorescu, Heir, Hauff, Wentzel-Larsen, & Lien, 2012). Unemployment was associated with mood disorders, including depression, among a sample of refugees from former Yugoslavia resettled in Germany, Italy, and the UK (Bogic et al., 2012). As most studies on associations between unemployment and mental health are cross-sectional, it is not clear whether unemployment leads to the deterioration of mental health, or if mental ill health leads to unemployment, as both associations have been found in the general population (Bartelink, Zay Ya, Guldbrandsson, & Bremberg, 2019; Paul & Moser, 2009). However, in a 10-year longitudinal study of Southeast Asian refugees resettled in Canada, unemployment emerged as a strong risk factor for depression among men (Beiser & Hou, 2001).

Furthermore, activity, including both work and employment training, was found to be associated to lower levels of post-traumatic symptoms in two groups of refugees in Norway (Lie, Sveaass, & Eilertsen, 2004), and low level of daily activities was related to depressive symptoms in a clinical sample of Bosnian refugees in the US (Miller et al., 2002).

Financial difficulties and economic hardship often come as a consequence of unemployment, and the support given to unemployed, as well as access to welfare benefits, vary greatly between different host countries, and access may also vary depending on residence status. Associations between poor mental health and financial difficulties among refugees have been found in several studies (Lecerof, Stafstrom, Westerling, & Ostergren, 2016; Lindencrona, Ekblad, & Hauff, 2008; Tinghög, Al-Saffar, Carstensen, & Nordenfelt, 2010). A bi-directional positive association between financial hardship and psychological distress was found in a longitudinal study among refugees in Australia (O'Donnell, Stuart, & O'Donnell, 2020). Refugees with higher levels of psychological distress one year after settlement were more likely to suffer from financial hardship over time. The reverse relationship, that refugees with economic hardship one year after settlement had higher levels of psychological distress over time, was also confirmed.

Housing arrangements are closely linked to employment and financial issues, and housing problems was found to be a risk factor for poor mental health among recently resettled Iraqi refugees in Sweden (Lecerof et al., 2016), while Porter and Haslam (2005) found worse mental health among refugees in temporary or institutional accommodation compared to those in secure private housing.

Learning the language of the host country may be a challenge for asylum seekers, refugees, and other migrants, and poor host country language acquisition and proficiency have been shown to be associated to depression among refugees (Bogic et al., 2015). Furthermore, poor host country language skills may function as a barrier to finding employment and proper housing, and to accessing health care services. In a study of Southeast Asian refugees in Canada, Beiser and Hou (2001) found that low English language proficiency after a near decade in Canada was associated with depression and unemployment, particularly among women and persons who had had experiences of unemployment during the initial period in the host country. In a longitudinal study on language acquisition among recently resettled Iraqi refugees in Sweden, PTSD symptom burden was negatively associated with the speed of language acquisition (Sondergaard & Theorell, 2004).

2.2.5.2 Social and interpersonal factors

Forced migration leads to the shattering of families, with children being separated from parents and siblings, and spouses being separated from each other. Refugees often have family members and relatives in their country of origin, where conflicts may still be ongoing, and where living conditions often are harsh. Consequently, it is not surprising that many studies have found family separation to have an adverse impact on refugee mental health.

Family issues was found to be one of the most important risk factors for psychopathology among Iraqi asylum seekers in the Netherlands. In particular, being separated from children under the age of 18 was related to fulfilling criteria for at least one psychiatric disorder (Laban et al., 2005). Similarly, family separation was a predictor of depression and somatization among Sudanese refugees in Australia (Schweitzer, Melville, Steel, & Lacherez, 2006). In a sample of Mandaean refugees from Iraq resettled in Australia higher levels of PTSD, depression, and mental-health related disability was found among those refugees who had immediate family members in Iraq compared to those that did not have family in Iraq. Furthermore, intrusive fear for family in Iraq was found to be a substantive predictor of PTSD, depression, and disability (Nickerson, Bryant, Steel, Silove, & Brooks, 2010).

While separation from family is linked to mental ill health, being reunited with family members after a period of separation was found to have a mitigating effect on the relationship between experiences of personal trauma and mental health ill health among Latin American refugees resettled in Canada (Rousseau, Mekki-Berrada, & Moreau, 2001). Being separated from one's family may also increase the risk for social isolation and lack of social support, factors that have been linked to poor mental health among refugees. Social isolation was found to be associated with symptoms of both PTSD and depression in a community sample of Bosnian refugees in the US (Miller et al., 2002).

However, living together as a family when life has fundamentally changed a consequence of forced migration, perhaps after a long period of separation, can be challenging. Accordingly, there is some evidence for an association between family conflict and mental ill health among refugees and migrants. The acculturative process of incorporating elements of the host-country's cultural values and beliefs, may cause tension within families, in particular between children and parents. This may contribute to experiences of alienation and isolation, and to development of depressive symptoms (Bhugra & Ayonrinde, 2004). Results from qualitative studies indicate that changes in social roles and altered family structure may be linked to domestic violence (Fisher, 2013; Rees & Pease, 2007).

Furthermore, loss of support alongside loss of culture and adaptation difficulties were associated with PTSD and emotional distress in a sample of refugees and asylum seekers in the UK (Carswell, Blackburn, & Barker, 2011). After controlling for pre-migration trauma, multivariate analyses yielded loss of culture and support a predictor of emotional distress, while adaptation difficulties were found to be a predictor of PTSD symptoms. In the same vein, Gorst-Unsworth and Goldenberg (1998) found that poor affective social support was a strong predictor for both PTSD and depression in a sample of male Iraqi refugees in a clinical setting in the UK. For depression, low affective support was a stronger predictor than factors relating to traumatic experiences.

In addition to social support, the importance of social integration and social networks, both in the host society and in one's ethnic community has been show in several studies (Beiser & Hou, 2006; Birman & Tran, 2008; Schweitzer et al., 2006; Teodorescu et al., 2012).

Furthermore, symptoms of depression and PTSD have been found to predict difficulties with social integration among treatment seeking refugees (Schick et al., 2016).

Knowing how to navigate in a new culture may be linked to social integration. A reduction in difficulties relating to finding one's way in the new culture was associated with a decrease in symptoms of PTSD and anxiety/depression among refugees in the Netherlands (Lamkaddem, Essink-Bot, Deville, Gerritsen, & Stronks, 2015). Alienation in terms of what one values in life and how this is perceived in the host country, on the other hand, was found to contribute substantially to common mental disorder among refugees in Sweden (Lindencrona et al., 2008).

There is strong evidence for the association between perceived discrimination and poor mental and physical health (Pascoe & Richman, 2009), and several studies have shown that perceived ethnic discrimination and not feeling accepted in the host country has a negative impact in the mental health of refugees (Beiser & Hou, 2016; Bogic et al., 2012). Among refugees in Sweden, social participation was found to have a protective effect against poor mental health when exposed to discrimination (Lecerof et al., 2016).

2.2.5.3 Asylum procedure and immigration policies

Being an asylum seeker often means living under conditions that are radically different from those of the general population. Living conditions may include limited or no access to employment or studies, restrictions in housing options (e.g., access only to institutional or temporary housing), not being allowed to reunite with family members abroad, limited access to health care and social welfare services, and uncertainty regarding one's future residency in the host country. Consequently, experiences related to the process of seeking asylum has been found to contribute to mental ill health among asylum seekers (Chu, Keller, & Rasmussen, 2013; Laban, Gernaat, Komproe, Schreuders, & De Jong, 2004; Laban, Komproe, Gernaat, & de Jong, 2008; Silove et al., 1997; Silove, Steel, McGorry, & Mohan, 1998).

Higher levels of mental health symptoms have been found among asylum seekers compared to refugees with residence permit. In a population-based study among refugees and asylum seekers from Afghanistan, Iran, and Somalia in the Netherlands, significantly higher prevalence rates for symptoms of PTSD and depression/anxiety were found among asylum seekers (Gerritsen et al., 2006). Furthermore, differences in mental health between asylum seekers and refugees with residence permit have been found to be mediated by post-migration living difficulties. In a comparison of health problems among asylum seekers and refugees in Ireland, higher levels of PTSD and anxiety/depression among asylum seekers (Toar, O'Brien, & Fahey, 2009). However, after controlling for pre- and post-migration factors, including traumatic experiences and current living difficulties such as uncertainty about residence status, loneliness and communication problems, residence status was no longer a significant predictor of PTSD and anxiety/depression. The authors argue that residence status per se may not be a predictor for mental health problems, but rather serve as a marker for other variables that contribute to explaining the differences in mental health. Furthermore, improvements in

mental health after receiving residence status were found to be mediated by a decrease in post-migration living difficulties among refugees from Afghanistan, Iran, and Somalia resettled in the Netherlands (Lamkaddem et al., 2015).

Several factors relating to the asylum procedure have been found to be associated with elevated levels of mental health problems among asylum seekers, such as the length of the asylum procedure, the use of forced detention, and the outcome of the asylum procedure.

Significantly higher risk for psychiatric disorders (including depressive, anxiety and somatoform disorders, but not PTSD) was found among asylum seekers that had been living in the Netherlands for more than 2 years, when compared to those that had resided in the country for 6 months or less (Laban et al., 2004). A protracted asylum procedure was also found to be the strongest predictor for low quality of life, and alongside post-migration living problems and adverse life events also as a predictor for functional disability and physical complaints, in the same sample (Laban et al., 2008).

Detention of asylum seekers has become routine rather than an exception in many countries, and although the widespread use of detention has been criticized, it is often used even when there are alternatives to detention. Detention means that the asylum seeker is kept isolated from the rest of the host society with restricted opportunities to lead a normal life while the application for residency is being processed (UNHCR, 2014). Detention during the asylum procedure has been found to be associated with poor mental health in several studies. In a systematic review investigating the associations between detention and mental health among asylum seekers, high levels of emotional distress among those detained were reported in all included studies (Robjant, Robbins, & Senior, 2009). The review also found that the length of detention was positively associated with severity of distress.

Detention during the asylum procedure contributed to ongoing risk of PTSD and depression, as well as mental health-related disability among Mandaean refugees Australia (Steel et al., 2006). Length of detention was associated with severity of mental health symptoms, and the negative effects of detention persisted for an average of 3 years after release from detention.

In a longitudinal study on among asylum seekers in detention in the US, clinically significant levels of anxiety, depression, and PTSD were reported among a large proportion of the detainees at baseline (Keller et al., 2003). At follow-up after 2 months or more, symptoms had improved significantly among those who had been released from detention, while a deterioration in reported mental health symptoms was seen for those who remained detained.

A negative outcome of the asylum procedure has been shown to be associated with mental health problems. Hocking) and colleagues (Hocking, Kennedy, & Sundram, 2015) reported that the risk of developing PTSD among asylum seekers with at least on rejected asylum claim increased with the number of rejections. In a longitudinal study of asylum seekers in Australia, symptom levels for anxiety, depression and PTSD were found to decrease substantially among those who had their applications accepted, while levels remained

unchanged for those whose applications were turned down. As mentioned above, Lamkaddem and colleagues (2015) found that symptom reductions after receiving refugee status were mediated by an increase in opportunities, resources and support that was made available after gaining refugee status. Contrary to these finding, Heeren and colleagues (2014) reported unchanged levels of PTSD after receiving a residence permit.

Immigration policies where temporary rather than permanent protection visas are the rule have implemented in several countries, including member states of the EU. Temporary visas rather permanent mean that the insecurity of the asylum procedure continues after one has been granted residence permit, and this uncertainty has been shown to have a negative impact on the mental health of refugees (Bogic et al., 2012). The negative effect of temporary protection on mental health has been shown in several studies (S. Momartin et al., 2006; Nickerson, Steel, Bryant, Brooks, & Shove, 2011; Steel et al., 2011; Steel et al., 2006).

In a particularly noteworthy study, Steel and colleagues (2011) investigated the impact of temporary versus permanent protection visas over a 2-year period. Temporary visa holders showed higher baseline ratings for PTSD, anxiety, depression, and general health. There were also substantial differences in reported daily living difficulties, with temporary visa holders reporting higher levels than those with permanent visas, while English language proficiency was on the same level for both groups. At follow up, after adjusting for differences in baseline symptom scores, an increase in symptoms of anxiety, depression and general health was found among temporary visa holders. While post-migration living difficulties remained at a low level for permanent visa holders and at a high for temporary visa holders, English language proficiency improved substantially for permanent visa holders but remained unchanged for temporary visa holders. Furthermore, an increase in social withdrawal as a way of coping was noted for the temporary visa holders. The authors conclude that temporary protection may lead to deterioration of mental health, social withdrawal, and continuous experiences of post-migration living difficulties at a high level.

3 RESEARCH AIMS

The overarching aim of this thesis is to increase the knowledge on post-migration stress and its associations with mental ill health among refugees.

3.1 PAPER I

The aim of Paper I was to investigate the prevalence of and associations between anxiety, depression, posttraumatic stress disorder (PTSD), subjective well-being (SWB), potentially traumatic events (PTEs), and post-migration stress among refugees from Syria recently resettled in Sweden.

3.2 PAPER II

The aim of Paper II was to develop and validate a new instrument for assessing refugee post-migration stress.

4 MATERIALS AND METHODS

This thesis is based on data from a cross sectional and population-based questionnaire study. The first paper uses data collected from a postal questionnaire in 2016. The second paper describes the development of one of the measures included in that questionnaire, the Refugee Post-Migration Stress Scale (RPMS). Data from the questionnaire study was used in the validation of the RPMS. As the development of the RPMS was conducted in an iterative process where the development itself can be seen as part of the results, all steps in the development process could be divided into a methods part and a results part (as was the case in the published paper). With the intention to make it easier to overview the development process, in this thesis the entire development of the RPMS is described in the *Materials and methods* section, whereas the results from the statistical analyses used for the validation of the measure are described in the *Results* section.

The description of materials and methods below contains less details compared to the corresponding sections in the papers included in this thesis.

4.1 PARTICIPANTS (PAPER I AND II)

The study population was the same for Paper I and for the second phase of the instrument development process in Paper II. It consists of a random sample of 1215 individuals from Syria aged 18-64 years who were granted permanent residence permit on asylum grounds between 2011 and 2013. The Total Population Register (TPR), Statistics Sweden, was used as sampling frame. Demographic data obtained from the TPR was complemented by information from the STATIV database, Statistics Sweden, a database containing information related to migration (grounds for residency, date for obtaining residence permit).

4.2 PROCEDURE (PAPER I AND II)

4.2.1 Data collection

During the spring of 2016, a postal questionnaire in Arabic was sent to a random sample of 4000 individuals (drawn from a sample frame at Statistic Sweden including all eligible respondents). Preparations prior to sending out the questionnaire included discussing issues relating to methods for data collection, cultural aspects of mental health and the Arabic language with a reference group of Syrian refugees with expertise in mental health issues and/or the Arabic language. Input from the reference group informed the implementation of the study and the construction of the questionnaire. The questionnaire included scales and items for assessing various aspects of mental ill health and factors known to be of relevance for the mental health and socioeconomic integration of refugees. Deciding on what scales to include in the questionnaire also involved developing new instruments where satisfactory options could not be found. The reference group also managed a telephone hotline where participants could turn with questions relating to the study.

4.2.2 Translation and adaptation of the questionnaire

In the case where adapted and/or validated Arabic versions of the measures included in the questionnaire could not be found, a standard double-blind translation and back-translation procedure was used. This was also the case for the newly developed measures. Throughout the translation and adaptation process, continuous discussions with Syrian community experts were held, resulting in revisions and amendments when deemed necessary.

4.2.2.1 Cognitive interviews

To improve usability of the questionnaire, a cognitive interview procedure for pretesting the items of the questionnaire was adopted (Collins, 2003). Cognitive interviews may inform the researcher on how respondents perceive and interpret the items of the questionnaire and may also provide information on problems that may arise when trying to answer the questions. Cognitive interviews are of particular use for questions with sensitive or intrusive content, and when memory retrieval is required (Drennan, 2003). Ten Arabic speaking patients at the Swedish Red Cross Treatment Center for Persons Affected by War and Torture (RCC, a rehabilitation center for refugees located in Malmö, Sweden, where the first author is employed) were instructed to read the items of the questionnaire out loud and to follow a think-aloud protocol (TAP), which means that they should say everything that comes to mind while trying to answer the question. Difficulties relating to problems with comprehension, memory retrieval, judgement and response formatting were recorded and later scrutinized by the research group. After further discussions with experienced interpreters and bilingual psychosocial professionals from the Syrian community, items were modified if deemed necessary.

4.3 MEASURES (PAPER I AND II)

4.3.1 Sociodemographic factors

All sociodemographic data for Paper I and II was retrieved the TPR. Age was categorised into four age groups: 18–29 years, 30–39 years, 40–49 years and 50–64 years; educational level was categorised as: 0–9 years, >9 years without a university degree and >12 years with a university degree; marital status was categorised as: married, unmarried and divorced/widow/widower; and year of immigration was categorised as ≤2011 (i.e., 5 years or more since immigration), 2012 and 2013. As we intended to construct non-response weights, the same information, except for marital status, was also obtained for the non-respondents.

4.3.2 Refugee-related potentially traumatic pre-migration and peri-migration events

To identify respondents who had been exposed to refugee-related PTEs before arriving to Sweden, the Refugee Trauma History Checklist RTHC (Erika Sigvardsdotter et al., 2017) was developed. The RTHC covers pre-migration and peri-migration PTEs, with peri-migration PTEs referring to events occurring in the period between leaving the home in Syria and before arriving in Sweden, hence including events occurring while on flight within

Syria's borders. The RTHC was developed with the aim to assess PTEs related to refugee experience in the least possible intrusive manner, without excluding any of the horrific experiences that refugees typically face before arriving in the host country. The respondent is asked whether he or she has been exposed to any of the following PTEs before arriving to Sweden: war at close quarters (i.e., proximity to war combat); forced separation from family or close friends; loss or disappearance of family member(s) or loved one(s); physical violence or assault; witnessing physical violence or assault; torture; sexual violence; other frightening situations where the respondent felt that his or her life was in danger.

4.3.3 Refugee-related post-migration stress

To assess experiences of refugee-related post-migration stress among the respondents, the Refugee-Post-Migration Stress Scale (RPMS) was developed (Malm, Tinghög, Narusyte, & Saboonchi, 2020). The development of the instrument is described below. The RPMS features 21 items and aims to assess refugee-related post-migration stress across seven domains: *perceived discrimination*; *lack of host country specific competences*; *material and economic strain*; *loss of home country*; *family and home country concerns*; *social strain*; and *family conflicts*. The respondent is requested to indicate on a 5-point Likert scale how frequently he or she has had the experience described in each item of the RPMS after arriving to Sweden. The five response alternatives range from *never* to *very often*. In Paper I, those responding 'often' or 'very often' were classified as having had the experience of that item *often* after resettlement in Sweden.

4.3.4 Measures of mental ill health

All measures for estimating prevalence of mental ill health included in the questionnaire have been used extensively among refugees and in population-based surveys and have been shown to possess sound psychometric properties among Arabic speakers (e.g., Hollifield, Warner, & Lian, 2002; Tinghög & Carstensen, 2010).

Symptom Checklist 25 (HSCL-25) measures symptoms of anxiety and depression. It contains 10 items for anxiety and 15 items for depression. The four response alternatives range from "not at all" (1) to "extremely" (4). Individual mean item scores were calculated separately for the anxiety and depression subscales. Respondents with a mean item score above 1.80 and 1.75 were classified as having depression or anxiety, respectively (Mollica, Wyshak, Marneffe, Khuon, & Lavelle, 1987; Oruc et al., 2008).

Harvard Trauma Questionnaire (HTQ) part IV, containing 16 items, was used to measure symptoms of PTSD. HTQ is similar in its form to HSCL-25. For both papers of this thesis, a mean item score of 2.06 was used to distinguish cases of PTSD from non-cases (Oruc et al., 2008).

WHO-5 Well-being index (WHO-5) was used to assess current mental wellbeing (SWB). The WHO-5 contains five statements regarding how the respondent has been feeling over the last two weeks, with six response alternatives ranging from "all of the time" (5) to "at no

time" (0). The highest possible value for the WHO-5 is 100. Those with values below 50 are classified as having low SWB (Topp, Østergaard, Søndergaard, & Bech, 2015).

4.4 DEVELOPMENT OF THE REFUGEE POST-MIGRATION STRESS SCALE (PAPER II)

The development of the RPMS was carried out in two consecutive phases. The first phase involved construction of the new instrument, including pretesting and content validation. In the second phase, validity of the construct was assessed using confirmatory and exploratory factor analyses.

4.4.1 Phase 1: instrument development

The instrument development followed a process where the results from the first step were included in the next step, and so forth until a preliminary version of the instrument was reached. To make the development process clearer and easier to overview, methods and results from the instrument development process are described in conjunction to each other in this section.

4.4.1.1 Conceptualization of construct and item pool generation

Based on a review of existing literature on post-migration stress and related constructs, in combination with clinical observations at the RCC and discussions with psychosocial professionals from Syria, a list of commonly reported stressful experiences faced by refugees after resettlement was established. By combining items from existing instruments with newly written items corresponding to these experiences, an initial item pool of 223 items was generated. Based on these items, theoretically distinct domains of post-migration stress were formulated, with redundant items being excluded at this stage.

This conceptualization process resulted in a theoretical model comprising of seven domains of refugee-related post-migration stress. The domains are described above. For each domain, at least five items from the initial item pool were chosen, which resulted in a reduced item pool of 56 items for the next stage of development.

4.4.1.2 Translation and back-translation

The process of translating the items into standard Arabic is described above.

4.4.1.3 Cognitive interviews

As described above, a cognitive interview procedure was adopted to improve the usability of the questionnaire This included pre-testing of the 56 items from the reduced item pool. Of the 10 interviewees recruited for the pretesting of the questionnaire, seven completed the items from the RPMS. Results from the interviews indicated minor difficulties relating to comprehension of items, either because of difficulties understanding the literal meaning of specific words or phrases in the Arabic translation or because of uncertainty regarding what or who the item referred to. Apart from these difficulties relating to comprehension and

judgment, no other concerns were recorded (i.e., relating to retrieval or response formatting). After further scrutiny by the research team and discussions with experienced interpreters at the RCC and bilingual psychosocial professionals from the Syrian community, 12 items from the reduced item pool were removed and one new item was added, whereas 18 items were slightly revised. This resulted in a 45-item version of the RPMS.

4.4.1.4 Content validity rating

Content validity rating was carried out to determine whether the remaining 45 items could be seen as being representative for the hypothesized domains (Polit & Beck, 2006). Participants were asked to rate each item in relation to its domain, using a 4-point scale. Responses were dichotomized (1 or 2 indicating not relevant, 3 or 4 indicating relevant). Content validity index for each item and for the entire scale were calculated. Six clinical professionals at the RCC were recruited to perform the ratings. Results showed adequate content validity for all items and for the entire scale. However, 12 items had a content validity index lower than 1.00, indicating that at least one rater considered the item to be either somewhat relevant or not relevant. No items were excluded at this stage.

4.4.1.5 Pilot testing

Pilot testing of the remaining 45 items was carried out on four different occasions. Participants were recruited among adult refugee students in a Swedish-for-immigrants programme and among patients participating in group activities at the RCC. All participants were given the same oral and written information on the study and were given the opportunity to decline to participate.

The pilot sample (n = 41) consisted of 12 women and 28 men (and one person who did not report gender), from Syria, Iraq, Lebanon, Palestine, Kuwait, and Yemen. Mean age for the participants was 45 years. The individual inter-item correlation coefficients ranged from − 0.06 to 0.85, mean inter-item correlation for all items was 0.15 (SD = 0.073, range − 0.02-0.29). Items with inter-item correlations that indicated either lack of common variance or item redundancy were identified for further scrutiny, as were items where responses were clustered at either extreme of the response categories (indicating floor or ceiling effects).

4.4.1.6 Item selection for the preliminary instrument

An evaluation of the remaining 45 items was conducted, based on the usability of the items, content validity, preliminary statistical characteristics from the pilot testing (mean inter-item correlations dispersion, floor and ceiling effects), theoretical considerations regarding item content, and the necessity of including an adequate number of items for each domain. This resulted in a preliminary instrument with 24 items spread across the seven hypothesized domains of post-migration stress.

4.4.2 Phase 2: construct validity

After developing the preliminary 24-item version of the RPMS, the purpose of the second phase in the development process was to assess its construct validity. Construct validity is attained when evidence in support of a theoretical construct – in this case the 7-domain model of refugee-related post-migration stress – is established (Colliver, Conlee, & Verhulst, 2012), i.e., when an adequate fit between the theoretical construct and empirical data is reached. For the RPMS, construct validity was assessed by means of confirmatory and exploratory factor analyses. Furthermore, correlational analyses were conducted for assessment of concurrent validity (i.e., how well the RPMS correlates with established measures).

4.4.3 Statistical analyses

The statistical analyses for Paper I and II are described below. These descriptions are somewhat less detailed than the descriptions in the original papers, in order to make it easier to follow the different steps of the analyses. A more in-depth description of all analyses conducted can be found in the papers included in this thesis.

4.4.4 Paper I

As the sample was not entirely representative with regards to sociodemographic factors, non-response weights based on these sociodemographic factors were constructed using logistic regression. Sociodemographic distribution of the sample, the sample frame and the weighted sample were then calculated. Prevalence estimates for anxiety, depression, low SWB and PTSD were calculated for the total population and for sociodemographic subpopulations, and proportions with mental ill health comorbidities and binominal correlations between the four used measures of mental ill health were estimated.

Prevalence of refugee-related PTEs and postmigration stress were calculated, and association between these factors and the four studied measures of mental ill health were explored in a series of logistic regression analyses. To minimize the risk of confounding, these analyses were adjusted for sociodemographic factors, and associations between types of post-migration stress and mental ill health were adjusted for the eight refugee-related PTEs, number of PTEs and number of PTEs squared. The potential mediating role of post-migratory stressful experiences in the association between PTEs and mental ill health was investigated. Mediation analyses were performed with number of included types of exposure for PTEs as exogenous, number of types of post-migratory stressful experiences as mediator and mental ill health as endogenous outcomes.

All analyses were conducted with SPSS V.24.0 except the mediation analyses that were performed in Mplus V8.

4.4.5 Paper II

Statistical analyses were run in two phases, starting with confirmatory factor analysis, CFA (Brown, 2015) to test the theoretical model of post-migration stress, followed by exploratory

factor analysis (EFA) within the framework of exploratory structural equation modelling, ESEM (Asparouhov & Muthén, 2009). The reason for starting off with the CFA was to see whether the theoretical 7-domain model would fit data collected for Paper I without any major modifications to the model. If adequate model fit could not be achieved by making minor theoretically motivated modifications to the model, based on Modification Indices, EFA within ESEM would be the next option for assessing construct validity.

The 7-factor measurement model – with factors corresponding to the theoretical domains of post-migration stress - was examined by CFA with maximum likelihood estimation and robust standard errors (MLR). To minimize the risk of rejection of a well-fitting model, a combination of fit indices was used. When no further theoretically motivated modifications to the measurement model could be made, EFA within ESEM was conducted in several iterations, using the same fit indices as in the CFA. This process allowed for the identification and omitting of items with either substantive and significant cross-loadings or poor factor loadings.

Cronbach's alpha was also assessed as a measure of internal consistency for each factor and the entire instrument (Cronbach, 1951). To assess the associations between post-migration stress and mental ill health, zero-order correlations between identified factors of the instrument and scores on HSCL-25, HTQ, and WHO-5 were calculated.

For the confirmatory and exploratory factor analyses, Mplus V8.3 software was used. The correlational analyses were investigated using SPSS V24.0.

4.5 ETHICAL CONSIDERATIONS

The study population in this thesis consists of newly resettled refugees from Syria. Since several factors contribute to making this a particularly vulnerable group, careful considerations were made during all steps of the survey and in the work that followed, including planning, implementation, and communication of results.

When conducting research with vulnerable populations such as refugees, and in particular when studying experiences of potential traumatization and its consequences, minimizing the risk of doing harm is of utmost importance. Given the prevalence of torture and other PTEs in refugee populations reported in other studies (Steel et al., 2009), it was assumed that a large proportion of the participants had had these kinds of experiences prior to coming to Sweden. Furthermore, prevalence of mental ill health in the study population was expected to be high. By asking questions about PTEs, including torture, death of loved ones, and sexual violence, there is a risk of triggering unwanted memories and emotions relating to these experiences, particularly in participants with PTSD.

However, the risk of evoking unwanted memories and emotions in participants had to be weighed against the possible benefits that could arise from gaining an increased understanding for the mental health and socioeconomic living conditions of the study population.

Efforts were made to reduce the risk of evoking unpleasant memories and emotions by choosing instruments that would be as acceptable as possible for the participants, i.e., avoiding measures with intrusive or too explicit content. For this reason, measures adapted for use among Arabic speaking refugees that have been used extensively in surveys among refugees were chosen when available. When designing new instruments, the same considerations were made. This was of particular importance in the design of the RTHC, which includes items referring to various PTEs typically faced by refugees. Items were formulated to be as non-intrusive as possible, for instance by avoiding graphic descriptions of violence. Furthermore, the questionnaire was pre-tested in cognitive interviews, in which strong emotional reactions to the phrasing of items could have been detected.

Because of possible language barriers and limited understanding regarding the Swedish society among recently resettled refugees, there was a risk that participants would not understand that participating in the survey was voluntary, and that they felt that they had to fill out and return the questionnaire. Efforts were made to minimize this risk by making research information accessible in Arabic in the missive and informed consent that came with the postal questionnaire. This included information on data protection.

A telephone line operated by bilingual (psychosocial) professionals from the Syrian community was set up. The purpose of this arrangement was two-fold; (1) participants could ask questions regarding the questionnaire, data collection, and handling of data, including protection and issues relating to integrity, and (2) participants who called in expressing mental ill health could be informed about how to get in contact with the health care system.

The survey was approved by the Regional Ethical Review Board (application numbers 2015/1463-31 and 2016/549-32).

5 RESULTS

As both papers included in this thesis are based on data from the same survey, results regarding the study population are presented first, followed by results for each of the included papers.

5.1 STUDY POPULATION (PAPER I AND II)

A total of 1215 participants returned the questionnaire (response rate 30.4%). The non-response analysis revealed that younger, unmarried, those more recently immigrated, and those with lower level of education were slightly overrepresented among the non-responders. When applying non-response weights to the sample, the sociodemographic composition corresponded closely to that of the sampling frame. Married individuals were, however, still slightly overrepresented.

5.2 RESULTS FOR PAPER I

The aim of Paper I was to estimate prevalence of and associations between anxiety, depression, PTSD, subjective well-being, potential traumatic events, and post-migration stress among refugees from Syria recently resettled in Sweden.

5.2.1 Prevalence of mental ill health

Results show that estimated prevalence rates for anxiety, depression, PTSD, and low subjective well-being were high in this sample of recently resettled refugees from Syria. The highest prevalence was found for depression 40.2% (95% CI 36.9% to 43.3%), followed by low SWB 37.7% (95% CI 34.8% to 40.1%), anxiety 31.8% (95% CI 29.2% to 34.7%) and PTSD 29.9% (95% CI 27.2% to 32.6%). At least one of the studied types pf mental ill health were found in 55% of the sample (95% CI 52.0% to 58.0%). Stratified analyses showed that mental ill health was more common among women, among older (50-64 years), and among those divorced or who had lost a spouse. Low SWB was more common among those with higher level of education.

5.2.2 Mental health comorbidity and binominal correlations

The sample displayed high levels of mental ill health comorbidity. The strongest correlations were found between depression and anxiety and between PTSD and depression, while the weakest correlation was found between low SWB and anxiety. Proportions of the participants with concurrent comorbidity varied slightly for the different measures of mental ill health. Of those classified as having PTSD, 90.0% (95% CI 86.8 to 93.1%) also met criteria for concurrent depression, and 86.6% (95% CI 83.1 to 90.0%) of those with anxiety also met criteria for depression. For those with low SWB, the type of mental ill health that was most commonly cooccurring was depression, 75.4% (95% CI 71.4 to 79.4%). Among the participants with depression, concurrent anxiety was found in 70.0% (95% CI 65.9 to 74.2%) of the participants, low SWB in 71.0% (95% CI 66.9 to 76.3%), and PTSD in 68.0 % (95% CI 62.4 to 80.8%).

5.2.3 Refugee-related potentially traumatic pre- and peri-migratory events and their associations with mental ill health

Experiences of potentially traumatic events (PTEs) were highly prevalent in the sample. On an average, participants had experienced 4.0 (95% CI 4.1 to 4.3) of the eight included types of PTEs before leaving their home in Syria, and 2.1 (95% CI 2.0 to 2.2) types of PTEs during their flight. The mean score for pre-migration and peri-migration types of PTEs combined was 4.2 (95% CI 4.1 to 4.3).

War at close quarters was the most frequently endorsed PTE in the sample, with 85.1% (95% CI 82.9 to 87.5%) reporting having this experience. About two thirds reported experiences of forced separation from family members or loved ones, loss or disappearance of family or loved ones, and witnessing physical violence. Three out of ten reported having experiences of torture and physical violence. Experiences of sexual violence was the least occurring PTE in the sample, with 7.1% (95% CI 5.5 to 8.6%) reporting having this experience.

After adjusting for sociodemographic factors, all PTEs showed significant associations with all included measures of mental ill health. The associations appeared to be particularly strong in relation to PTSD, with two exceptions; torture showed equally strong associations with anxiety and PTSD, and sexual violence was more strongly associated with anxiety. However, as the confidence intervals for all associations were rather wide and overlapping, interpretation of these associations should be made with some caution.

5.2.4 Post-migration stressful experiences and their associations

Prevalence rates for the seven types of post-migration stress included in the analysis ranged from 4.3% 95% CI 3.1 to 5.5%) for often feeling disrespected due to my national background to 62.3% (95% CI 59.6 to 65.2%) for often missing my social life from back home. Often feeling sad because I am not reunited with family members was reported by 50.2% (95% CI 46.9 to 53.5%) of the participants, while 37.1% (95% CI 34.5 to 39.9%) reported often had bothering difficulties communicating in Swedish. Almost one in five of the participants, 19.8% (95% CI 17.4 to 22.2%), reported that they had often felt excluded or isolated in the Swedish society, while often having been unable to buy necessities was reported by 8.5% (95% CI 6.9 to 10.2%). Finally, often having had distressing conflicts in my family was reported by 6.0% (95% CI 4.5 to 7.5%) of the participants.

All seven types of post-migration stress were significantly associated with all measures of mental ill health, with the exception of often feeling sad because I am not reunited with family members, which was not significantly associated with anxiety. The three most prevalent forms of post-migration stress (missing my social life from back home, feeling sad because not reunited with family members, and bothering difficulties communicating in Swedish) showed the weakest associations with included measures of mental ill health. Often having felt disrespected due to my national background was the type of post-migration stress that showed the strongest association with all measures of mental ill health.

The types of post-migration stress that most strongly predicted PTSD were feeling disrespected due to national background (OR 5.96 95% CI 2.97 to 11.94), followed by conflicts in family (OR 5.16 95% CI 2.56 to 10.40), having been unable to buy necessities (OR 4.31 95% CI 2.49 to 7.45), and having felt excluded in the Swedish society (OR 3.29 95% CI 2.27 to 4.78).

Feeling disrespected because of national background and having been unable to buy necessities were the strongest predictors of anxiety (OR 5.49 95% CI 2.79 to 10.81 and OR 3.46 95% CI 2.14 to 5.60, respectively) and depression (OR 5.68 95% CI 2.83 to 11.41 and OR 3.46 95% CI 2.14 to 5.60, respectively), while low SWB was most strongly predicted by feeling disrespected because of national background (OR 7.04 95% CI 3.35 to 14.78) and conflicts in family (OR 4.64 95% CI 2.32 to 9.29).

Results indicate that post-migration stress was more strongly related to PTSD than to anxiety, depression and low SWB. However, as confidence intervals are wide and overlapping, all interpretations of these associations should be made with caution. All associations described above were adjusted for sociodemographic variables, all types of PTEs, number of types of PTEs and number of types of PTEs squared.

5.3 RESULTS FOR PAPER II

The aim of Paper II was to develop and validate an instrument for assessing post-migration stress among refugees.

5.3.1 Instrument development

As described in the Materials and methods section above, the development process resulted in a preliminary instrument with 24 items, spread across seven domains.

5.3.2 Construct validity

5.3.2.1 Confirmatory factor analysis

The CFA showed close but insufficient fit between the outlined 7-factor model and data. Based on the Modification Indices, the model was re-run in two iterations with minor theoretically justifiable changes made, but it still failed to show fit to the data. Inspection of the Modification Indices revealed items with poor factor loadings as well as substantive cross-loadings. As no further theoretically justifiable modifications were possible, we followed recommendations by Asparouhov and Muthén (2009) and proceeded with EFA within ESEM.

5.3.2.2 Exploratory factor analysis

EFA within ESEM with Geomin rotation was performed in four iterations resulting in the omitting of three items. After discarding an 8-factor model that contained one factor with no items with significant factor loadings, excellent fit was established for a 7-factor model. Satorra–Bentler scaled chi-square was still significant for this solution ($S\text{-}B\chi 2 = 156.10$; $df =$

84 $p < 0.001$). Chi-square statistics are sensitive to large sample sizes, which means that even well-fitting models may have a significant chi-square if only the sample is large enough. The selected model featured 7 factors containing 21 items. The factors corresponded to the domains of refugee-related post-migration stress from our theoretical model.

5.3.2.3 Internal consistency

The final 21-item instrument (included in the Appendix) showed good internal consistency, with Cronbach's alpha for the entire instrument being 0.86. Cronbach's alpha for the seven factors of the instrument ranged between 0.74 and 0.87, indicating acceptable to good internal consistency.

5.3.2.4 Concurrent validity

All post-migration stress factors correlated significantly with all measures of mental ill health, and furthermore displayed significant negative correlations with WHO-5 mental wellbeing scores, thus indicating concurrent validity for the RPMS. Correlations for the entire instrument with the same measures showed a similar pattern.

6 DISCUSSION

In this section, the results from the two included papers will be discussed. First, main findings from the studies are presented, followed by discussion of the results from both papers in the light of findings from previous research. Prevalence of mental ill health and PTEs are discussed, while the main focus will be on post-migration stress and its associations with mental ill health. Methodological issues relating to both papers will conclude the discussion.

6.1 MAIN FINDINGS

Results from Paper I indicate that a majority among refugees from Syria that were granted residence permit in Sweden between 2011 and 2013 reported symptoms in line with at least one of the types of mental ill health included in this study. Prevalence rates for anxiety, depression, PTSD, and low subjective well-being (SWB) range from 30% to 40% with high levels of comorbidity, in particular for concurrent depression among those fulfilling criteria for PTSD and anxiety, respectively.

Furthermore, experiences of refugee-related potentially traumatic events (PTEs) were highly prevalent in the sample, with more than 80% reporting experiences of war at close quarters. More than six out of ten had experienced loss of or separation from family, close friends, and loved ones. Experiences of torture and physical violence was endorsed by 30% of the participants, whereas less than 10% reported exposure to sexual violence. While a higher number of PTE types were reported from the period prior to migration, results indicate that the migration itself meant further exposure to PTEs. All PTEs were significantly associated with anxiety, depression, low SWB, and PTSD.

Post-migration stress was assessed using the Refugee Post-Migration Stress Scale (RPMS), a new instrument for assessing refugee-related post-migration stress that was developed for this survey. Confirmatory and exploratory factor analyses resulted in a 21-item instrument for the assessment of refugee-related post-migration stress across seven domains (*Perceived discrimination, Lack of host country specific competences, Material and economic strain, Loss of home country, Family and home country concerns, Social strain, and Family conflicts)*. The final 7-factor measurement model showed excellent fit to data, indicating that the survey data support the theoretical model of refugee-related post-migration stress outlined in Paper II.

Results from Paper I indicate that experiences of post-migration stress were very common in the sample. A majority had often felt sad because they were not reunited with family members, while more than one in three had often experienced bothering difficulties communicating in Swedish. About 20% had often felt excluded in the Swedish society, while less than 10% had often experienced financial hardship in the form of not being able to buy necessities. Family conflicts and experiences of disrespect due to national background were less common, with about 5% reporting having had these experiences often since coming to Sweden.

All types of post-migration stress were significantly associated with anxiety, depression, low SWB, and PTSD, except for often feeling sad because not reunited with family members, which was not significantly associated with anxiety. Furthermore, all seven factors in the final model for post-migration stress correlated significantly with all measures of mental ill health. The number of post-migration stress types was found to mediate the relationship between PTEs and all measures of mental ill health.

6.2 DISCUSSION OF RESULTS

6.2.1 Prevalence of mental ill health

The prevalence rates for mental ill health reported in Paper I are largely in line with prevalence rates reported in systematic reviews and meta-analyses from recent years (Blackmore et al., 2020; Bogic et al., 2015; Henkelmann et al., 2020; Steel et al., 2009). Comparisons with other studies should be made with caution, given the variation across studies in regard to study population, setting, and methodological aspects (Bogic et al., 2015). However, some more recent studies are of particular interest in the discussion of our results.

A systematic review of studies on refugees from Syria (Peconga & Høgh Thøgersen, 2020) reported prevalence rates for PTSD, depression, and anxiety around 43%, 41%, and 27%, respectively. As in previous reviews of mental ill health among refugees (Bogic et al., 2015; Fazel et al., 2005; Steel et al., 2009), estimates varied extensively across the included studies. Although the rates for PTSD in this review were significantly higher than in our study, rates for depression and anxiety were similar. These rates are, however, higher than those from the reviews mentioned above. The reasons for this are not known, several factors have been shown to affect prevalence rates, with studies using small samples, non-random sampling, and self-report instruments generally reporting higher rates (Steel et al., 2009). However, as mental ill heath also has been found to be more common among refugees from certain countries, including Cambodia and former Yugoslavia (Bogic et al., 2015), it is possible that rates among refugees from Syria are higher compared to refugees of other origin. This could mirror the impact of the now decade-long armed conflict in Syria, including the targeting of civilians in indiscriminate attacks, atrocities and war crimes including the use of internationally banned weapons, and the widespread use of enforced disappearances and torture (Human Rights Watch, 2021).

Studies among Syrian refugees living in camps and shelters in neighbouring Turkey, Lebanon and Iraq have shown mixed results, with prevalence rates for specific types of mental ill health around 30% in studies using diagnostic interviews (Alpak et al., 2015; Kazour et al., 2016; Sagaltici, Alpak, & Altindag, 2020) and in the range 60% to 83% for studies using self-report instruments (Acarturk et al., 2018; Mahmood, Ibrahim, Goessmann, Ismail, & Neuner, 2019). Furthermore, in a study comparing two groups of Syrian refugees, one living in refugee camps and shelters in Turkey and the other living in Sweden, prevalence of PTSD was found to be higher for refugees in Turkey (Cheung Chung et al., 2018).

Although these mixed findings may be partly attributable to differences relating to the methods of assessment (i.e., diagnostic interview versus self-report instruments), other factors are likely to affect the results as well. Higher levels of mental ill health among refugees in refugee camps may be partly due to selection, as refugees living in camps may have been granted protection there for being considered vulnerable. At the same time, refugees in camps may lack of basic needs and safety, which may also contribute to mental ill health (Rasmussen et al., 2010). In a wider perspective, this points to the possibility that the variation in mental health outcomes further reflects differences in living conditions in the various post-migration context of the host country societies (Bogic et al., 2015; Li et al., 2016; Porter & Haslam, 2005).

6.2.2 Potentially traumatic events

With traumatic experiences being strong predictors for PTSD and other types of mental ill health, the extent to which a particular refugee population is affected by trauma will have an impact on the rates of mental health problems in that population. In paper I, all investigated PTEs were significantly associated with all types of mental ill health, with the strongest associations in relation to PTSD. In line with previous research (Steel et al., 2009), interpersonal violence including torture, physical violence and sexual violence, emerged as strong predictors for PTSD, but also for anxiety and depression.

Considering the absolute prohibition against the use of torture in the world (UN), experiences of torture in 30% of the sample is strikingly high. It is, however, not unexpected. The use of torture has been reported from more than 70% of the counties in the world, and the use of torture by the Syrian regime is well-documented. Although our results are in line with rates reported in a systematic review on the prevalence of torture (Sigvardsdotter, Vaez, Rydholm-Hedman, & Saboonchi, 2016), they are considerably higher than the 21% reported by Steel and colleagues (Steel et al., 2009).

The comparatively low reported rates for experiences of sexual violence in the sample are probably reflecting the lack of reliable data in this area. Although refugees and other refugees considered being of particular risk for being exposed to sexual violence both in their country of origin and during the migration itself, it remains unclear how common these experiences are (De Schrijver, Vander Beken, Krahé, & Keygnaert, 2018).

A finding in Paper I worth pointing out is that PTEs along the journey, peri-migration traumas, appear to be common among refugees from Syria, although the number of reported PTE types are lower during migration than prior to it. This shows that the migration itself may contribute to increasing the risk for mental ill health among refugees, as a high number of PTE types has been linked to higher levels of PTSD, depression, and anxiety (Bogic et al., 2012; Steel et al., 2009).

6.2.3 Post-migration stress

Experiences of post-migration stress are common among recently resettled refugees from Syria in the Swedish society. The associations found between post-migration stress and mental ill health are in line with previous research presented in this thesis (Li et al., 2016), although not all types of post-migration stress appear to be of equal importance. What constitutes post-migration stress may differ from one context to another, depending on host society conditions, (e.g., high-income vs low- or middle-income country, attitudes towards migrants in society), but probably also relating to differences between refugee populations, not only with regards to experiences from the country of origin and the migration itself, but also to factors relating to culture, language, and ways of living.

Results from the correlational analyses indicate that material and economic strain and social strain are of particular importance for mental ill health among refugees. This is not surprising considering the evidence for associations between unemployment and financial hardship and mental ill health found among refugees and other migrants, as well as in the general population (Tinghög et al., 2010; Tinghög, Hemmingsson, & Lundberg, 2007). Even though unemployment and financial hardship may lead to a deterioration of mental health among refugees, it is also possible that mental health problems contribute to difficulties in finding and maintain an employment, and, as a consequence, to financial hardship. As the directions in correlations are not known, a reciprocal relationship between economic difficulties and mental ill health similar to that found by O'Donnell and colleagues (2020), cannot be ruled out.

In a mixed-methods study on the effects of financial hardship on mental health among refugees in the US, lack of economic resources was found to be the primary cause for distress among participants (Goodkind, Ferrera, Lardier, Hess, & Greene, 2020). However, financial hardship was found to further impact mental health negatively by affecting the ability for language acquisition, employment opportunities, and changing social roles.

The factors corresponding to the domains of material and economic strain and social strain displayed the strongest correlations in the analyses in Paper II. This is not surprising considering how closely the items for these domains relate to each other. While items in the social strain domain refer to lack of financial resources, the items representing social strain relates to feeling excluded and isolated, not being able to make use of ones' competences and loss of status. It is undoubtedly possible to have a good enough financial and still feel excluded or isolated and suffer from status loss. This is mirrored in the prevalence rates for financial hardship and social strain in our sample, where less than 10% report that they had often been unable to buy necessities, while the rates for often having felt excluded in the Swedish society were close to 20%. However, it is also – and perhaps even more so – possible that circumstances such as unemployment increase the risk for post-migration stress in the realms of both economic and social strain. Furthermore, the relationship between social isolation and mental health may be bi-directional, as avoidance of trauma triggers in PTSD may lead to social isolation, which in turn lead to further deterioration of mental health.

Difficulties with the Swedish language, reported by more than a one in three, was associated with all measures of mental ill health. In a study among Iraqi refugees, higher levels of PTSD was associated with slower learning of the Swedish language (Sondergaard & Theorell, 2004). This may point to more complex patterns of interaction between post-migration stress and mental ill health, where refugees with PTSD face barriers to finding employment because of language acquisition difficulties. Bothering difficulties communicating in Swedish is part of the domains lack of host country specific competences, which also includes items relating to the understanding forms and documents from Swedish authorities as well as how the Swedish society works. In addition to being significantly associated with mental ill health, the factor corresponding to this domain also showed among the strongest correlations to the factors material and economic strain and social strain. This further points to the complex relationships between different types of post-migration stress relating to language, social exclusion, and economic hardship, as suggested by Goodkind and colleagues (2020).

While experiences of discrimination (as assessed by the item often having felt disrespected due to my national background) were fairly uncommon in our sample (less than 5% reported having had his experience often since coming to Sweden), the risk for mental ill health among those who endorsed having had these experiences often was high. In the correlational analyses in Paper II, the factor corresponding to the perceived discrimination domain displayed a pattern of rather weak albeit significant correlations with all included measures of mental ill health. Although a pattern of stronger correlations would have been expected considering evidence for the relationship between perceived discrimination and mental ill health (Schmitt, Branscombe, Postmes, & Garcia, 2014), similar findings have been found among refugees in the US (Szaflarski & Bauldry, 2019).

The most common type of post-migration stress experienced in our sample was often missing one's social life from back home, reported by more than 60%. Missing social life in Syria was significantly associated with all measures of mental ill health. The loss of home country factor, to which missing social life from back home belongs, also correlated with all measures of mental ill health in the analyses in Paper II. This factor further contains items relating to longing for the home country and missing activities from before coming to Sweden. Loss has been found to be a risk factor for depression among refugees (Miller et al., 2002).

A somewhat puzzling finding is that being sad for not being reunited with family members showed the weakest pattern of associations with all included measures of mental ill health. In the correlational analyses in Paper II, a similar pattern was found for the factor containing that item, family and home country concerns. This was unexpected since several studies have found family separation to be a risk for mental ill health including PTSD and depression among asylum seekers and refugees (Laban et al., 2005; Nickerson et al., 2010; Schweitzer et al., 2006).

The family and home country concerns factor further contains an item relating to worry for family members that one is separated from, and intrusive fear for family in country of origin has also been found to be a substantive predictor of PTSD, depression, and mental health-

related disability among Iraqi refugees in Australia (Nickerson et al., 2010). Furthermore, PTEs relating to separation from and loss of family members, close friends and loved ones were reported by more than 60% of the participants, and they were associated with anxiety, depression, PTSD, and low SWB. The reasons for the weak correlations between sadness and worry for family members and mental ill health in our sample are not known. One possible explanation is that the meaning of the word family has been interpreted as including more distant family members or relatives, and not just the closest family.

Often experiencing distressing family conflicts was reported by less than 10%. Distressing conflicts correlated with all included types of mental ill health, as did the factor family conflicts, which also includes experiences of feeling disrespected and unimportant in the family. Tension within families may be caused or aggravated by changed roles and issues relating to the acculturation process, and may contribute to feelings of alienation and isolation (Bhugra & Ayonrinde, 2004), experiences associated with increased risk for mental health problems (Lindencrona et al., 2008). Furthermore, if conflicts involving family members and relatives remain unresolved, there may be a risk of decrease in social support, which in turn could lead to further deterioration of mental health (Carswell et al., 2011; Kawachi & Berkman, 2001; Miller et al., 2002).

Several studies have found that post-migration stress contributes to poor mental health among refugees over and above the impact of traumatic experiences (Chu et al., 2013; Porter & Haslam, 2005), and that traumatic experiences only partly explain symptoms of PTSD (Miller, Omidian, Rasmussen, Yaqubi, & Daudzai, 2008; Steel, Silove, Bird, McGorry, & Mohan, 1999). A finding from Paper I worth mentioning is that our mediation analyses showed that the number of experienced post-migration stress types partially mediated the effect of PTEs on all included measures of mental health. This is in line with the finding by Goodkind and colleagues (2020), who found that financial hardship mediated the relationship between previous trauma and both emotional distress and PTSD.

While our finding indicates that refugees with high levels PTEs are more susceptible to unfavourable circumstances in the post-migration context, it remains unclear if this is due to coping abilities following trauma, or that refugees with traumatic experiences are at greater risk for encountering harsh post-migration living conditions.

Whereas the importance of both traumatic experiences and post-migration stress for the mental ill health among refugees has become clearer over the last decades, the psychological processes underpinning these associations still need to be further investigated. High exposure to war-related traumas may have a negative impact on refugees' ability to cope with difficulties in the post-migration context, and high levels of daily stressors may further impede one's ability to cope with continuous adversities (Miller & Rasmussen, 2010; Steel et al., 1999). This could to some extent be related to difficulties in emotion regulation, common in PTSD, which has been found to mediate the relationship between trauma, post-migration stress and symptoms of mental ill health (Nickerson et al., 2015).

The findings presented here add to the growing body of evidence that adverse circumstances in the post-migration environment contribute substantially to the poor mental health found among refugees. While conditions in the countries of origin are the result of complex interactions between several factors that are hard to control, host countries should be able to reduce the negative impact from adverse post-migration circumstances on the mental health and well-being of refugees. Instead of contributing to a continuum of stress characterized by a climate of fear and uncertainty (Silove et al., 1991), the post-migration context should facilitate recovery from traumatic events by fostering a supportive, predictable and safe environment (Silove, 1999).

6.3 DISCUSSION OF METHODS

In this section some of the methodological issues of relevance for the two included studies will be discussed. The discussion will primarily deal with external validity, measurement issues, and model specification. External validity refers to how well the results can be generalized to the study population (refugees from Syria in Sweden) and to other populations (other country of origin, other host country societies). Study design and drop-out will be discussed. Measurement error and model specification, on the other hand, relate more to the concept of internal validity in that it involves questions of the trustworthiness and interpretation of associations, as well as how accurately studied phenomena have been measured or classified in the study population.

6.3.1 Cross-sectional study design

The cross-sectional study design is appropriate when investigating prevalence. It is, however, not possible to make causal inferences based on correlation from cross-sectional studies, as the directions for these correlations are not known. Notwithstanding, directions for some of the correlations found in Paper I can be assumed with regard to the sequencing of events. Specifically, PTEs were assumed to have happened before arriving to Sweden, while the different types of post-migration stress were assumed to have occurred after arriving in Sweden. However, because of the limitations with this study design, we cannot definitely conclude that higher levels of pre-migration mental ill health are causally linked to elevated levels of post-migration stress, or if the observed associations are due to reverse causality.

6.3.2 External drop-out and missing values

The external dropout rate in our study was substantial. However, the random sample was drawn from a known sample frame containing all eligible participants, which is a major strength of this study. The representativeness of our sample could be evaluated through access to register-based information for all eligible participants, i.e., also for non-responders. This dropout analysis led to the construction of non-response weights, using logistic regression. The weights were based on main effects for gender, age groups, marital status, level of education, and year of immigration, and on the interaction between gender and age groups. Differences for the unweighted and weighted prevalence rates were rather small, but both types of prevalence rates were reported in the study.

To compensate for missing values, which overall were fairly marginal, a series of sensitivity analyses were conducted using multiple imputation by chained equations (MICE; White, Royston, & Wood, 2011). Prevalence rates from these analyses were similar to those from the main analysis, and associations that were significant remained largely unchanged, as did non-significant associations.

Although prevalence rates from the unweighted and weighted analyses were similar, and sensitivity analyses yielded the same pattern of significant correlations, we still do not know for sure if our results are representative for the wider population meeting our exclusion and inclusion criteria. Persons with severe mental health problems have been found to be overrepresented among non-responders in surveys (Lundberg, Damström Thakker, Hällström, & Forsell, 2005), but this finding is not necessarily transferable to the current study population. Although those with the highest levels of mental ill health may not have participated in the survey, the same could be true for those with no mental health problems at all, as they could have found the questions irrelevant. Either way our findings need to be interpreted with this potential limitation in mind.

In spite of the possible impact of the substantial external dropout rate on the accuracy of our prevalence estimations, our results are largely in line with results from reviews on refugee mental health (Blackmore et al., 2020; Bogic et al., 2015; Steel et al., 2009). This circumstance may, to some extent, serve as an indication that the prevalence rates are likely to be fairly accurately estimated in this study. Still, as previously discussed, some caution is warranted as prevalence rates of mental ill health are known to differ between contexts and differences in study designs.

6.3.3 Measurement issues

Although the RPMS appears to be a valid instrument for assessing refugee-related post-migration stress among Syrian refugees in Sweden, its generalizability to other populations is not known. In the development of the RPMS, items and domains were formulated to be relevant for refugees and asylum seekers in various settings. In this process, we decided to leave out items specifically referring to the asylum procedure, as these items were considered to be less relevant to refugees with residence permits who had been in the host country for a longer time. Instead, we included an item referring to fear of being sent back to the country of origin, but this item was later discarded due to poor factor loadings in the EFA. To assess the RPMS's generalizability to other populations, including asylum seekers, the instrument would need to be validated not only in different refugee populations but also in different resettlement contexts.

Furthermore, as no testing of measurement invariance was conducted in the development of the RPMS, we only know that our model fits data for the entire sample, not if the same if true for different subgroups (i.e., gender, age groups, immigration year). Measurement invariance of the RPMS thus needs to be further investigated in future studies.

Although excellent model-to-data fit was achieved in the final EFA, there may still be domains relating to refugee post-migration that are not covered by our model. As mentioned above, the RPMS does not include any items referring to the asylum procedure, such as legal status or temporary protection, factors that have been shown to be associated with mental health among refugees (Laban et al., 2004; Nickerson et al., 2011). Furthermore, items relating to housing are not included, although lack of private housing has was one of the strongest post-displacement predictors for mental ill health in the meta-analysis by Porter and Haslam (2005). The reason for leaving housing out from the RPMS may be related to the pilot testing of the RPMS, which was done in a sample of Arabic speaking refugees for whom housing did not appear to be a problem.

To address these possible limitations with the RPMS, a revised version of the instrument is under development. In order to stay true to the original intention of creating an instrument that could be used among all refugees (at least in host societies in high-income countries), a domain containing items relating to both housing and fear of being sent back to the country of origin has been included.

Reliable and valid instruments for use in refugee populations are generally lacking (Bogic et al., 2015). However, included measures for mental ill health, i.e., HTQ, HSCL-25 and WHO-5, have all been used extensively in research among refugees. Although the instruments have been validated in refugee populations, to our knowledge that have not been validated among refugees from Syria. The cut-off of 2.06 used for HTQ is lower than the commonly recommended 2.5, which could imply that our estimations of PTSD are somewhat inflated. However, in a study on screening for PTSD and depression in Bosnia and Herzegovina, a cut-off of 2.06 was found to be optimal for diagnostic accuracy, sensitivity and specificity (Oruc et al., 2008). In the same study, optimal cut-off for depression using the HSCH-25 was found to be 1.80 instead of the recommended 1.75. For anxiety, however, a cut-off of 1.75 was used.

The use of self-report in the assessment of mental health problems has been found to be related to higher prevalence rates compared to diagnostic interviews (Bogic et al., 2015; Henkelmann et al., 2020; Steel et al., 2009). In spite of these reported differences, self-report instruments are the only viable option for large-scale epidemiological studies. In the light of these findings, it cannot be ruled out that the prevalence rates in our study are inflated. However, this is not necessarily a problem, as our objective was to assess mental ill health and not mental disorders, with focus on symptoms of PTSD, depression, and anxiety that not necessarily reach clinical level, as well as low SWB. Nevertheless, the prevalence for mental ill health in our sample is largely in line with that found in systematic reviews and meta-analyses (Blackmore et al., 2020; Peconga & Høgh Thøgersen, 2020; Steel et al., 2009).

A limitation in the analyses of prevalence and associations for post-migration stress is that only one item for each domains of the RPMS were included in the analyses in Paper I. This rather coarse measure for assessing post-migration stress increases the risk for measurement errors, as some of the included items may be difficult to give a correct answer to (in this case,

reporting that you have had the experience described in item as frequently as you have had it). The difficulty parameter of an item is part of what can be assessed using Item Response Theory (IRT). The inclusion of several items for each domain would have decreased the risk for measurement error relating to item difficulty, but it would not have eliminated the risk as, hypothetically, all items in one domain could qualify as difficult items. IRT analyses could reveal if there are items in the RPMS that are particularly difficult, but item response analyses have not yet been performed.

The presence of difficult items in the RPMS (and in the RTHC) may have influenced the prevalence rates for PTEs and post-migration stress in Paper I and could also have contributed to inflated ORs for some of the correlations between PTEs, post-migration stress and mental ill health. This could explain the low prevalence of experiences of perceived discrimination, financial hardship, and family conflicts, all being reported by less than 10% of the participants. ORs for the associations between these items and the measures of mental ill health were the highest, and corresponding confidence intervals were rather wide, indicating greater uncertainty regarding the true value for these correlations. In the correlational analyses in Paper II, the domain *perceived discrimination* was not more strongly associated with any of the measures of mental ill health, which supports the hypothesis that the item *felt disrespected due to my national background* could be a difficult item. In all, the risk for measurement error related to the inclusion of difficult items in the RPMS warrants for caution when interpreting the associations between post-migration stress and mental ill health found in this study, in particular for the items with higher ORs.

Deciding what factors to control for may be complicated when factors may be mediators and confounders at the same time. In our decisions on what factors to control for, we chose not to include any of the types of post-migration stress. Although these could have had a confounding effect on the relationships between PTEs and mental ill health, we deemed it more likely that they were part of the causal pathway, and thus controlling for them would have weakened the correlation between PTEs and mental ill health in an inaccurate way.

In our main analyses, we could not control for pre-migration mental health, as this information for obvious reasons was not available. However, it is possible, and even likely, that pre-migration mental health to some extent has confounded the results in this study. The ultimate study design for investigating the effect of post-migration stress on mental ill health would be a longitudinal repeated measurement design, where the refugees' mental ill health was assessed shortly after arriving to the new country.

7 CONCLUSIONS

This thesis highlights the necessity of considering not only traumatic experiences but also adverse experiences and circumstances in the post-migration context when trying to understand what factors contribute to mental ill health among refugees. These findings have consequences both on a societal level and in the clinical mental health practice with refugees.

More specifically the findings in this thesis suggest that:

- The prevalence of mental ill health is highly elevated among refugees from Syria recently resettled in Sweden. In our study, at least 3 in 10 met criteria for anxiety, depression, PTSD, and low subjective well-being, respectively. A majority met criteria for at least one of the studies types of mental ill health, and comorbidity was common.
- Experiences of potentially traumatic events (PTEs) are highly prevalent among refugees from Syria. More types of PTEs were reported to have occurred before the migration, but the migration itself also meant exposure to PTEs.
- Experiences of post-migration stress are common among refugees from Syria recently resettled in Sweden. Furthermore, all types of post-migration stress investigated were found to be associated with mental ill health. Post-migration stress was also found to partially mediate the relationship between PTEs and mental ill health.
- The newly developed Refugee Post-Migration Stress Scale (RPMS) appears to be a valid instrument for assessing refugee-related post-migration stress, at least among recently resettled refugees from Syria. However, its applicability in other populations needs to be further investigated.
- Given the associations between post-migration stress and mental ill health, measures need to be taken on societal level to mitigate the adverse impact of post-migration stress. These would optimally include: targeting unemployment and socioeconomic disparities; promoting social participation and integration; providing language training where learning difficulties relating to PTSD and other forms of mental ill health are considered; targeting discrimination; and providing access to adequate health care for mental health problems including PTSD.
- Knowledge on the adverse effect of restrictive migration policies on mental health should be taken into account and be reflected in migration legislation. Necessary steps include: ensuring the right for families shattered by armed conflict, human rights violations and forced migration to be reunited in a safe environment; providing permanent protection rather than temporary; disconnect the right to permanent protection from requirements relating to employment and language acquisition; and limiting the use of detention to a minimum.
- Furthermore, as experiences of potentially traumatic events occurring during migration may further increase the risk for mental ill health, efforts should be made to prevent PTEs from occurring during migration. Steps in this direction include

providing safe legal migration options and ensuring refugees the right to seek protection from war, persecution and human rights violations.

- In clinical research on effective treatment for PTSD and other mental health problems among refugees, issues relating to post-migration stress need to be taken into account. Research on how to best address these issues in clinical practice is largely lacking. Furthermore, there is a need for a better understanding of the processes underpinning the associations between trauma, post-migration stress and mental ill health.

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10 APPENDIX

The Refugee Post-Migration Stress Scale (RPMS)

Please indicate how frequently you experience each of the following situations in Sweden.

		Never	Seldom	Sometimes	Often	Very often
1	Discrimination by Swedish authorities					
2	Discrimination in school or at work					
3	Feeling disrespected due to my national background					
4	People making racist remarks towards me					
5	Bothering difficulties communicating in Swedish					
6	Difficulties understanding how ordinary life activities in Sweden work (shopping, buying tickets, traveling, etc.)					
7	Difficulties understanding documents and forms from authorities					
8	Worry about unstable financial situation					
9	Frustration for not being able to support myself financially					
10	Worry about debts					
11	Missing my social life from back home					

12	Longing for my home country					
13	Missing activities that I used to do before coming to Sweden					
14	Worry about family members that I am separated from					
15	Feeling sad because I am not reunited with family members					
16	Feeling excluded or isolated in the Swedish society					
17	Frustration due to loss of status in the Swedish society					
18	Frustration because I am not able to make use of my competences in Sweden					
19	Distressing conflicts in my family					
20	Feeling disrespected in my family					
21	Feeling unimportant in my family					