Inland Norway
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Good starts

Mental Health and Resilience in Resettled Syrian Refugee Youth

PhD Dissertations in Child and Youth Participation and Competence Development • 2022

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MENTAL HEALTH AND RESILIENCE IN RESETTLED SYRIAN REFUGEE YOUTH

Cecilie Dangmann | Doctoral dissertation | September 2021

Printed by: Flisa Trykkeri A/S

Place of publication: Elverum

Photo: Adam Patterson/Panos/DFID

PhD Thesis in Child and Youth Competence Development no.28

ISBN printed version: 978-82-8380-323-5

ISBN digital version: 978-82-8380-324-2

ISSN printed version: 2535-7433

ISSN digital version: 2535-7441

Sammendrag

Bakgrunn: Halvparten av verdens 82 millioner mennesker på flukt er barn og ungdom, allikevel er de mindre synlige i forskningslitteraturen. Deres behov fortjener økt oppmerksomhet på grunn av de langvarige konsekvensene for utvikling, helse og livskvalitet. En god start i et nytt land er en unik mulighet til å positivt påvirke deres fremtidige helse og utvikling. Bedre kunnskap om hvordan ulike faktorer påvirker deres psykiske helse i tidlig bosetting, kan bidra til strategier og tiltak som sikrer en slik «god start».

Hensikt: Overordnet hensikt med avhandlingen var å utforske psykisk helse og livskvalitet hos syrisk ungdom, og påvirkningen av risiko og resiliens faktorer før og etter ankomst til Norge.

Metode: Spørreundersøkelse på 23 skoler der 160 syrisk ungdom i alderen 13-24 år deltok. Studien er del av REFUGE prosjektet (REsettlement For Uprooted Groups Explored), en nasjonal spørreundersøkelse om psykisk helse og livskvalitet hos syrere bosatt i Norge.

Resultat: Deltakerne rapporterte et høyt nivå av psykiske plager og redusert livskvalitet. For livskvalitet var det vennskap, fysisk og psykisk helse som skåret lavest, mens familie og skolemiljø bidro positivt. Potensielt traumatiske opplevelser fra krig og flukt påvirket psykisk helse negativt, men påvirkningen var i hovedsak indirekte gjennom å øke mengden hverdagsstress. Psykiske plager reduserte opplevd livskvalitet direkte, men også gjennom å øke mengden hverdagsstress. Resiliensfaktorer hadde sammenheng med bedre psykisk helse uavhengig av risikofaktorer. For PTSD symptomer hadde resiliens faktorer liten effekt. Miljø- og relasjonsfaktorer så ut til å ha størst betydning for psykisk helse og livskvalitet.

Konklusjon: Redusert psykisk helse og livskvalitet hos ungdom med fluktbakgrunn er en klar indikasjon på behovet for tiltak. Komplekse påvirkninger mellom tidligere opplevelser og faktorer etter bosetting tilsier at både universelle helsefremmende tiltak og målrettede forebyggende tiltak kan ha nytteverdi. Fokuset på miljø- og relasjonsfaktorer etter bosetting bør økes.

Abstract

Background: Children and youth are estimated to comprise almost half the world's displaced population of 82 million, yet they are less visible in literature on refugee health. The needs of young refugees deserve greater attention due to the long-term consequences for development, integration, health and quality of life. A good start in a new resettlement country represents an opportunity to positively influence their future health and development. Increasing our understanding of factors influencing their mental health in early resettlement could inform important policy and interventions to provide for such "Good starts".

Aim: The overall aim was to explore mental health and resilience in Syrian refugee youth and the influence of pre-and post-migration risk and resilience factors.

Methods: One hundred sixty recently resettled Syrian youth, aged 13 to 24 years, participated in a survey at 23 schools across Norway. The study is part of the REFUGE project (REsettlement For Uprooted Groups Explored), a nation-wide survey of mental health and quality of life in refugees from Syria resettled in Norway.

Results: The Syrian youth reported high levels of mental distress and reduced quality of life. For quality of life; friendships, physical and mental wellbeing were low-scoring dimensions, whilst home and school life contributed positively. Potentially traumatic events from war and flight had significant impact on mental health, but their influence was largely through increasing the amount of post-migration stressors. Mental distress reduced the experienced quality of life, both directly but also through increasing the amount of post-migration stressors. Lastly, resilience factors were associated with better mental health as a direct main effect independent of risk. However, this was not significant for PTSD. Environmental and relational factors seemed to have the largest impact on mental health.

Conclusion: The inequities in health clearly indicate the need for policy and interventions to improve mental health and resilience in refugee youth. The complexity of interactions suggests that both universal promotive interventions, as well as targeted preventive interventions could be beneficial. Increased attention should be given to post-migration risk and resilience factors, especially environmental and relational factors.

ملخص

معلومات أساسية: يُقدَّر عدد الأطفال والشباب اللاجئين بما يقرب من نصف تعداد النازحين في العالم البالغ عددهم 82 مليون نسمة، ومع ذلك فإنهم أقل ظهورًا في الأدبيات المتعلقة بصحة اللاجئين. تستحق احتياجات اللاجئين الشباب أن تولى اهتمامًا أكبر بسبب العواقب طويلة المدى على التنمية والتكامل والصحة ونوعية الحياة. تمثل البداية الجيدة في بلد إعادة التوطين الجديد فرصة للتأثير إيجابيًا على صحتهم وتطورهم في المستقبل. تؤدى زيادة فهمنا للعوامل التي تؤثر على صحتهم العقلية في إعادة التوطين المبكرة إلى المساعدة في توجيه السياسات والتدخلات المهمة لتوفير مثل هذه "البدايات الجيدة".

الهدف: تمثل الهدف العام في استكشاف الصحة النفسية والقدرة على الصمود لدى شباب اللاجئين السوريين وتأثير عوامل المخاطر والصمود قبل الهجرة وبعدها.

الطرق: شارك مئة وستون شابًا سوريًا أعيد توطينهم مؤخرًا، تتراوح أعمارهم بين 13 و24 عامًا، في استطلاع رأي في 23 مدرسة في جميع أنحاء النرويج. الدراسة جزء من مشروع REFUGE (إعادة التوطين للمجموعات المستأصلة المستكشفة)، وهو استطلاع رأي على مستوى الدولة للصحة العقلية ونوعية حياة اللاجئين من سوريا الذين أعيد توطينهم في النرويج.

النتائج: أفاد الشباب السوري عن ارتفاع مستويات الاضطراب النفسي وانخفاض نوعية الحياة. لتحقيق نوعية الحياة، كان للصداقات والرفاهية الجسدية والعقلية أبعاد منخفضة الدرجات، في حين ساهمت الحياة المنزلية والمدرسية بشكل إيجابي. كان للأحداث المؤلمة المحتملة من الحرب والهروب تأثير كبير على الصحة العقلية، لكن تأثيرها كان إلى حد كبير من خلال زيادة مقدار ضغوط ما بعد الهجرة. وقد قللت الضائقة النفسية من نوعية الحياة المتمرسة، سواء بشكل مباشر أو أيضًا من خلال زيادة كمية الضغوطات بعد الهجرة. أخيرًا، ارتبطت عوامل المرونة بصحة عقلية أفضل كأثر رئيسي مباشر مستقل عن المخاطر. ومع ذلك، لم يكن هذا مهمًا لاضطراب ما بعد الصدمة. يبدو أن العوامل البيئية والعلائقية لها التأثير الأكبر على الصحة العقلية.

الخاتمة: تشير أوجه عدم المساواة في الصحة بوضوح إلى الحاجة إلى سياسة وتدخلات لتحسين الصحة النفسية والقدرة على الصمود لدى الشباب اللاجئين. يشير تعقيد التفاعلات إلى أن كلاً من التدخلات التعزيزية الشاملة، وكذلك التدخلات الوقائية المستهدفة يمكن أن تكون مفيدة. ينبغي إيلاء اهتمام متزايد لعوامل مخاطر ما بعد الهجرة والمرونة، وخاصة العوامل البيئية والعلائقية.

Acknowledgements

Throughout my work as a public health nurse, I have always been amazed and grateful for children, youth and their families sharing their trials and triumphs with us. It has been a privilege to pursue this through research, and I am grateful to all the youth who participated in this study and shared their important life experiences. Our hope is that what you shared can improve future policy and practice. I also want to thank the teachers who organised access to the schools. Your care and sincere concerns for the youth were obvious, and this is also reflected in the youth's responses.

This thesis is founded on the labour of others. The Inland University of Applied Sciences awarded me the scholarship in nursing science and migration health, and the opportunity to join the PhD programme in Child and Youth Competence Development. The Norwegian Centre for Violence and Traumatic Stress Studies were positive to my initial enquiries and kindly allowed me take part in their exciting new projects on refugee health. I have also been fortunate to have four fantastic supervisors and mentors along the way. Professor Per Normann Andersen has been a wonderful support as my main supervisor. You have been just what I needed; incredibly patient, quick to respond and very thorough. Øivind Fjeld-Solberg has managed all NCVTSS projects, and still had the time and interest to supervise my endeavours. Thank you for all your support, humour and educational discussions. Professor of Nursing Science Sevald Høye, has followed this project from beginning to end. Your important focus on migration health within nursing practice, your continual positive support and practical feedback is truly appreciated. Lastly, Anne Kjersti Myhrene Steffenak, you are my guiding star and I have respectfully followed in your footsteps for many years. Your enduring belief in me and my abilities is the reason why I am writing these words at all.

Thank you to all the wonderful teachers, parents, counsellors, fellow researchers and cultural advisors for all your invaluable advice along the way. A very special thank you to Aimee Aoun Lisøy, Aya and Alaé Ali whose enthusiasm and help was invaluable. Lastly, my colleagues and my family have been the glue between engrossed thesis work and "real life". Thank you all for your patience and support.

Abbreviations

ANOVA	Analysis of variance
CRIES-8	Child revised impact of events scale, 8 items
CYRM12	Child and youth resilience measure, 12 items
HRQoL	Health-related quality of life
HSCL-10	Hopkins symptom checklist, 10 items
NCVTSS	Norwegian Centre for Violence and Traumatic Stress Studies
PTEs	Potentially traumatic events
PTSD	Post-traumatic stress disorder
QoL	Quality of life
SPSS	Statistical Package for Social Sciences
UN	United Nations
URM	Unaccompanied refugee minors

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1 Introduction

Refugee youth have been forced to leave their country and are unable to return safely. Growing up in areas of conflict has left them with experiences of war, violence and loss. They have travelled long and sometimes hazardous journeys, with or without their families. For many refugee youths, resettlement in another country means the end of one journey and the beginning of another. They face new challenges, such as learning a new language and culture, and finding new friends. With hopes for the future, they adapt to a new home and a life in Norway. How is their mental health in this period of early resettlement? And how do past experiences, present challenges and resilience factors affect their mental health? This thesis explores these questions in a group of Syrian youth who recently resettled in Norway. A good start in a new country can be decisive for their future health and wellbeing. Improving our understanding of the process of resettlement can help us provide for such "good starts".

> *"Refugees face two journeys, one leading to hope, the other to despair.*
> *It is up to us to help them along the right path."*
>
> *UN High Commissioner for Refugees Filippo Grandi* (UNHCR, 2016)

1.1 Background

The population of forcibly displaced is now at an all-time high of 82 million and continues to grow (UNHCR, 2021a). Health inequalities between refugees and other populations are well-known, particularly when it comes to mental health (Bradby et al., 2015; WHO, 2018). International public health initiatives suggest that specific attention to migrant and refugee health is necessary to close the gap (Lindert et al., 2016; The Lancet Public Health, 2018; WHO, 2018).

Children and youth are estimated to comprise almost half the population of forcibly displaced people (UNHCR, 2021a). Despite this, children and youth are less visible in literature concerning refugee health. The WHO global action plan to promote the

health of refugees and migrants (2019–2023) suggests that refugee children and youth are a particularly vulnerable group (WHO, 2019). They have experienced several potentially traumatic events (PTEs) during war and flight which are closely linked to increased mental distress (Kien et al., 2018). These experiences—happening during crucial phases of their physical, emotional, social and cognitive development—makes youth particularly vulnerable to mental health problems following war, uprooting and flight (Calam, 2017; Reed et al., 2012). However, some researchers suggests that an over-focus on these events has led to stressors related to resettlement being under-researched (Miller & Rasmussen, 2017; Ventevogel et al., 2019). Factors such as discrimination, economic concerns or language problems could potentially mediate—or partly explain—the influence PTEs have on mental health. Several of these factors are also highly malleable and possible to address by host countries.

Despite considerable adversity, most refugees do not suffer from mental distress, or their mental health improves over time (Betancourt et al., 2013; Keles et al., 2016; Purgato et al., 2020; Strømme et al., 2020). This remarkable resilience is duly noted in literature, drawing increased research attention. Several factors are associated with the resilience of this group; stability, safety and social support seem to correlate with improved mental health (Fazel et al., 2012; Scharpf et al., 2021). Yet, including these resilience factors in interventions is sometimes difficult as their mechanism of influence is lesser known. The fact that most refugees report little mental distress, also necessitates a broader description of their wellbeing, complementing the descriptions of mental distress.

Resettlement in a new country could therefore be both a challenging and an empowering experience, which this thesis will try to encompass. The needs of this young refugee population deserve greater attention due to the long-term consequences for their development, integration, health and overall quality of life. Longitudinal research also shows that addressing psychological distress in early resettlement may promote long-term refugee adjustment and, in particular, reduce post-migration stress (Tingvold et al., 2015). In a life-course perspective on health, a good start in a new host country represents an opportunity to positively influence future health and development (Calam, 2017).

Recommendations for promoting mental health and wellbeing in refugee children and youth are to target risk and resilience factors within a holistic framework, using a mixture of policy-based and specific interventions. However, recommendations are general due to large knowledge gaps noted by several over the past 10 years (Fazel & Betancourt, 2017; Hjern & Kadir, 2018; Masten & Narayan, 2012). The overall aim of this thesis is therefore to add to existing knowledge by exploring how risk and resilience factors affect mental health and quality of life in recently resettled Syrian youth. Assessing positive health, such as quality of life, could be a valuable complement to existing knowledge, discerning both dimensions of concern and of strength. Exploring mechanisms of resilience and risk factors from before and after resettlement could aid the development and implementation of interventions. The ultimate intention is to inform policies and practice on how we can protect and promote mental health and resilience in young refugees in the context of resettlement and integration.

This thesis will first describe relevant theoretical frameworks and central concepts, within a public health perspective. This is followed by a context description of Syrian refugees resettled in Norway and a review of current knowledge in the field, before presenting the study and the three papers upon which this thesis is based.

2 Theoretical framework

2.1 Public health and bioecological models

The general theoretical framework for this study is based upon accepted definitions and theories within the field of public health research. This field of research has been described as young and transdisciplinary, with a dual research and practice focus (Gauffin & Dunlavy, 2019).

Public health is seen as society's effort to influence factors affecting people's health and wellbeing, to prevent physical and mental illness, injury or suffering, protect against health threats and promote health and wellbeing (Folkehelseloven, 2011). Although the science and practice of public health has changed throughout its history, a broad definition of health is now endorsed: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." (WHO, 1948). Several topics are central to this definition, such as (1) the inherent human right of achieving highest possible health, (2) the subjective and multidimensional experience of health, and (3) that health is more than not being ill. Assessing health therefore needs to include subjective and multidimensional measures, and concepts such as wellbeing or quality of life should complement descriptions of ill-health (Lindert et al., 2015; Nes et al., 2018).

Implicit in modern public health is also the notion that health is determined by a range of interlinked biological, relational and environmental factors (Naidoo & Wills, 2016). These social or ecological models have been fundamental in public health approaches for more than 40 years and are also widely used in the fields of migration and child development. They situate individuals within an ecosystem of risk and protective factors, extending outwards from the intrapersonal level (e.g., biology, psychology) through the interpersonal (e.g., family, peers, partner), institutional (e.g., school, workplace, health clinic), community (e.g., cultural norms), and societal levels (e.g., policies, laws, economics) (Brady et al., 2020). These nested spheres of influence are not hierarchical, nor one-directional factors, but interact to produce individual and population health. Although several models exist, often cited is Bronfenbrenner's *Bioecological Model of Human Development* (Bronfenbrenner & Morris, 2006). This model posits that health and development is defined by a complex

reciprocal interaction of biological, psychological, and social factors. The theory also puts equal emphasis on experiential and objective views and recognises that health determinants are both within and outside individuals' control.

Based on the broad definition of health and socio-ecological models of health influences, contemporary conceptualisations of public health explicitly integrate biology and social ecology, adopt a life-course perspective and incorporate social justice and community engagement principles (Brady et al., 2020). The emphasis has also been on modifiable determinants appropriate for current or future interventions in a perspective of translational research (Ogilvie et al., 2009). The theoretical framework and principles of public health have influenced the planning, design and aims of this study (Gauffin & Dunlavy, 2019) and relevant concepts included in the study—such as mental health, quality of life and resilience—share these underlying assumptions. These concepts will be described in more detail shortly.

Central to refugee youth are also cultural and developmental perspectives. Cultural perspectives pertain to the assumptions that all theories and concepts are universal across cultures. A common criticism is that they are predominantly based on western affluent cultures. Care has therefore been taken to systematically evaluate cultural and contextual appropriateness of theories and methods used.

Developmental perspectives pertain to the notion of development as a process, and the developmental stage of adolescence and youth. Referring to a period between childhood and adulthood, such a developmental stage is universally accepted across cultures (Flisher & Gerein, 2017). It comes with substantial biological and social changes. During the latter part of youth, many leave school and transition into higher education and work, leaving home and sometimes friends—a period characterised by change, waiting and uncertainty (Bambra & Thomson, 2019). Increasing age is accompanied by a general rise in mental distress and a reduction in quality of life. For most, this decline in mental health is small and temporary, but for some it marks the onset of long-lasting problems (Flisher & Gerein, 2017). Thus, addressing mental health in youth has enormous public health significance because it could reduce burden and suffering, but also promote future health.

2.2 Central concepts

2.2.1 Refugee youth

In this thesis the term *refugee* refers to a person who is forced to move and unable to return safely, as proposed by the United Nations (UNHCR, 1951). In this thesis, the term is used broadly and includes asylum seekers and family members granted residence, as well as those granted the status through UN applications.

There are multiple terms describing different age-groups of children, and in this thesis the term *youth* refers to the UN description of a period of development between dependence and independence, in transition towards completing compulsory education. Suggested ages are 15–24 years but the age limitations are described as fluid and contextual (UN, 2013). In this study we recruited from secondary and upper secondary education in Norway, and the ages 13–24 years are included in the term *youth*.

The author recognises the importance of refugee status not being a personal and permanent identity for youth, but a given label. The group is also highly heterogenous, and it is important to remember that they are first and foremost youth, not refugees (Borchgrevink et al., 2019). For some, the label infers vulnerability, weakness and a burden to society which is seen as stigmatising (Edge et al., 2014). The term *refugee youth* is used in this thesis for readability, whilst the intended meaning is *children and youth with refugee experience or backgrounds.*

2.2.2 The "refugee experience"

The journey from uprooting to flight and final resettlement has been described as the *refugee experience*. It is often divided into phases of the journey; pre-flight, flight and resettlement (Lustig et al., 2004) or contexts (internally displaced, asylum, camp, unaccompanied). Others have referred to it as a "triple burden" of trauma, uprooting and resettlement (Lie, 2003). The variety of descriptions illustrates the heterogeneity of the group and contexts, but also makes comparisons difficult. This thesis refers to factors and experiences as pre-migration (before and during flight) or post-migration (after arrival in Norway), to separate past experiences from current situations. Pre-migration factors could include a variety of experiences such as persecution, violence,

separation and lack of basic resources (Bradby et al., 2015). These are collectively termed *potentially traumatic events* (PTEs) in this thesis. Post-migration is related to the period after resettlement in Norway. Stressors related to this period are sometimes labelled acculturational stress, daily hassles, everyday life events or settlement stressors and include factors relevant to the settlement experience such as: language problems, uncertainties about asylum application/status, worry for family members left behind, cultural adjustments, loneliness or exclusion, discrimination or problems navigating new social and health systems (Hou et al., 2020; Keles, Friborg, et al., 2016; Li et al., 2016; Miller & Rasmussen, 2014; Seglem et al., 2014) These are collectively termed *post-migration stressors* in this thesis. PTEs are proposed to separate persons with refugee backgrounds from other migration groups, e.g. labour migrants, and could potentially explain differences found between these groups. Post-migration factors associated with resettlement may apply to all groups who migrate. However, it is the particular combination of pre- and post-migration factors we suggest constitute the *refugee experience* (Lustig et al., 2004; McFarlane et al., 2011).

2.2.3 Mental health

In this thesis, *mental health* refers to the World Health Organisation (WHO) definition: "Mental health is a state of well-being in which an individual realises 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." (WHO, 2004). For children, the WHO definition needs to be considered within the limits of their dependent and developing nature. This comprehensive perception of *mental health* includes both positive **and** negative aspects of mental health, such as quality of life and mental distress. The different concepts within *mental health* are not seen as opposite parts of a scale but as complementary to each other, hence it is possible to experience mental distress whilst enjoying a good quality of life. This broad definition of *mental health* is used in international and national strategy documents, including the Norwegian national strategy for child and youth mental health (2019–2024) (MHCS, 2019).

2.2.4 Mental distress

Mental distress is seen as burdensome conditions, independent of falling within diagnostic criteria (MHCS, 2019). Diagnoses of anxiety, depression and post-traumatic stress disorder (PTSD) are examples of mental distress, as are symptoms or emotions such as sadness, anger or loneliness.

2.2.5 Quality of life and health-related quality of life

Quality of life (QoL) is defined as an "[I]ndividuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." (WHO, 1998). Increasing efforts are made to include QoL in health monitoring, and it is seen as a significant public health indicator (Lindert et al., 2015; Nes et al., 2018). QoL is a wholistic and multidimensional concept which includes an individual's subjective evaluation of their physical health, psychological state, autonomy, social relationships, personal beliefs and their relationship to their environment (WHO, 1998). QoL measures are therefore often multi-dimensional. In simpler terms, QoL is seen as the experience of wellbeing and good functioning and could range from good to bad (MHCS, 2019). Health-related Quality of Life (HRQoL) is considered to be the health aspect of quality of life that focuses on people's daily functioning and ability to experience a fulfilling life (WHO, 1998). However, a clear distinction between QoL and HRQoL is often not made in literature (Buchcik et al., 2013). In this thesis the term QoL is used broadly to refer to positive mental health concepts, such as wellbeing, happiness, life satisfaction. HRQoL is used when referring to multi-dimensional measures such as the one used in this study (KIDSCREEN).

2.2.6 Resilience

Resilience can be seen as good health or function, despite significant adversity (Southwick et al., 2014). Within a bioecological framework, resilience becomes the ability not only to cope and return to normality, but to adapt and transform. Its focus is on response to shock and stress, but also opportunities and emergence of new trajectories, and therefore goals or desired outcomes always need to be relevant to the context (Bourbeau, 2018; Ungar, 2019). In this sense, resilience is a process towards

adaptation, and not a state or ability (Luthar et al., 2000). The following definition guided our inquiry:

> In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided in culturally meaningful ways. (Ungar, 2008, p. 225)

Adopting the bioecological model as a framework for resilience suggests that there are a multitude of factors on individual, relational and environmental levels, which interact with each other to contribute to resilience. In this thesis these protective factors and processes are called *resilience factors* and their interactions *resilience mechanisms*. Resilience mechanisms are the theoretical and operational process by which the outcome is thought to be achieved (Bosqui & Marshoud, 2018). Models describing *resilience mechanisms* propose several pathways of influence:

- an insulating effect where resilience factors protect against exposure to risks (Grych et al., 2015; Kia-Keating et al., 2011)
- an inoculation or steeling effect, where previous exposure to manageable amounts of stress promotes coping skills useful in later contexts (Grych et al., 2015; Schultze-Lutter et al., 2016).
- a promotive effect where resilience factors balance or compensate for the influence or risk factors (Garmezy et al., 1984; Grych et al., 2015; Schultze-Lutter et al., 2016; Zimmerman & Arunkumar, 1994), or promote wellbeing regardless of risk (Kia-Keating et al., 2011; Masten & Narayan, 2012).
- a protective effect where resilience factors buffer the influence of risk on outcomes (Garmezy et al., 1984; Grych et al., 2015; Kia-Keating et al., 2011; Masten & Narayan, 2012; Schultze-Lutter et al., 2016; Zimmerman & Arunkumar, 1994).

Promotive and protective resilience are the more influential models in literature and will be explored in this thesis. *Promotive resilience models* are also termed ‘compensatory’ or ‘additive’, suggesting that positive resilience factors compensate for the presence of negative risk. The mechanism is manifest when a resilience factor

has a direct influence on the outcome (i.e. a main effect in the analysis) and does not interact with a risk factor in predicting the outcome. Thus, the factor influences all participants in the same manner, both those exposed and not exposed to the risk. On the other hand, a *protective resilience model* proposes that factors buffer the influence of risk, identified when the resilience factor interacts with the risk factor to predict the outcome. Thus, the protective resilience factor is especially influential when risk is present. A protective effect would imply that for someone with low resilience, experiencing trauma or stress would lead to a steep increase in mental distress. By contrast, experiencing similar trauma or stress for someone with high resilience would lead to a much smaller increase in mental distress—or no increase at all.

It is also suggested that factors may have differential impact depending upon the outcome investigated. For example, some factors may be important for reducing mental distress and others for improving QoL, thus resilience factors differ depending on outcomes being "positive" or "negative" (Hofgaard et al., 2021; Masten & Narayan, 2012; Patel & Goodman, 2007; Tol et al., 2013). Outcomes should therefore be explored individually.

2.2.7 Factors, mechanisms and conceptual models

In this thesis, factors are aspects, events, experiences or characteristics that could affect outcomes. Mechanisms, on the other hand, are the theoretical and operational process by which the targeted outcome is thought to be achieved (Bosqui & Marshoud, 2018). The difference consists in factors being the "what" and mechanisms the "how" in a process. Knowledge of both these elements is needed to close the "research-practice gap" (translational research) (Ogilvie et al., 2009).

Conceptual models are visual representations of specific research questions that display key components of interventions and policies. The conceptual models are based on a broader theoretical framework, but are intentionally focussed in scope, depicting mechanisms of how potential risk and resilience factors could be associated with outcomes (Brady et al., 2020).

3 The Syrian refugee context

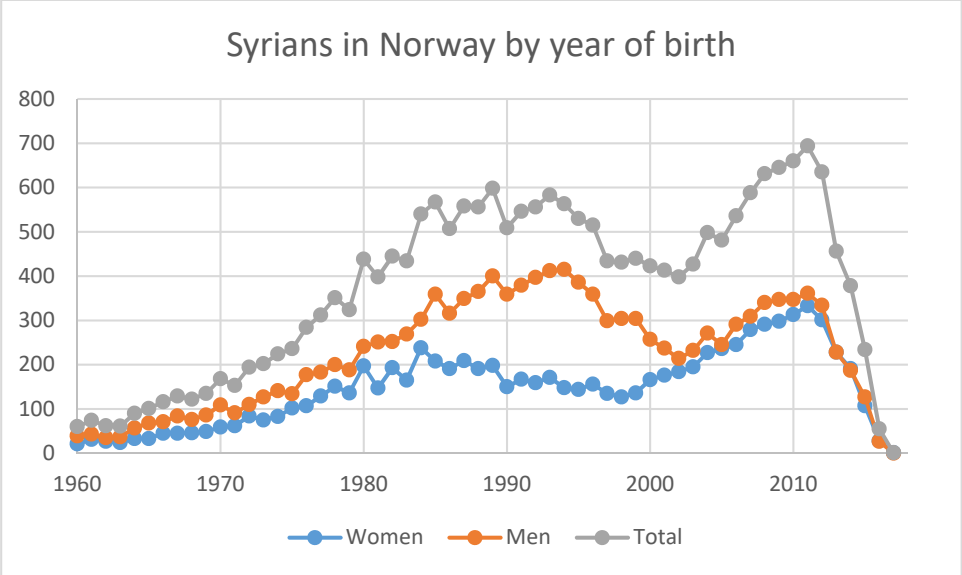
3.1 The Syrian conflict

A decade of armed conflict in Syria has resulted in the largest displacement of civilians since World War II. An estimated 12 million have been forced to move—more than half of the country's pre-war population—many on multiple occasions (UNHCR, 2021b). Over 6 million have fled from Syria; most of these have crossed the borders to neighbouring countries such as Turkey, Lebanon, Jordan, Iraq and Egypt (UNHCR, 2021b). About 1 million have fled to Europe and received asylum; the biggest receiving countries are Germany and Sweden with 550 000 applicants. Around half of all refugees from Syria are children under the age of 18 years. Before the onset of the crisis, Syrian schools had reached near universal enrolment rates, with close to 100 % literacy rates in the population. However, protracted conflict, mass displacement, destruction and occupation of public infrastructure by the military have left a sizeable proportion of school-aged children and youth without access to safe learning spaces where they can get a quality education (UNOCHA, 2014). Missing out of education also means missing out on social environments with other children, and being vulnerable to child labour, forced recruitment in armed groups and early child marriage (UNICEF, 2016).

3.2 Resettlement in Norway

The total amount of Syrians in Norway at the time of the study was around 22 000 and is therefore one of the largest groups of refugees in Norway. The population was quite young, including many families with dependent children under 12 years (see Figure 1). There were also many young single men, who often apply to be reunited with their families. This in turn may increase the proportion of children. Most Syrians in Norway are Arabic, originating from cities like Aleppo and Damascus, but a substantial percentage are Kurds (UDI, 2015).

Figure 1 Syrians in Norway by year of birth



Source: National registry of Norway, 2018

The largest influx of Syrians to Norway was in 2015 when more than 10 000 applied for asylum, compared to 2000 the year before. During the application process, asylum seekers stay in reception centres, sometimes for long periods. Almost all Syrians seeking asylum in Norway are granted permanent settlement (UDI, 2018). The number of asylum seekers has since decreased and new arrivals are now mainly family reunions or UN refugees transferring from camps in Jordan and Lebanon (UDI, 2018).

3.3 The Norwegian settlement process, access to education and healthcare

After permanent settlement is granted, the refugees are allocated to a municipality responsible for their housing, healthcare and education. This means that refugees are resettled in municipalities across the whole of Norway, both rural and urban (IMDI, 2021). Children and adolescents of school age enter Norwegian schools; the right to education extends to 24 years. Many schools offer introductory classes for recently resettled students with combined language training and subject catch-up for missed schooling, to enable completion. However, some children are placed directly in ordinary classes shortly after arrival to the municipality, with no language assessment or follow-up.

Refugees under 18 have the same rights and access to healthcare, although their parents may have some restrictions based on settlement status (Norwegian Directorate of e-Health, 2021). All refugees are invited to a health screening within 3 months of arrival in the municipality. This typically involves screening for tuberculosis and vaccination status, but also mental health. Both adults and children are invited, sometimes together as a family. Some of the larger cities have specialized refugee health services, but screening is often done by public health nurses in the local municipalities who refer to other services if needed, but often have little resources to follow up the families themselves (Norwegian Directorate of Health, 2018).

The current national integration strategy (2019–2022) describes good health as a valuable resource for integration (Ministry of Education and Research, 2019). Reciprocally, the national strategy for mental health in children and youth (2019–2024) states that good integration policies promote good health (MHCS, 2019). The mental health strategy also posits that increased efforts should be made to reach children and youth with refugee backgrounds, as experiences of violence and loss increases their risk of mental distress.

4 Literature review

4.1 Mental health in refugee children and youth

In general, evidence points to poorer mental health in refugee children and youth than general populations (Bronstein & Montgomery, 2011; Kien et al., 2018; Priebe et al., 2016). The inequalities in health are also associated with lower educational attainment and employment rates (Borsch et al., 2019) and long-term risks for increased mortality, disability, psychiatric care and substance misuse in adulthood (Dunlavy et al., 2021).

In this thesis, mental health is seen as a broad concept including both positive and negative aspects of mental health. However, within the literature on mental health in refugee youth, mental distress is most commonly assessed. Results show higher prevalence than population norms (Kien et al., 2018) with higher PTSD in early resettlement, and higher anxiety and depression in later resettlement (Montgomery, 2011). In the past 5 years, several studies have explored mental distress in Syrian children and youth, reporting even higher prevalence than the general reviews: 33%–54% for PTSD, 32–47% for depression and 29–69% for anxiety (Beni Yonis et al., 2019; Duren & Yalçın, 2020; Eruyar et al., 2018; Kandemir et al., 2018; Khamis, 2019; Panter-Brick, Dajani, et al., 2017; Perkins et al., 2018; Solberg, Nissen, et al., 2020).. Despite abundant evidence of health inequalities, there is noteworthy variability in results suggesting the disadvantage is not consistent across all groups. Variations might be due to different measures or recruitment methods, e.g. larger studies of greater quality reporting lower prevalence than smaller studies (Priebe et al., 2016). However, the differences could also reflect the great heterogeneity in the group with regards to what they are fleeing from and the contexts of resettlement (Fazel et al., 2005).

Whilst mental distress is extensively explored, quality of life is less so (Van Der Boor et al., 2020). One could assume that leaving areas of conflict and resettling in a high-income country could be positive, and QoL measures have the advantage of also measuring multidimensional and positive aspects of health. Literature shows improved QoL for those resettling in high-income countries compared to people who remain, but levels are still lower than the population in the country they move to

(Barstad, 2017). There is often improvement in some QoL dimensions, such as physical health and environmental QoL, whilst social QoL is reduced (Van Der Boor et al., 2020). Results for overall and psychological QoL varies greatly but is strongly associated with mental distress and time since arrival (Van Der Boor et al., 2020). A recent study following adult Syrian refugees from Lebanon to resettlement in Norway, found that although general health scores did not improve, QoL scores for all dimensions (physical, psychological, environmental and social relationships) improved significantly after resettlement (Haj-Younes et al., 2020). At the same time, a cross-sectional study of 902 adult Syrians resettled in Norway found that only 45% considered their overall QoL to be "good" or "very good" (Fjeld-Solberg et al., 2020).

There is limited research on QoL in children and youth with refugee backgrounds and the results vary. Two Australian and one Norwegian study found QoL levels comparable to rates in healthy populations (Correa-Velez et al., 2010; Seglem et al., 2014; Ziaian et al., 2016), whilst two Swedish studies found lower HRQoL scores for foreign-born youth (Hjern et al., 2013) and refugee youth (Solberg, Sengoelge, Johnson-Singh, et al., 2021). A Norwegian project including 81 unaccompanied refugee minors living in foster care, found reduced HRQoL at levels comparable to youth with mental health problems (Kvestad & Bøe, 2019). Lastly, an UN project reported substantially lower HRQoL scores for Syrian children living in Jordan (Abu Hamad et al., 2017). The variations could partly be due to using different measures, as all studies with reduced HRQoL rates used KIDSCREEN measures, and the three studies with rates comparable to healthy populations used a variety of other measures.

4.2 Pre-and post-migration factors affecting mental health

The bioecological model proposes a great variety of factors influencing general health and development, in a continual and reciprocal process (Bronfenbrenner & Morris, 2006). Several reviews and models have applied this perspective to the refugee experience and adaption process, and summarised factors at many levels: Individual level factors are for example age, gender or time since displacement, or personal factors such as self-efficacy, emotion regulation and coping strategies. Examples of family level factors are family functioning and parental health, household economy or parental education. Local community factors could be location (camps, institutions,

rural/urban), safety, social support and quality of the neighbourhood, school environment and peer relationships. Also, wider societal factors such as acceptance, discrimination, cultural differences and resettlement conditions (temporary, illegal, waiting times) have a strong influence on health and QoL (Arakelyan & Ager, 2020; Fazel et al., 2012; Scharpf et al., 2021; Suárez-Orozco et al., 2018).

Most literature focusses on the impact of the *refugee experience* as it has long been understood to have a profound effect on mental health and may explain the observed inequalities in health (WHO, 2018). Traumatic events are well established risk factors for developing mental illnesses such as depression, anxiety and PTSD, all of which could affect important developmental processes or persist to adulthood (Devakumar et al., 2015). These events, or PTEs, also separate persons with refugee backgrounds from other migration groups such as labour migrants, and could potentially explain differences found between these groups (Borsch et al., 2019; Lindert et al., 2009). A majority of studies in refugee health have therefore focussed on individual pre-migration exposure to PTEs and repeatedly found that cumulative exposure is related to poor mental health outcomes Syrian children and youth report several and serious PTEs, including war experience of bombing and shooting, violence and death (Dehnel et al., 2021; Giordano et al., 2019; Kandemir et al., 2018). One of the earlier studies after the outbreak of war in Syria, found that Syrian children in Turkish camps had experienced very high levels of trauma: 79% had experienced a death in the family; 60 percent had seen someone get kicked, shot at, or physically hurt; and 30 percent had themselves been kicked, shot at, or physically hurt. About 44 percent of the children had experienced five or more of these stressful events, and 19 percent had experienced seven or more, from an 11 point scale (Özer et al., 2016). Although there are differences in how severely different types of events will affect mental health, there is a cumulative effect (Fazel et al., 2012; Scharpf et al., 2021). Associations are also seen in other outcomes, such as educational attainment and employment (Borsch et al., 2019). Less explored is the effect of PTEs on quality of life after resettlement, but findings suggest a negative influence on overall QoL (Araya et al., 2007; Matanov et al., 2013; Van Der Boor et al., 2020). A proposed mechanism of influence is that PTEs increase mental distress, which in turn reduces QoL (Araya et al., 2007).

Despite the obvious importance of PTEs for mental health in refugees, some authors argue that there has been an over-focus on these individual level factors, leading to environmental factors being under-researched (Keles, Friborg, et al., 2016; Miller & Rasmussen, 2010; Purgato et al., 2016; Ventevogel et al., 2019). Environmental post-migration stressors, such as family functioning, school environments and discrimination, are also associated with increased mental distress and reduced QoL (Fazel et al., 2012; Scharpf et al., 2021). These stressors have shown significance above and beyond PTEs, even more prominently so in children and youth (Bronstein & Montgomery, 2011; Hou et al., 2020). It is also proposed that the impact of PTEs on mental health is compounded or alleviated by the context of post-migration resettlement, implying an indirect or mediational effect of post-migration stressors. In their *ecological model of refugee distress*, Miller and Rasmussen (2017) suggest a mediational effect where PTEs increase the amount of experienced post-migration stressors, which in turn affects mental health. Later studies have found empirical support for this model (Hou et al., 2020; Newnham et al., 2015; Riley et al., 2017). One proposed mechanism is that trauma sensitises a person to future adversity, triggering an overreaction to ongoing demands (Hammen et al., 2000; Masten & Narayan, 2012). However, the *ecological model of refugee distress* does not consider QoL as an outcome, and any broader impact on dimensions of QoL is only implied. Pre-and post-migration risks seem to affect QoL similarly to how they affect mental distress, and mental distress is strongly connected with QoL (Hou et al., 2020; Van Der Boor et al., 2020). The interaction between pre-and post-migration risks, mental health and QoL would therefore be important to explore further. This could help us understand what factors to address in interventions and how they influence mental health.

4.3 Resilience in refugee children and youth

Despite the obvious burden and challenges inherent to the *refugee experience*, mental distress is by no means an inevitable consequence. In fact, the majority report improved mental health or no distress (Betancourt et al., 2013; Fazel et al., 2005; Purgato et al., 2020; Strømme et al., 2020). Studies following refugee youth over time have described four main trajectories: maintaining or improving good mental health, and maintaining or increasing mental distress (Betancourt et al., 2013; Masten &

Narayan, 2012). In a study of unaccompanied refugee minors resettled in Norway, the same four groups were described related to symptoms of depression: 864 participants reported symptoms of depression at two time points, of which 25% had high levels throughout and 17% had increasing levels of depression, 42% had low symptom levels throughout and 16% improved (Keles et al., 2016). Good mental health and functioning despite considerable risk, or so-called resilience, is therefore the most common trajectory. Thus, exploring protective factors associated with resilience is equally as important as exploring risk factors. Although this is widely acknowledged, resilience factors and mechanisms are under-researched (Betancourt & Khan, 2008; Carlson et al., 2012; Lustig et al., 2004). It is also important to note that although risk and resilience factors are closely linked, they are not always two sides of the same coin—that is: the absence of risk is not necessarily a resilience factor. This warrants particular attention to resilience factors and mechanisms.

Well supported resilience factors within literature are: granted asylum, positive acculturation and coping strategies, school belonging, family and social support (Arakelyan & Ager, 2020; Fazel et al., 2012; Keles et al., 2016; Scharpf et al., 2021; Sleijpen et al., 2016; Tol et al., 2013). Evidence also supports a multiple resilience factor model where the total constellation of factors promotes better functioning after adversity, not one specific driving factor (Fritz et al., 2018). A handful of studies have looked at such multi-level resilience factors in Syrian refugee youth. Most find that resilience is associated with reduced stress and general mental distress (Clukay et al., 2019; Dehnel et al., 2021; Panter-Brick, Hadfield, et al., 2017; Scherer et al., 2020), but not necessarily with reduced PTSD (Giordano et al., 2019; Scherer et al., 2020). One study with Syrian youth and a control group of Jordanian youth found that both groups had high resilience, despite higher levels of trauma in Syrian youth. In fact, trauma reduced resilience scores in Jordanian youth, but not in Syrian youth (Panter-Brick, Hadfield, et al., 2017). Other studies also comment on the high levels of resilience co-occurring with high amounts of trauma and mental distress in refugee youth (Badri et al., 2020; Jones et al., 2019; Longobardi et al., 2017; Southwick et al., 2014). Although assessed less frequently, studies also report a strong positive association between resilience and QoL measures (Caqueo-Urízar et al., 2021; Sanders et al., 2017; Wu et al., 2018).

Even though resilience factors are associated with less mental distress and better QoL, their mechanism of influence is less explored. This might be important to understand how, why and for whom, the factors are relevant (Lustig et al., 2004). For example, some resilience factors—such as religion, cultural identity or avoidance behaviour—show mixed results (Sleijpen et al., 2016; Tol et al., 2013) . One explanation for this is that processes that are beneficial in one context can have no or even harmful effects in another context. As an example, avoiding stressful situations might be beneficial in emergency situations, but create additional problems in a post-migration context (Güngör & Perdu, 2017; Panter-Brick, Hadfield, et al., 2017). Studies exploring *protective resilience,* evident as resilience factors having a moderating effect on mental distress, have found mixed results. Some studies find a protective effect of resilience on mental distress (Dehnel et al., 2021; Goldenson et al., 2020), others again find protective effects for only one type of symptom (Zahradnik et al., 2010) or no moderating effects (Badri et al., 2020). A longitudinal study with Syrians found that resilience was associated with initial lower perceived stress and a faster reduction in perceived stress over time (Clukay et al., 2019). Two studies with control groups found that individual level coping strategies were protective for non-refugee groups, but not for refugee youth (Seglem et al., 2014; Sleijpen et al., 2019). Thus, the general importance of resilience factors is evident, but the mechanisms of influence are more elusive.

4.4 Mental health interventions for refugee children and youth

The Conventions of Children's Rights state that children and youth have the right to the highest attainable standard of health, and that governments must ensure access to promotive and treatment services (UN General Assembly, 1989). Considering the evidence on inequalities in mental health between youth with refugee backgrounds and other youth, interventions should routinely be made available (Turrini et al., 2019).

Recommendations for promoting mental health and wellbeing in refugee children and youth are to target risk and resilience factors within a holistic framework, using a mixture of policy-based and specific interventions. Three main strategies are suggested: psychoeducation, parenting support and school-based programmes (Hjern

& Kadir, 2018). However, the lack of rigorous evaluative research and large knowledge gaps on understanding resilience pathways is noted by several over the past decades, stating that recommendations are so general because the evidence base is so thin (Fazel & Betancourt, 2017; Hjern & Kadir, 2018; Lustig et al., 2004; Masten & Narayan, 2012).

Despite the consensus on the importance of the wider environment, most evidence pertains to cognitive and narrative-based therapies with a trauma-focussed component, aiming to reduce symptoms of PTSD, depression and anxiety (Turrini et al., 2019; Tyrer & Fazel, 2014). Even with their general success, they have variable results; for example reducing depression but not PTSD, or not reducing symptoms but improving quality of life (Bosqui & Marshoud, 2018; Fazel & Betancourt, 2017; Oppedal et al., 2019). Very few actually test the theory of change—or change mechanisms—in interventions (Bosqui & Marshoud, 2018). Psychosocial interventions target a wider range of factors—such as post-migration stressors—but are generally poorly conceptualised and less evaluated (Fazel, 2018). Limited data is available on positive outcomes such as functioning or quality of life (Bosqui & Marshoud, 2018; Turrini et al., 2019). Therefore, most of the evaluated interventions are not designed to be preventive or promotive and few focus on resilience (Fazel, 2018).

4.5 Summary and knowledge gaps

Overall, evidence points to poorer mental health in refugee youth than general youth populations. The main focus in literature has been on mental distress, although the majority report no distress. Exploring QoL after resettlement could therefore complement descriptions of mental distress and is in itself a valuable goal in interventions. Syrian children and youth have experienced several dramatic events during war and flight, and these are closely linked to increased mental distress. However, post-migration stressors and resilience factors may be relevant targets in promotive and preventive efforts in resettlement, and their role is less explored. Although we know of several important resilience factors, including these in interventions is sometimes difficult because we know little about their mechanism of influence. Considering the dearth of evidence on preventive and promotive

interventions, improved knowledge of the aforementioned factors and how they interact could inform efforts to provide for good starts for resettled refugee youth.

5 Overall aims and objectives

The overall aim of the thesis was to explore mental health and resilience in Syrian refugee youth recently resettled in Norway. This knowledge could contribute to our understanding of refugee adaptation after resettlement and inform policy and interventions. Three papers addressed different aspects of this overall aim:

1. Paper 1: To explore overall and dimensional HRQoL in Syrian refugee youth recently resettled in Norway.
2. Paper 2: To explore the influence of pre- and post-migration factors and mental distress on HRQoL in Syrian refugee youth recently resettled in Norway.
3. Paper 3: To explore protective and promotive resilience mechanisms' influence on mental distress and HRQoL in Syrian refugee youth recently resettled in Norway.

In addition, the thesis addressed several research questions. These are included in the summary of papers (Chapter 7).

6 Materials and methods

6.1 Project design – REFUGE project

This research study is part of the overarching "REFUGE" project (REsettlement For Uprooted Groups Explored), a nation-wide survey of mental health and QoL among refugees from Syria resettled in Norway. The project was initiated by the Norwegian Centre for Violence and Traumatic Stress Studies and its main aim was to investigate how mental health affects adaption and integration in the years following resettlement in Norway (Fjeld-Solberg et al., 2020). The REFUGE project is part of an international co-operation to create a shared database on refugee health including longitudinal surveys and interviews combined with registry data (ClinicalTrials. gov, 2018). One arm of the of the REFUGE project is REFUGE-Children and Adolescents, consisting of quantitative follow-up studies and qualitative interviews with refugee children and youth in Sweden and Norway. In this thesis, only results related to mental health in the first survey of Syrian refugee youth in Norway are presented.

6.2 Development and planning

The PhD candidate was responsible for the Norwegian part of REFUGE-Children and Adolescents, designed the study and collected all the data. The design and survey content was developed in cooperation with the REFUGE project group, and modelled on public health studies on children and youth, such as the *Health Behaviour in School-aged Children (HBSC) Study* (WHO, 2020), *Ungdata* (NOVA, 2021) and *UngKul* (NIPH, 2020). Inclusion of measures was evaluated on cross-cultural validity, available language versions and their contextual relevance. The latter was based on context descriptions of the Syrian conflict and research on the resettlement experience for refugee youth (for example d'Abreu et al., 2020; McFarlane et al., 2011). Two measures were developed, translated and validated by partners in the REFUGE project (The Refugee Trauma History Checklist and Refugee Post-Migration Stress Scale).

In addition to the REFUGE project group, the project included a reference group of stakeholders, including cultural advisors from the Syrian community in Norway. For the REFUGE-Children and Adolescents in Norway study, additional stakeholders

were interviewed in advance: four teachers from introductory classes in both secondary and upper secondary schools, a public health nurse specialising in immigration health, a local municipality leader for refugee services, a consultant from the Directorate of Integration and Diversity and representatives from a network of schools focussing on multicultural teaching (Nasjonalt senter for flerkulturell opplæring (OsloMet). Lastly, three other researchers who had recently collected data in refugee populations were consulted. The interviews were used to plan the practical design and recruitment. Interviewees also assessed the readability, length and level of language in the survey. Several suggested simple and short measures due to the great variability of language skills in the group. We therefore created an alternative short version of the survey for students who lacked reading skills in both Norwegian and Arabic. Information and consent were translated to Arabic by a professional translation service (SALITA Translation and Interpretation Services) and screened for mistakes, before a Norwegian, Arabic and English online survey was created. The survey was formatted to be used on PCs, tablets or mobile phones—or paper. Lastly, it was piloted in a class of 12 students in an adult learning centre and final adjustments were made.

6.3 Recruitment

To achieve the aim of exploring mental health in early resettlement, we used purposive (cluster) sampling in the REFUGE-Child and Adolescents study. Recruitment was through introductory classes at secondary schools, as students here are recently resettled, and the environments were presumably well-known and safe for the youth. Another reason for choosing this recruitment site was that many of the stakeholders interviewed in the planning phase believed that otherwise, parents would act as gatekeepers for youths' participation and might actively influence how they replied to questions, especially for the younger participants and girls. They therefore suggested that data collection in schools was better than sending surveys to home addresses.

We contacted 40 lower and upper secondary schools across southern and mid-Norway. Twenty-three schools agreed to participate, and these were located in nine different regions of Norway, representing 23 local municipalities of different sizes.

Reasons for schools not participating were *no response to request* (nine schools), *no Syrian students* (six schools) or *already participating in other studies* (two schools). The participating schools had between one and 23 Syrian students attending and all offered some kind of introductory classes. When the schools agreed to participate, local school nurses were informed of the study and invited to attend the day of the survey.

Teachers gave written information about the study in Norwegian and Arabic to the students and consent forms to parents with children under the age of 16. The students were then invited to meet the researcher at school on an agreed date when additional oral information was given. Students were given the opportunity to fill in the survey or return to class if they did not want to participate. Three students declined to participate due to exam preparations or language difficulties. Students absent from school that day were not included. Participants could choose paper or digital surveys in Arabic or Norwegian, and students with language difficulties were offered a shorter version of the survey. It took between 20 and 30 minutes to complete the survey and the researcher was present at all data-collection sites during collection. The recruitment period lasted from May to December 2018.

6.4 Participants

One hundred sixty participants filled out the survey, and 19 of these chose the shorter version of the study. Compared to the population of Syrian youth in Norway at the time of recruitment, the sample included a higher proportion of 17- to 18-year-olds and fewer 19- to 24-year-olds, but the average age was similar (18.6 years). There was a higher proportion of boys (62.5%) than girls, also similar to the age-gender distribution in the population of Syrian youth in Norway at the time of recruitment (Statistics Norway). On average, the youth had moved from their homes in Syria more than 5 years ago and had been in Norway for two years. Almost 90% said they had missed out on education due to war and flight, an average of 4 years of missed schooling. A majority (75%) lived with their own parents and siblings and had moved 3–4 times during the past 5 years. Of the remaining 25%, most lived alone and were over 19 years old. Arabic was the mother tongue for 75% whilst 22% spoke

Kurmanji, and the majority (62%) felt they spoke their mother tongue considerably better than Norwegian.

6.5 Measures

All measures had validated Arabic language versions available and permission to use these were sought from all copyright holders. Measures for PTE and Post-migration stressors were translated from Swedish to Norwegian and reviewed to detect and remove any discrepancies in meaning.

6.5.1 Global Health-Related Quality of Life (HRQoL)

KIDSCREEN-27 is a generic self-report measure to assess subjective HRQoL and is cross-culturally validated in 38 languages (Ravens-Sieberer et al., 2014). The items are rated on a scale from 1–5 for experiences in the previous week, grouped into five dimensions: Physical wellbeing (Physical, 5 items), Psychological wellbeing (Psychological, 7 items), Autonomy and Parent relations (Autonomy/Parents, 7 items), Social support and peers (Friends, 4 items), and School environment (School, 4 items). We also used KIDSCREEN-10 as a measure of global HRQoL consisting of 10 of the 27 items from all dimensions. KIDSCREEN-10 is a self-report measure of global HRQoL developed through Rasch analysis ensuring that only items which represent a global, unidimensional latent trait are included (Ravens-Sieberer & The KIDSCREEN Group Europe, 2006). The items are rated on a scale from 1–5 for experiences in the previous week and a scoring algorithm was used to calculate and sum scores of 100 (Paper 1) or T-scores with a mean of 50 and a standard deviation of 10 (papers 2 and 3). Higher scores indicate higher self-rated HRQoL (Ravens-Sieberer & The KIDSCREEN Group Europe, 2006).

6.5.2 Potentially traumatic events (PTEs)

The Refugee Trauma History Checklist was developed for self-report data on refugee trauma history in community samples, considering intrusiveness and relevance of the included events (Sigvardsdotter et al., 2017). Adjustments to fit local context and group are advised, the measure was therefore modified to fit the age of respondents and the context of recent resettlement e.g. by reducing the number of items in the scale. The list consisted of 10 dichotomous items (yes/no): witnessing war, being

forced to leave friends/family, someone you love disappearing, someone trying to hurt you or someone you love, having a life-threatening illness or injury, lacking food or shelter, having to hide, torture, seeing someone die, other frightening experience where you thought your life was in danger. All positive responses were added as a cumulative score (range 0–10) with higher scores indicating higher number of events experienced. This measure was called Stressful Events (SE) in Paper 1.

6.5.3 Post-migration stressors

The Post-Migration Stress Scale was developed to assess post-migration stressors and validated in Syrian refugees in Sweden (Malm et al., 2020). The scale was modified to fit the age of the respondents and the Norwegian context. Ten indicators representing different types of stressors experienced since their arrival in Norway were used: perceived discrimination, language difficulties, economic strain, missing family, family cultural conflicts, feeling lonely, missing previous life, feeling unsafe, worrying about having to move or worrying about having to leave Norway. All indicators were scored on a 5-point Likert scale ranging from 0 (Never) to 4 (Very often) and were added as a cumulative score. Higher scores indicate higher frequencies of experienced stressors, range 0–40.

6.5.4 General mental distress

The Hopkins Symptom Checklist (HSCL-10) consists of four items related to anxiety and six related to depression that collectively indicate general mental distress (Strand et al., 2003). All items have four response categories ranging from 1 (Not at all) to 4 (Extremely) regarding how much the symptoms bothered the respondents in the past 7 days. The response values are added and then divided by the number of items (range 1–4); higher scores indicate greater symptom load. A cut-off score ≥1.85 was used as an indication of general mental distress (Strand et al., 2003). The HSCL-10 has previously shown satisfactory validity and reliability as a measure of mental distress both in young and displaced populations (Lavik et al., 1999).

6.5.5 Post-traumatic stress disorder (PTSD)

The Child Revised Impact of Events Scale (CRIES-8) is a screening tool measuring the severity of post-trauma intrusion and avoidance symptoms during the previous week. Eight items are rated on a 4-point scale ranging from 0 (not at all), 1, 3 to 5

(often) and then added (range 0–40), with higher scores indicating greater symptom loads. The scale is recommended by the Children of War Foundation and is cross-culturally validated with good psychometric properties. A cut-off value of ≥17 indicates possible PTSD (Perrin et al., 2005).

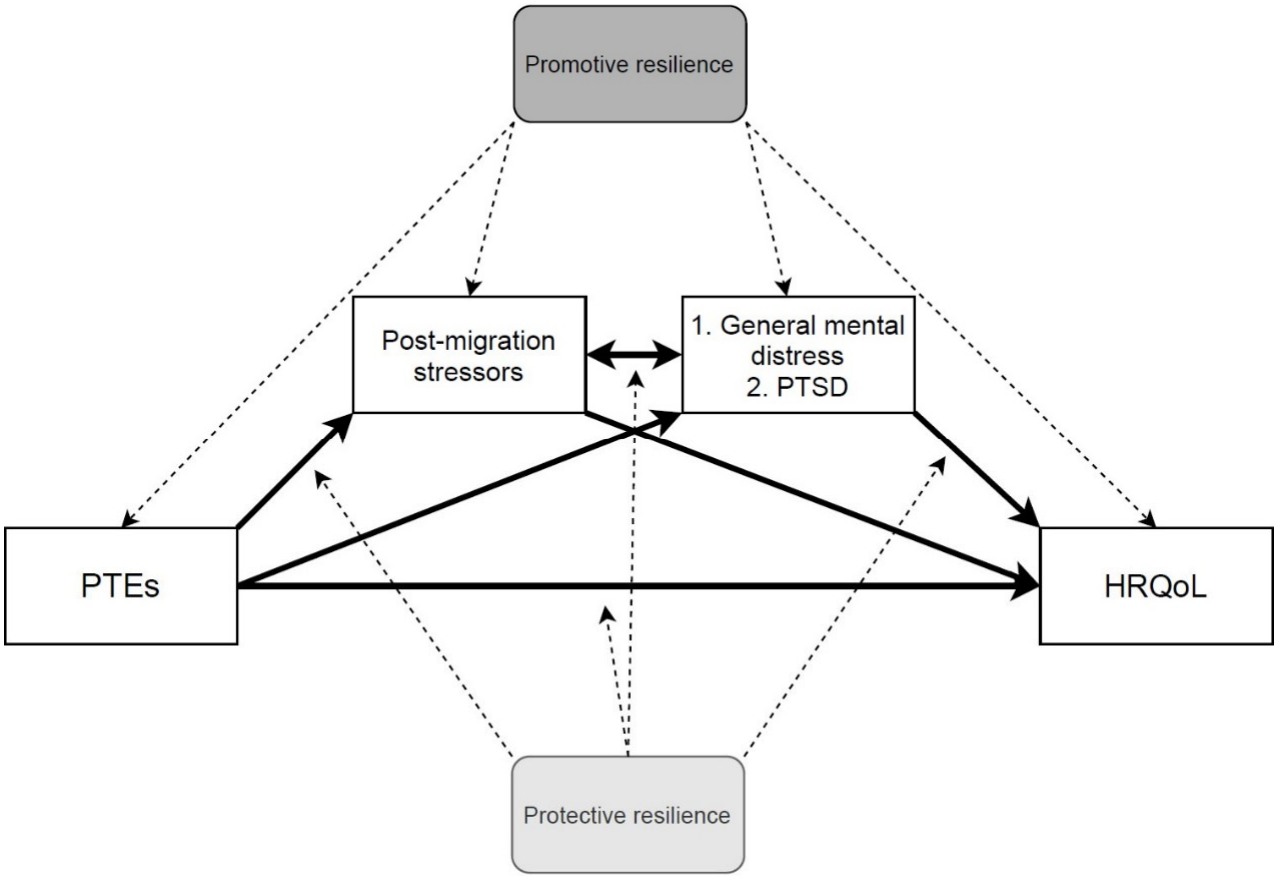
6.5.6 Resilience

Child and Youth Resilience Measure (CYRM) is based on a socio-ecological framework and assesses resilience factors at individual, relational, and contextual dimensions. Most measures of resilience are criticised for being based on western cultural norms, but CYRM is cross-culturally developed and validated in an international resilience project with more than 40 researchers, through iterative and participatory mixed methods with 1500 youth in 11 western and non-western countries (Ungar & Liebenberg, 2011). The scale assesses the level or presence of internal or external protective factors associated with resilience, and therefore acts as an indirect or proximal measure of resilience. Such indirect measures of resilience may be useful for identifying areas of strengths or deficits. An advantage is also that items are relatively tangible and unambiguous, but a downside can be their contextual variation among protective factors (Jefferies, 2021). CYRM 12 is a brief measure including items from all dimensions, derived from the original 28 items (Liebenberg et al., 2013). The items are rated on a scale from 1–5 (range 12–60) for experiences in the previous week and higher scores indicate higher resilience. The Arabic version of the measure was translated and validated in Syrian refugee youth resettled in Jordan (Panter-Brick, Hadfield, et al., 2017). The measure was reviewed by Syrian youth living in Norway and teachers in introductory classes before it was piloted.

6.6 Analyses

Previous theory and empirical knowledge on refugee and youth adaptation were used to build conceptual models (see Figure 1). The "ecological model of refugee distress" describes how post-migration stressors may mediate the influence of PTEs on mental distress in refugees (Miller & Rasmussen, 2017). Mediation analyses investigate the underlying process or mechanism of a relationship between a predictor and outcomes by including potential explanatory variables (Brady et al., 2020). For example, PTEs' effect on HRQoL could partly or wholly be explained by post-migration stressors.

Figure 2 Conceptual model



Note: PTEs: potentially traumatic events, PTSD: post-traumatic stress disorder, HRQoL: health related quality of life. Promotive resilience: direct main effect of resilience, Preventive resilience: moderating effects of resilience.

The relevance of this model for our participant group was explored, together with a modified model including HRQoL as an outcome and mental distress as a mediator in sequence with post-migration stressors (Papers 2 and 3). The *protective and promotive resilience* mechanisms described under "central concepts", were added to the conceptual model as main or moderating effects (Paper 3). Moderation means that one variable is thought to modify the relationship between two other variables (Brady et al., 2020). For example, PTEs' negative effect on HRQoL would be large for individuals with low resilience, whilst for individuals with high resilience the negative effects would be smaller or nothing. Moderated mediation, or conditional mediation is an analysis testing whether the mediation is dependent on a third and moderating

factor (Hayes, 2017). For example, post-migration stressors mediate the relationship between PTEs and HRQoL but this mediation is moderated by levels of resilience. Post-migration stressors could then explain most of the reduced HRQoL, but only if the individual had low resilience. Mediation and moderated mediation (conditional mediation) was examined using a regression-based approach using the SPSS PROCESS 3.4 macro (models 4,6 and 8) with 5000 bootstrap samples in the procedure suggested by Hayes (2017). In the analyses including resilience, the three outcomes of HRQoL, general mental distress and PTSD were analysed separately, as some models of resilience propose distinct pathways to "positive" or "negative" concepts of mental health (Tol et al., 2013).

Descriptive analyses— such as means and distributions—were done for all variables, and comparison between groups were done by Students *t*-tests and analysis of variance (ANOVA). Parametric correlation analyses used Pearson's *r*, and non-parametric correlation used Spearman's *rho*. Hierarchical multiple regressions were used in Papers 1 and 3. The order of data entered in the hierarchical regression was based on previous research, but also chronological occurrence. Therefore, age and gender were entered first as covariates, and pre-migration experiences before post-migration factors.

Scores for each measure were calculated using the individual manuals. A missing values analysis (MVA) was done for all measures which suggested non-response items were missing at random (MAR) (Tabachnick & Fidell, 2014). Missing items from KIDSCREEN27/10 were replaced according to the KIDSCREEN manual using calculated estimates based on Rasch analyses (Ravens-Sieberer & The KIDSCREEN Group Europe, 2006), whilst responses missing two or less items in HSCL-10 or CRIES-8 were replaced with individual means. Responses missing more items were categorised as below cut-off values (CRIES-8 and HSCL-10) when assessing the prevalence so as not to inflate frequency of cases but were not included in further analyses. For the CYRM-12 measure multiple imputation with estimates based on values of other items in the same scale was done for responses missing 2 or fewer items (Gottschall et al., 2012). Sensitivity analyses done showed that adding missing values did not bias results significantly.

Table 1 Cronbach's alpha for all measures

Measures	Cronbach's alpha
KIDSCREEN 27	
- Physical wellbeing	.83
- Psychological wellbeing	.84
- Parents/Autonomy	.82
- Friends	.88
- School environment	.83
KIDSCREEN 10	.82
CRIES8	.86
HSCL10	.89
Refugee post-migration stress scale	.77
CYRM12	.79

Note: PTEs is a checklist and therefore not checked for internal consistency.

Nineteen participants opted for a shortened survey due to language difficulties which did not contain HSCL10, CRIES8 or post-migration stressors, and are therefore not included in analyses with these variables. Post-hoc analyses show that the 19 participants were younger and had experienced fewer PTEs than participants completing the full survey (M_{age} = 16.3 years, range 13–24 years, PTEs: $t(18) = 2.88$, $p = 0.005$). There were no significant differences in gender, residence time or HRQoL.

All statistical analyses were done in IBM Statistical package for Windows (SPSS) version 25/26 and power estimates by G*Power version 3.1.

6.7 Ethical considerations and permissions

Both refugees and youth are considered vulnerable populations in research literature, and ethical complexities of including them in research are well-recognised (Block et al., 2013). Several strategies addressing the interrelated practical, methodological and ethical issues were implemented during planning and data-collection procedures. Two main issues were addressed: how to maximise the benefits of involvement for participants while reducing potential harm and how to enhance capacities for participants to give informed consent.

The core ethical principle of non-maleficence and beneficence involves our duty to ensure safety for the participants. An often-mentioned dilemma for this group is the risk of re-traumatisation or exacerbations of mental health problems, by asking questions of past experiences and present difficulties (Lustig et al., 2004). Although this theory has been challenged and participants commonly report benefits (Pillai et al., 2019), several considerations were made to reduce the burden of participation: The survey was reviewed to ensure a balance of "positive" and "negative" measures and wording, the expected time to fill in the survey should be less than 30 minutes, participants should be able to stop or opt out of answering questions if they experienced discomfort, and the survey was available on the project website for parents, teachers and students. Also, the PhD candidate is a trained public health/school nurse and was present at all data-collections sites to answer questions or deal with any immediate ill-effects. Teachers were informed of the content and possible consequences and were either present or easily available during the sessions. The school nurse at each participating school was also invited to participate on the day and encouraged to follow up the students afterwards.

Literacy and language considerations were important in creating the survey, but also in ensuring informed consent. Consent forms were translated, rigorously reviewed and made available to students at least one week before participation. The main points were repeated by the researcher before participants signed the consent forms.

All procedures were in accordance with ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was reviewed and approved by the Regional Research Ethics Committee of Norway East (Reference number 2018/192).

7 Summary of results

7.1 Main results

- The participants had higher levels of mental distress and lower HRQoL than other youth, especially the oldest age group
- Post-migration stressors mediated the relationship between pre-migration PTEs and all outcomes (PTSD, general mental distress and HRQoL)
- Post-migration stressors and mental distress also acted as mediators in sequence on the relationship between PTEs and HRQoL, and the relationship between post-migration stressors and mental distress seemed to be bi-directional
- Resilience factors had a direct main effect (*promotive resilience*) on general mental distress and HRQoL, but no moderating effects (*protective resilience*) on any tested relationship

7.2 Paper 1: Health-related quality of life in young Syrian refugees recently resettled in Norway

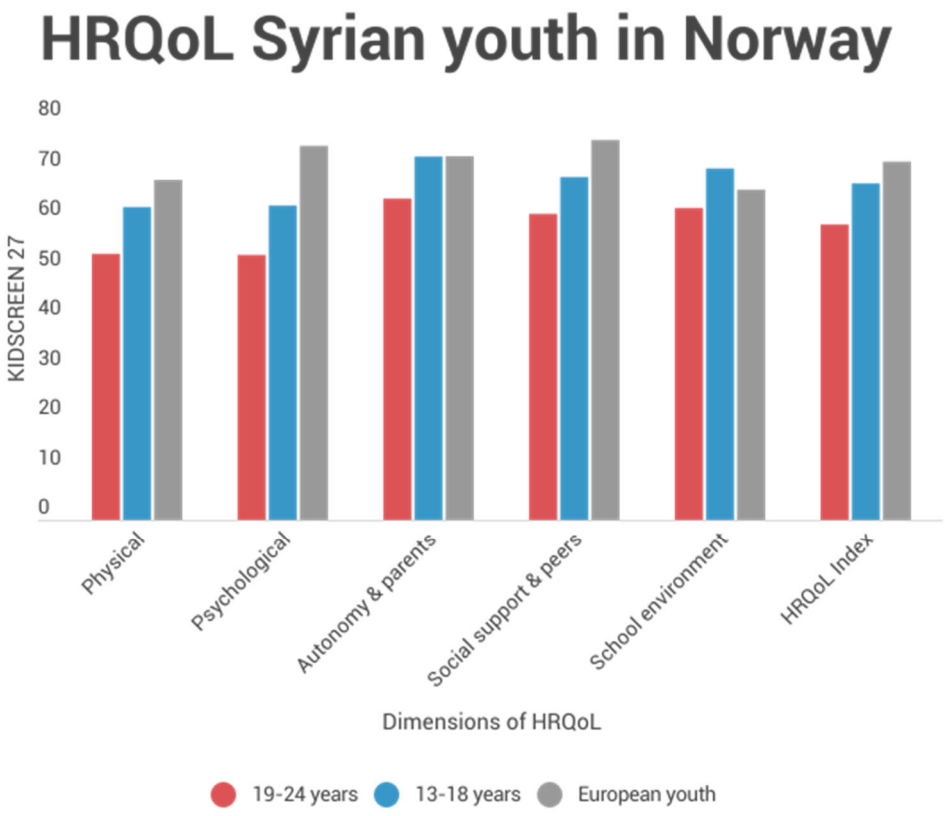
Aim: To explore overall and dimensional HRQoL in Syrian refugee youth recently resettled in Norway. The following research questions were addressed:

- How are levels of HRQoL in Syrian refugee youth compared to norm populations?
- How do sociodemographic factors and PTEs influence HRQoL?

Methods: All KIDSCREEN27 dimensions and index scores were compared to norm populations using *t*-test and ANOVA to compare three age groups. Hierarchical regressions were used to test relevant predictors of high and low scoring dimensions of HRQoL.

Results: The participants had moderately good HRQoL, but significantly lower than norms. *Physical* and *psychological wellbeing* had the lowest scores and were lower than norms. *School environment* and *autonomy and parents* had the highest scores and were similar or better than norms. *Social support and peers* scores were also lower than norms (see Fig. 2).

Figure 3 HRQoL in Syrian youth



Note: HRQoL scores in Syrian resettled youth for all sub-dimensions of KIDSCREEN-27 and KIDSCREEN-10 Index. Divided into two age groups and compared to European youth norms (Ravens-Sieberer & The KIDSCREEN Group Europe, 2006).

HRQoL declined with increasing age and number of PTEs, especially for *school environment*, *social support and peers* and *autonomy and parents*. After controlling for age and PTEs, no sociodemographic variables—such as living with or without their parents—had significant effect. The total explained variance in HRQoL was only 20%.

Conclusion: Previously found health inequities were confirmed through overall HRQoL lower than norms. Physical and psychological wellbeing scores were especially low, warranting interventions. These could be based in schools or families, to benefit from these being seemingly safe environments for the majority of the group.

Increasing age and trauma were influential factors and need to be considered in interventions.

7.3 Paper 2: Health-related quality of life in refugee youth and the mediating role of mental distress and post-migration stressors

Aim: To explore the influence of pre- and post-migration factors and mental distress on HRQoL in Syrian refugee youth recently resettled in Norway. The following research questions were addressed:

- Do post-migration stressors mediate the effect of PTEs on HRQoL, alone or serially with mental distress?
- What types of post-migration stressors are the most influential on different dimensions of HRQoL?

Methods: Descriptive and serial mediation analyses, controlling for age and gender.

Results: 32% had general mental distress and 49% PTSD scores above suggested cut-off. Average number of reported PTEs were above four events on a list of 10 events. Increasing numbers of PTEs reduced HRQoL, but this direct effect was mediated by post-migration stressors alone and serially with general mental distress. Despite high levels of PTSD, this did not affect HRQoL independently, only through increasing post-migration stressors. Economic concerns and discrimination were types of post-migration stressors affecting several dimensions of HRQoL.

Conclusions: Quality of life in refugees is affected by past events from war, stressors in current resettlement and elevated mental distress through complex interrelations. The study reiterates the importance of considering structural and everyday post-migration stressors in policy and intervention to improve the health and wellbeing of refugee youth.

7.4 Paper 3: Syrian refugee youth resettled in Norway: mechanisms of resilience influencing health-related quality of life and mental distress

Aim: To explore protective and promotive resilience mechanisms' influence on mental distress and HRQoL in Syrian refugee youth recently resettled in Norway. Promotive resilience is seen as a direct main effect independent of risk, whilst

protective resilience a moderating effect related to risk factors such as PTEs. The following research questions were addressed:

- Does resilience have a direct main effect on mental health outcomes (HRQoL, general mental distress and PTSD) – *promotive resilience*?
- Does resilience moderate the negative effects of risk (PTEs and post-migration stressors) on mental health outcomes – *protective resilience*?
- Does resilience moderate the relationship between PTEs and post-migration stress or the mediational pathway of post-migration stressors on mental health outcomes?

Methods: Hierarchical regression including interaction terms were used to assess the relative contribution of various predictors to outcomes. Moderated mediation analyses were done to answer the last research question, controlling for age and gender when appropriate.

Results: A direct main effect of *promotive resilience* was found for HRQoL and general mental distress, but not for PTSD. No moderating effects of *protective resilience* were found. Post-migration stressors mediated the effects of PTEs on all mental health outcomes, and this indirect effect was present at all levels of resilience. Most influential resilience factors seemed to be relational and environmental. Despite high-risk exposure and mental distress, resilience was also high.

Conclusion: Resilience factors are important for mental health and wellbeing, with a general positive effect independent of experienced trauma or post-migration stress. Broad resilience interventions targeting multiple factors would likely benefit the group, and these should include both individual assets and building supportive environments. Additionally, reducing current stress and providing treatment for those in need would not only aid recovery but also increase the efficacy of resilience factors already present.

8 Discussion

8.1 Summary of findings

The main aim of this thesis is to explore mental health in recently resettled young refugees and how it is affected by risk and resilience factors. We found that the recently resettled Syrian youth had high levels of mental distress and reduced quality of life compared to other youth. By including HRQoL in addition to mental distress measures, we found both areas of concern and areas of strength. For example, mental distress rates were high, but satisfaction with school and family were better than expected.

Risk factors related to the *refugee experience*—including both pre- and post-migration experiences—were significant in explaining some of the health differences. Exposure to potentially traumatic events (PTEs) during war or flight were common among our participants and had a cumulative negative impact on mental health, especially PTSD. However, post-migration stressors had an equally important role; directly influencing general mental distress and HRQoL and creating an indirect pathway of influence between PTEs and all outcomes. In addition, PTEs influenced HRQoL indirectly through post-migration stress and mental distress in sequence, suggesting a bidirectional influence between post-migration stressors and mental distress.

Although risk factors were influential, resilience factors were also important in improving mental health. This was mainly through *promotive resilience* mechanisms directly influencing HRQoL and general mental distress, not PTSD. The *protective resilience* mechanism —where resilience factors buffer the negative effect of PTEs— was not evident in our material. The indirect effect of post-migration stressors found earlier, was therefore significant at all levels of resilience.

Overall findings add to knowledge on how risk and resilience factors affect mental health in refugee youth in the context of resettlement. Targeting post-migration stressors and resilience factors would likely benefit the majority of the group, irrespective of individual risk. Factors and pathways of influence varied between mental health outcomes, highlighting the complexities of influence and the need for

multimodal interventions. Lastly, the importance of environmental rather than individual factors was evident in the material.

8.2 Interpretation and discussion of findings

8.2.1 Mental health differences

Our findings show that the resettled Syrian youth had high levels of mental distress and lower quality of life than other youth. These health differences disfavouring refugee populations are well documented in previous research (Borsch et al., 2019; Bradby et al., 2015). The level of PTSD was especially high (48%), but not dissimilar to studies of Syrian youth in other host countries (33–54% using CRIES-8) (Duren & Yalçın, 2020; Eruyar et al., 2018; Özer et al., 2016; Panter-Brick, Dajani, et al., 2017; Perkins et al., 2018; Solberg, Nissen, et al., 2020). Being at the high end of the expected range, our results should be interpreted with caution. Previous reviews have shown that smaller non-random samples and the use of self-report measures could overestimate prevalence rates of mental distress (Kien et al., 2018; Ventevogel et al., 2019). Actual rates of PTSD might be closer to those shown in two studies using random sampling and weighted analyses, one with Syrian youth in Sweden (Solberg, Nissen, et al., 2020) and one with Syrian adults in Norway (Fjeld-Solberg et al., 2020). Both these studies found a prevalence of 34% for PTSD. However, the actual levels could also be higher than expected due to our inclusion of older youth (aged 18–24), who had higher PTE exposure, and also in general populations who report more mental distress (MHCS, 2019). Moreover, it might represent the effect of strategically sampling recently resettled youth, as previous studies suggest that general PTSD levels fall with increasing residence time (Jensen et al., 2019; Montgomery, 2011). Despite possible overestimations, the reported levels of mental distress and reduced HRQoL are still higher than other groups of youth and need to be addressed by policy and interventions to prevent and alleviate symptom burdens.

Although it is important to address symptoms, the purpose of intervention must move beyond the absence of ill-health. Being well, having a good life and thriving are meaningful goals and expectations for anyone living in Norway (MHCS, 2019; UN General Assembly, 1989). Measuring HRQoL in this study allowed a broader insight into general health and wellbeing, essential to widening our perspective on

appropriate policy and intervention. Of all dimensions, *psychological wellbeing* showed the greatest distance from norms, which might reflect the high levels of distress in the group. However, this dimension in the KIDSCREEN-27 also includes questions on self-perception, positive and negative feelings, differentiating it from the mental distress measures. This subtle difference may be of importance if interventions are targeting positive experiences and feelings, not just reducing negative feelings. Thus, *psychological wellbeing* complements the mental distress scales with a wider perspective on relevant processes.

The participants also rated their *Physical wellbeing* very low. Unexplained somatic symptoms is one possible explanation, as these are particularly high in refugee populations (Özer et al., 2016; Rohlof et al., 2014). It is suggested that somatic symptoms in refugees could be due to psychopathology or stigmatisations of psychiatric care, leading to somatisation. In addition, post-migration stressors have been linked to increased somatisation in refugee youth (Jensen et al., 2019). These factors should be explored further, bearing in mind alternative explanations, such as poor lifestyle choices or sleep problems.

A third dimension of concern was *social support and peers.* The importance of social support for mental health is repeatedly shown in studies with refugees (Araya et al., 2007; Duren & Yalçın, 2020; Gottvall et al., 2020; Oppedal & Idsoe, 2015; Runarsdottir & Vilhjalmsson, 2015; Sengoelge et al., 2020; Van Der Boor et al., 2020). It is not unexpected that social networks have to be rebuilt in early resettlement, but low scores could also be interpreted as negative signs of inclusion and integration (Teodorescu et al., 2012). Several studies have found the concept of belonging crucial to the development of identity, health and wellbeing in refugee youth (Correa-Velez et al., 2010; Ziaian et al., 2021). Psychosocial interventions therefore stress the importance of creating friendships and establishing networks as part of improving mental health and building resilience (Bosqui & Marshoud, 2018; Diab et al., 2015; Fazel, 2018; Hettich et al., 2020). Interestingly, few of the included post-migration stressors significantly influenced this dimension, including perceived discrimination (Paper 2, Table 3). Other relevant mechanisms to explore would be the importance of transcultural networks and belonging (Bergnehr et al., 2020; Karataş et

al., 2021; Samara et al., 2019) or role of social withdrawal as a symptom of mental distress (Center for Substance Abuse Treatment, 2014).

Satisfaction with the *school environment* was markedly higher than norms for the younger age group (13–18 years). Considering that many have missed out on several years of schooling or struggle with language, scores were higher than expected. Nearly all participants also endorsed statements of *education being of importance* to them and *having opportunities to develop useful skills* (CYRM-12, Paper 3, Table 5). One explanation might be that schools represent stability and normalcy after long periods of adversity, as well as providing opportunities to learn as a meaningful purpose (Hayward, 2017; Masten & Narayan, 2012; Pastoor, 2015). Schools are also social arenas where they meet other youth and experience friendship and belonging (Correa-Velez et al., 2010; Kia-Keating & Ellis, 2007). In addition to the factors mentioned, the high satisfaction might be a result of sampling primarily within introductory classes, where a majority of students share similar backgrounds and challenges, as opposed to being a minority in a larger school environment (Hjern et al., 2013). However, high scores in *school environment* for refugee youth was also found in a study using random recruitment by age and gender, and not school type (Solberg, Sengoelge, Johnson-Singh, et al., 2021).

The participants were most satisfied with the dimension for *autonomy and parents.* These questions concern parental relations, free time and perceived economy. Family relations are central to mental health and healthy development in children and youth, yet high satisfaction within this dimension was unexpected for several reasons. Firstly, previous literature refers to high rates of parental stress and mental distress which affect their parenting negatively (McMichael et al., 2011; Sim et al., 2018). Secondly, developmental factors associated with adolescence, such as increasing autonomy and reliance on friends, could contribute to reduced closeness with parents over time (Bambra & Thomson, 2019). Lastly, 20% of our participants, especially the older youth, did not live with their parents. The two last arguments relate to developmental aspects, which suggest results for the older participants should be read with some caution (Jervaeus et al., 2013). One possible explanation for the high satisfaction could be that difficult times bring families closer together. However, family closeness is often high on arrival in a host country, but levels decrease over

time (McMichael et al., 2011). From the preliminary interviews of stakeholders we got the impression that many participants had part-time jobs, and *economic concerns* were one of the main contributors to post-migration stress (Paper 2, Table 3), contradicting the idea that questions on free time and economy should compensate for negative parental relationships. The positive endorsement of *autonomy and parents* would therefore be interesting to explore qualitatively, to better understand what contributes to the high satisfaction. This might be particularly important as parents are traditionally less involved in interventions targeting youth, yet they may be vital to include for this particular group.

In addition to giving valuable insight into separate dimensions of their lives, the KIDSCREEN-27 provided a unique profile of high scoring (*autonomy and parents, school environment)* and low scoring (*physical* and *psychological wellbeing, social support and peers*) HRQOL dimensions. This was strikingly different from the norm profile of European youth (Ravens-Sieberer & The KIDSCREEN Group Europe, 2006). In the European youth, the lowest scoring dimensions are *school environment* and *physical wellbeing*, the highest are *psychological wellbeing* and *social support and peers*, and *autonomy and parents* in the middle. The unique HRQoL profile for refugee youth was also found in a Swedish study, including youth from Syria, Afghanistan and Iraq (Solberg, Sengoelge, Johnson-Singh, et al., 2021). This indicates that the KIDSCREEN measure is both relevant and sensitive to the specific context of resettlement in refugee youth (McFarlane et al., 2011). Potential differences in these dimensions could be interpreted as areas of concern and strengths in specific populations. As such, they could aid the tailoring of psychosocial interventions to meet the needs of refugee youth. Our results suggest that psychological wellbeing is of particular concern, and that schools and parents are important partners or arenas for any interventions. This is also supported in a recent WHO technical guidance for interventions in refugee and migrant children (Hjern & Kadir, 2018).

Overall, mental health in the recently resettled Syrian youth was worse than in other youth, and the next step was to explore factors which could explain some of these differences.

8.2.2 How do risk and resilience factors affect mental health? Mechanisms of influence and the importance of environmental factors

It has long been understood that refugees are exposed to potentially traumatic events that have profound effects on mental health (WHO, 2018). In line with this, participants in the present study reported high exposure to potentially traumatic events (PTEs) from war and flight, with an average of four events, highest for older youth and boys. The most common experience was *witnessing war at close quarters* and *feeling your life was in danger,* and half had also *seen someone die.* These results are comparable to other reports of Syrian children and youth resettled in Lebanon, Turkey and Jordan (Dehnel et al., 2021; Eruyar et al., 2018; Kandemir et al., 2018; Khamis, 2019). Notably, the last item in the Refugee Trauma History Checklist (*other frightening experience where you thought your life was in danger*) was endorsed by 60% of participants, indicating that several other types of pre-migration events are not addressed in the list. The cumulative PTE exposure was significantly related to PTSD and general mental distress, thus confirming previous research. Less explored is the effect of PTEs on quality of life after resettlement, but our results support existing literature showing significant and negative correlation with overall HRQoL (Araya et al., 2007; Van Der Boor et al., 2020). All subdimensions—apart from physical wellbeing—were significantly affected by PTEs, even after controlling for age, gender and other demographic variables. This may illustrate how the effects of trauma can have "cascading effects" on several dimensions of life (Masten & Narayan, 2012).

Responding to earlier critique of a narrow focus on singular risk (Ventevogel et al., 2019), we also explored the influence of post-migration stressors. These current and sometimes long-term stressors are shown to influence mental health above and beyond singular events in the past (Chen et al., 2017; Hou et al., 2020; Li et al., 2016). Studies exploring post-migration stressors have often been conducted among refugees in high stress environments such as refugee camps, asylum centres or detention facilities (Araya et al., 2007; Newnham et al., 2015; Riley et al., 2017; Solberg, Vaez, et al., 2020). We therefore expected lower scores from our group as they all had access to housing, basic services and most are granted permanent settlement. This turned out to be accurate as the mean score was only 13.6 (*SD*=7.6) on a scale from 0–40. However, the influence of post-migration stressors on mental health was still

considerable, with high to moderate correlations across all outcomes (Paper 2, Table 2), also when considering the influence of age, gender and PTEs (Paper 3, Table 3). *Economic concerns* and *perceived discrimination* were types of stressors impacting several HRQoL dimensions (Paper 2, Table 3). Variations of these two stressors are frequently identified by other studies (Chen et al., 2017; Sengoelge et al., 2020; Tinghög et al., 2017). Silove (2013) suggests this might be because they affect basic and adaptive systems related to attachment, identity and meaning (Silove, 2013). They may also represent structural factors outside personal control and demonstrate that refugee mental health is influenced by the same social determinants as other populations: poverty, inadequate housing, discrimination and social isolation (Hynie, 2018; Sengoelge et al., 2020). Previous studies using the same measure also show similar impact of the different factors, with economic and social stressors showing greatest impact on mental health (Malm et al., 2020; Solberg, Vaez, et al., 2020; Tinghög et al., 2017). Overall, our results replicate earlier findings demonstrating the vital importance of post-migration stressors, also for refugees resettled in a high-income country rated positively on the migrant integration policy index (Dunlavy et al., 2021; MIPEX, 2020).

The *ecological model of refugee distress* (Miller & Rasmussen, 2017) suggests that post-migration stressors not only affect mental health directly, but also mediate the influence of PTEs on mental health. We found significant mediating effects of post-migration stressors on the relationship between PTE and all mental health outcomes, thus confirming the model and adding to accumulating empirical evidence (Hou et al., 2020; Housen et al., 2019; Newnham et al., 2015; Riley et al., 2017). One suggested explanation for this mediation is that trauma sensitises a person to future adversity. The oversensitivity triggers an overreaction to ongoing demands, thus decreasing the tolerance for stressors (Hammen et al., 2000; Masten & Narayan, 2012). Such an autonomic hypersensitivity or emotional dysregulation has been found to mediate mental distress in refugees (Khamis, 2019; Nickerson et al., 2015). Processes such as emotion regulation and executive functions are also susceptible to the influence of trauma or elevated stress during development, which in turn affects the capacity to regulate future stress responses (National Scientific Council on the Developing Child, 2020). The fact that mediation was present also in our study—a context with generally

low levels of post-migration stressors—and that this was not affected by increasing levels of resilience (Paper 3, Table 4), further supports the idea of the youth being sensitive to stress. Post-migration stressors are also suggested to reduce the potential impact of resilience factors and the positive outcomes of interventions, thus depleting resources and delaying recovery (Bryant, 2021; Miller & Rasmussen, 2017; Oppedal et al., 2019; Ungar & Theron, 2020). The potent combination of PTE and post-migration stressors at a crucial stage of development could therefore have both immediate and long-term consequences for the refugee youth.

The current *ecological model of refugee distress* considers mental distress as a final outcome (Miller & Rasmussen, 2017). However, within a broader conception of mental health, mental distress could also be viewed as a burden of symptoms acting as an additional stressor reducing general wellbeing and quality of life (QoL). The influence of mental distress on QoL is well documented (Sharpe et al., 2016; Van Der Boor et al., 2020) and we therefore modified the model to include mental distress as an additional mediator to QoL (see *conceptual model*, page 28). The analysis of the serial mediation model showed that general mental distress (symptoms of anxiety and depression) mediated the influence of PTEs on QoL both independently and serially with post-migration stress. This independent mediation has been demonstrated previously (Araya et al., 2007), but to our knowledge the serial mediation is not extensively explored in literature. In this model, both post-migration stressors and mental distress contribute to reduced QoL and explain 39% of QoL variance (Figure 2, Paper 2). As a contrast, PTSD symptoms did not independently mediate the effect of PTE on QoL, only through increasing post-migration stress (Figure 4, Paper 2). Proposed mechanisms are that PTSD symptoms generate more stress, for example by avoiding social contact or seeking help (Pettit et al., 2010; Seglem et al., 2014). In interview studies, refugees describe how the burden of symptoms drains all their energy, with nothing left to face the daily challenges in life (Opaas, 2019). The finding that PTSD symptoms do not influence QoL directly, despite almost half the participants reporting high symptom levels, is somewhat contrary. Often the high levels of PTSD symptoms in refugee populations put trauma-focussed interventions at the centre of mental health responses and there is strong evidence for positive outcomes of these interventions (Fazel, 2018). However, there have been reservations

about exaggerating this focus, based on PTSD diagnosis not being the only or even the most disabling mental health problem among refugees (Ventevogel et al., 2019). The serial mediation model suggest a bidirectional relationship between post-migration stressors and mental distress, also highlighted in other studies (Keles, Idsøe, et al., 2017; Tingvold et al., 2015). Both should therefore be addressed in interventions.

Our results add to contextually relevant knowledge of outcomes and risk factors. This in turn, is necessary to understand the potential influence of resilience factors (Ungar, 2019). Although several resilience factors are known, *how* they influence mental health is less explored. Resilience mechanisms are the theoretical and operational process by which the outcome is thought to be achieved (Bosqui & Marshoud, 2018). Two of the more influential models are *promotive* and *protective resilience* models (Garmezy et al., 1984; Grych et al., 2015; Kia-Keating et al., 2011; Zimmerman & Arunkumar, 1994). *Promotive resilience* models are also termed 'compensatory' or 'additive', suggesting that positive resilience factors compensate for the presence of negative risk. The mechanism is manifest when a resilience factor has a direct influence on the outcome (i.e. a main effect in the analysis) and does not interact with a risk factor in predicting the outcome. Thus, the factor influences all participants in the same manner, both those exposed and not exposed to the risk. Our findings show that combined resilience factors had a large main effect (*promotive resilience*) on HRQoL, accounting for 22% of its variance alone, compared to PTEs and post-migration stress which combined accounted for only 12% (Table 3, Paper 3). However, considering the potent influence of general mental distress on QoL, this direct effect of resilience on HRQoL could be reduced by a higher burden of mental distress. A similar, but smaller main effect was found for general mental distress, but not for PTSD. Adopting this perception of *promotive resilience,* our results suggest that general resilience building interventions could be beneficial for refugee youth, independent of their experienced PTEs, stressors or symptoms. However, these interventions would presumably have little influence on PTSD symptoms as resilience showed no main effect on these. The model of *promotive resilience* could also explain the co-occurrence of high resilience levels and high distress, as the model posits that they compensate for each other, not reduce the effect. This implies that a person may

have PTSD but still manage its negative effects, and that the presence of PTSD does not infer a lack of resilience (Southwick et al., 2014).

As a contrast, models of *protective resilience* propose that factors buffer the influence of risk, identified when the resilience factor interacts with or moderates the risk factor to predict the outcome. Thus, the *protective resilience* factor is especially influential when risk is present. A protective effect would imply that for someone with low resilience, experiencing trauma or stress would lead to a steep increase in mental distress. Inversely, experiencing similar trauma or stress for someone with high resilience would lead to a much smaller increase in mental distress—or no increase at all. The *protective resilience* mechanism has been demonstrated in previous refugee research using a variety of resilience factors (Araya et al., 2007; Fritz et al., 2018; Goldenson et al., 2020; Zahradnik et al., 2010). However, we found no moderation effects in our group of Syrian youth. If resilience buffered the effect of PTEs on mental health, we would have expected that individuals with high resilience had a smaller increase in mental distress with increasing PTEs than individuals with low resilience. Instead, the effect of risk was similar across all levels of resilience. That does not mean that resilience is not important, but its influence was general and not specific to risk. Again, this supports the use of universal and promotive health interventions.

Some studies find interaction effects when examining resilience factors individually (Araya et al., 2007), which we could also have explored. However, assuming that resilience factors are interrelated, we wanted to examine their combined effect. The contrary results could also be due to design or measurement errors; a larger sample, or strategically including youth with lower resilience or more risk could have increased chances for identifying moderation effects (Aiken & West, 1991). However, larger studies have also found more support for the *promotive resilience* model, as opposed to *protective resilience* (Askeland et al., 2020). In fact, the lack of moderating effects reflect the findings of an emerging body of resilience studies in refugees (Giordano et al., 2019; Seglem et al., 2014; Sleijpen et al., 2019; Solberg, Sengoelge, Nissen, et al., 2021). Two of these studies include comparison groups, and show that resilience (measured as coping) only moderates risk in non-refugee youth (Seglem et al., 2014; Sleijpen et al., 2019). The lack of moderation effects could therefore be contextual,

specifically related to the *refugee experience*. Some authors suggest that contextual factors, such as high levels of post-migration stressors, deplete or impede resilience factors, similar to what Miller & Rasmussen (2017) suggested (Giordano et al., 2019; Solberg, Sengoelge, Nissen, et al., 2021). An alternative explanation to the presence of high levels of resilience combined with high levels of mental distress, could be that even though resilience factors are present, they are not as effective. Another contextual factor which could explain the lack of moderation, is a lack of fit between the resilience factors investigated, the risk and outcomes, i.e. the measure used did not include all resilience factors relevant to the refugee experience or context (Ungar, 2019). A recent study comparing adult Syrian refugees in Germany and Turkey, found differences between coping strategies and mental distress—suggesting that different types of resilience factors were beneficial in different contexts (Woltin et al., 2018). A correlation analysis between CYRM-12 and all the outcomes (Paper 3, Table 5) suggests that the measure might have missed some contextually relevant items, especially individual level factors or factors related to PTSD. However, qualitative studies of young refugees' experiences of resettlement, confirm the relevance of most included factors (Atari-Khan et al., 2021; McFarlane et al., 2011; Mohamed, 2012). A qualitative exploration related to the measure could improve the fit for future research (Ungar, 2019), but at the same time, local adaptations may limit cross-cultural and country comparisons (Wu et al., 2018).

Resilience scholars also propose that the interaction between different resilience factors can explain the lack of moderation: even though some factors are present they need other resilience factors to be effective (Ungar & Theron, 2020). For example, some individual coping mechanisms are not sustainable unless other environmental systems, such as family and school, support the adaptive behaviour (Diab et al., 2015; Portilla et al., 2014; Ungar & Theron, 2020). This idea is also supported in a review of resilience in children and youth affected by armed conflict, where they found that participants perceived resilience to be a combination of personal strengths and supportive contexts (Tol et al., 2013). Interventions focussing purely on individual factors may therefore have less effect if family or schools are not included and supportive. This also implies that a purely additive or compensatory model of *promotive resilience*, may be too simplified.

The models including all variables account for around 50% of QoL variance in the participating youth. This is a considerable amount, although many factors are still unexplained. General mental distress and resilience factors seem to be the two most malleable and influential factors on general QoL, but this thesis has endeavoured to highlight the complexity of possible mechanisms between all the factors.

8.3 Methodological considerations

8.3.1 Advantages of the design

This study addressed gaps in previous knowledge by applying multidimensional frameworks and measures of QoL and resilience. These are less explored and therefore complement earlier research on individual risk and distress. This allowed a broader description of mental health, but also discussions about the complex interactions between risk, resilience—individuals and environment. By building on and expanding existing theories of distress and resilience in refugees, this thesis contributes to knowledge of not only factors of influence, but also relevant mechanisms needed to create and evaluate interventions. The use of cross-culturally validated or specifically developed instruments increases validity of the findings and their relevance. Lastly, refugee youth—and in particular Syrian youth—are a population increasing in size. This study adds to a rapidly growing number of studies describing their health in a variety of host countries. In a Norwegian context, unaccompanied refugee minors have been the main focus of attention, but the Syrian youth represent a slightly different group; mainly accompanied by family and granted settlement status.

8.3.2 Limitations

General limitations include the cross-sectional design and interlinked nature of the variables under analysis which prevent any assertion of causality or direction. Self-report measures can also overestimate the association between variables as they are all from the same source. Using cross-culturally validated measures was a strength of the study and screening measures are important to identify children and youth at risk. However, participants' scores were interpreted on norms and cut-off levels based on levels in similar but not the same populations (Poortinga, 2016), thus the levels should be interpreted with caution.

The total sample of 160 participants was sufficient for the planned analyses but limited comparisons of smaller groups, for example by geography or living conditions. Inclusion of comparison groups could have improved the study, to see if any effect was universal across groups or particular for refugee youth. However, it is not straightforward to decide on an appropriate comparison group to refugee youth.

Recruitment of refugee populations, especially youth, is notoriously difficult (Hadfield et al., 2020; Nielsen et al., 2017). The strategy of recruitment through schools legitimised our presence and purpose, and almost all youth approached in this way consented to participate. However, teachers found it difficult to collect consent from parents, and the younger age groups are less represented. As this age group had less exposure and mental distress, overrepresentation of older youth may have inflated the general rates of mental distress. All schools lacked any student register which included country of origin; thus a full sampling frame was not available, preventing comparison of participants and non-participants. Not recruiting youth absent from school on data collection days may also have created a selection bias, potentially excluding individuals with more mental distress. Nevertheless, an age and gender comparison with data from Statistics Norway, suggested that our sample had similar gender composition and mean age as the whole population of Syrian youth aged 13–24 years living in Norway at the time of the study.

Language skills were an important consideration, and the reason for offering the survey in different languages and a simplified version. This did increase the number of participants, representativeness of the sample and avoided some selection bias. However, it created challenges with missing cases in analyses as the simplified versions did not include all measures. In addition, language difficulties may have caused some participants to misunderstand or jump questions, despite the researcher being present to answer questions. Technical difficulties with school iPads also resulted in some missing items. However, missing analyses showed that data was missing at random, and patterns of missing data are said to be more important than the amount of missing data (Tabachnick & Fidell, 2014). Despite efforts to ensure otherwise, some participants may have feared their answers were shared with teachers or other authorities, creating a response bias.

Previous research also stresses the importance of not assuming that the *refugee experience* is universal. Contextual differences, such as what you are fleeing from and where you are resettling, suggest a highly diverse group (Borchgrevink et al., 2019; Reed et al., 2012). This does of course limit generalisability of our results to all refugee youth and settings. Considering the lower Cronbach's alpha for the Post-Migration Stress Scale, further adjustments may be needed to improveits contextual or content validity.

8.3.3 Ethical reflections

A number of ethical and practical considerations were made in the design and recruitment of the study. These are described under the Methods section. This section considers some of the broader ethical issues in refugee research.

Refugee youth are frequently described as a vulnerable population. Sometimes this refers to being **in** a vulnerable situation or being vulnerable to exploitation (UNOCHA, 2018). This perspective is important to advocate on behalf of a disadvantaged group, an integral part of public health practice and research (Lindert et al., 2016; Wild & Dawson, 2018). Being vulnerable to exploitation also evokes important ethical principles of research such as informed consent and confidentiality (Pillai et al., 2019). At other times, vulnerability is used to describe the heightened risk exposure and elevated distress found in the group. Although it is important to advocate against unfair and unmet health needs, researchers need to use caution when labelling population groups as vulnerable. Placing the symptomatic distress of the refugee experience in the realm of psychopathology is criticised as a Westernised ideal, pathologizing normal and transient responses to extreme adversity (American Psychological Association, 2009). Others argue that this "labelling" may also stigmatise and alienate refugees by denying their inherent resilience (Hutchinson & Dorsett, 2012). Vulnerability and risk should be understood as contextual and contingent, rather than inherent. In the present political and media climate—with frequent negative stereotyping of migrants and refugees—ethical rigour is also important to avoid misrepresentation of refugees when publishing results (McMichael & Nunn, 2019).

Shifting to a more resilience or strength-based focus may contribute to a more balanced description of the health in a population group (Dehnel et al., 2021). However, resilience perspectives are not without pitfalls. Mahdiani and Ungar (2021) warns of "the dark side of resilience" where the expectance of recovery or resilience may be used as an excuse for not addressing inequalities, ignoring distress, giving individuals the responsibility for adaptation and overlooking policies and environments causing or exacerbating distress in refugee youth. Thus, both concepts of risk and resilience, or vulnerability and strength, are important when addressing the mental health in refugee youth.

8.4 Implications of findings

Given the importance of adolescence and early adulthood as a critical time of physical, mental and emotional development, support programmes for the successful resettlement of refugee youth should be a priority for host countries (Earnest et al., 2015). Early and preventive efforts should be a primary aim (Varvin & Lien, 2019). General recommendations for promoting mental health and wellbeing in refugee children and youth are to target risk and resilience factors within a holistic framework, using a mixture of policy based and specific interventions (Hjern & Kadir, 2018). Practical efforts may reflect these recommendations, but intervention research has largely focussed on rehabilitation and treatment of mental distress (Fazel, 2018). The following section will therefore focus mostly on preventive and promotive efforts, suggesting potential implications of the findings in the study.

8.4.1 Broader perceptions of mental health are valuable

Understanding both dimensions of concern and of strength is not only in line with current recommendations, but also widens the scope of possible interventions and permits targeting, tailoring and a promotive intervention focus. It is relevant to all youth independent of mental distress and as indicators for positive change (Sari et al., 2020; Veronese et al., 2020). Most of all, QoL is a valuable goal itself (UN General Assembly, 1989), and should not be demoted to a spurious secondary outcome of interventions. Our findings demonstrate the value of QoL as being relevant, sensitive to the context and illustrating the complexity of multidimensional factors relevant for mental health. It may also be appropriate for early assessments, for example in

contexts outside clinical practice or research such as schools or primary practice, where screening for PTEs or PTSD may be too intrusive or inappropriate.

8.4.2 Post-migrational and environmental factors must be addressed

There is no contention about the relevance and importance of potential trauma. Our results are in line with previous observations; PTEs and PTSD are closely related and widespread in this group of youth. Hence, discovering and treating PTSD is important, and it may be appropriate to increase competence and trauma-informed practice in schools and primary practice (Pastoor, 2015). However, our findings also demonstrate the importance of addressing post-migrational and environmental factors. These are often highly malleable, appropriate for non-specialist interventions and thus important for increasing promotive and preventive efforts.

Factors related to relationships and the resettlement environment were especially influential, and may in fact reduce or increase the effect of interventions (Miller & Rasmussen, 2010). A recent example is an intervention trial in Norway ("Teaching Recovery Techniques"), where a group intervention based on cognitive behaviour theory was offered to refugee youth with PTSD symptoms above recommended cut-offs. The lack of effect for some participants was attributed to a lack of support from their environments or high amounts of current stress, as this influenced how the youth managed to learn and practice the new techniques (Oppedal et al., 2019).

Few evaluated interventions include post-migration stressors (Fazel, 2018). Targeting these could be done by two main strategies: either improving how the youth individually deal with the stressors, or by reducing the general burden of stressors. Traditionally, interventions have focussed on the first, using psychoeducation, coping strategies, relaxation techniques or practical problem-solving skills. Although moderately effective, this has been criticised for giving the individuals the responsibility for dealing with undue burden often caused by circumstances (Lustig et al., 2004). Instead, targeting structural and environmental determinants to reduce post-migration stressors could be an alternative: Providing safe and accepting school and classroom environments, flexible educational routes, sufficient economic support, shorter waiting times for asylum or family reunion and reduced barriers to help

services could reduce undue burden and greatly improve mental health. There are many good examples of such interventions, but few are evaluated (Hynie, 2018).

8.4.3 Resilience factors must be addressed

Resilience approaches may hold particular appeal for children and youth because they include factors and processes influencing their general development, and highlight the shared goals of many stakeholders such as schools, family or integration services (Masten & Narayan, 2012). Our findings suggest that results of interventions can be improved by promoting resilience in addition to addressing risk factors and mental distress. The promotive resilience mechanism present in our findings has the advantage of being relevant under low risk as well as high risk conditions, thus appropriate also for preventive and promotive efforts. Interventions should take care to include not only individual resilience factors, but also relational and environmental ones. However, our results suggest that increasing resilience factors may increase QoL and reduce mental distress, but not significantly influence PTSD. In turn, this means a mixture of universal and specific interventions are appropriate (Hjern & Kadir, 2018)

Resilience factors should be part of early assessments, in addition to mental distress and risk. Norwegian guidelines recommend health assessments shortly after and three months after arrival (Norwegian Directorate of Health, 2018), also for children, youth and their families. The accompanying form includes questions on trauma and symptoms of physical and mental distress, but gives no attention to resilience factors. Tools such as the "Cultural Formulation Interview" (Aggarwal & Lewis-Fernández, 2020) or Ungar's diagnostic tool for resilience (Ungar, 2015), could be valuable additions.

8.4.4 Involvement of family and school

Our results also demonstrate how parents and schools are both important collaborators but also potential sites for interventions addressing mental health. Parenting support and school-based programmes are specifically recommended for refugee children and youth (Hjern & Kadir, 2018). Parental guidance programmes have shown that a decrease in harsh discipline and an increase in positive parenting and involving family is a powerful approach for preventive intervention with long term benefits (Fazel &

Betancourt, 2017). However, these results are largely based on younger children, and the relevance and content of parenting programmes for youth could be very different. Also, many youths arrive without family and might live with other caregivers or alone, which must be considered in interventions. Better understanding of the role of parents and caregivers for refugee youth is therefore necessary to benefit from parent involvement in interventions.

Schools are also proposed as key sites for interventions, and our findings provide support for their important role as a safe environment. It is important to ensure this source of support is continued through the different transitions the youth will experience. Several school-based universal and tailored interventions exist, but few are evaluated (Sullivan & Simonson, 2016; Tyrer & Fazel, 2014). It is also important to consider their relevance in local contexts, for example group interventions may be appropriate in schools with many newcomers but not in smaller communities with just a few families resettling each year. Other relevant sites for interventions should also be considered, such as leisure activities, digital or online spaces.

9 Conclusions

Youth with refugee backgrounds have a hazardous journey behind them, and a new journey ahead, adjusting to a new life in Norway. Conscientious efforts by host nations to provide for good starts in a new country could be crucial for their future health and development. The overall aim of this thesis was to explore mental health and resilience in Syrian refugee youth to inform such policy and intervention efforts. The Syrian youth in this study represent a group less apparent in literature: most have attended school in Syria, live with their own families and are granted resettlement. As such, they seem more protected than for example unaccompanied refugee minors or children in protracted asylum processes. Despite this, the results show that the youth have poor mental health, with higher levels of mental distress and reduced quality of life. Friendships, physical and mental wellbeing were low-scoring dimensions of health, whilst home and school life contributed positively. Potentially traumatic events from war and flight were common and had significant impact on mental health. However, much of this effect was indirect through increasing post-migration stressors, suggesting a complex and interwoven influence of past and present events. Symptoms of mental distress reduced quality of life in the Syrian youth, both directly and indirectly through post-migration stressors. On the other hand, resilience factors were related to better mental health, independent of risk factors.

The inequities in health indicate the need for policy and interventions to improve mental health and resilience in refugee youth. Although a substantial portion of mental health inequalities could be explained by factors related to the refugee experience of pre- and post-migration stressors, general relational and environmental factors such as social support, stability and economy were equally important. Host nations have a responsibility to prevent undue burden in a post-migration period and to ensure that refugee youth get access to the necessary services. The complexity of interactions suggests that both universal promotive interventions, as well as targeted preventive interventions are beneficial. Increased attention should be given to environmental and relational risk and resilience factors. Overall, national integration strategies need to reflect the importance of health and wellbeing and provide for both a good start and continued efforts to support positive adaptation after resettlement.

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11 Papers

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Scandinavian Journal of Public Health, 2020; 48: 688–698

ORIGINAL ARTICLE

Health-related quality of life in young Syrian refugees recently resettled in Norway

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Abstract

Aims: Millions have fled from the civil unrest in Syria, and half of these are children and youth. Although they are a population with an elevated risk of health problems due to adverse pre-migratory and post-migratory experiences, few studies have explored their health-related quality of life (HRQoL). This is considered a fundamental construct in public health and might provide complementary descriptions of their health and well-being after resettling in a new country. *Methods:* This was a cross-sectional study of 160 Syrian youth aged 13–24 years. Using KIDSCREEN-27, the results for five dimensions of HRQoL was compared to population norm data. Demographic factors and war-related adverse events were used to predict HRQoL in hierarchical regression. *Results:* For most participants, the overall HRQoL was good, but it was lower in the dimensions for friends, physical well-being and psychological well-being compared to population norms. Scores in the dimensions for autonomy/parental relation and the school environment were high and were the main contributors to a positive HRQoL. Age and number of reported stressful events (SE) had the greatest impact on HRQoL, but the final regression model only accounted for 21% of the total variance. ***Conclusions:*** **HRQoL is a relevant and non-invasive measure for refugee youth. Contributors to lower scores in physical and psychological well-being should be explored further and indicate the potential for future interventions focussing on general psychological well-being and networks, regardless of the SE that have been experienced. These interventions could potentially be based in schools or in families in order to benefit from these being seemingly safe environments for the majority of the group.**

Keywords: *Refugee, adolescent, health-related quality of life, Syria, KIDSCREEN-27, physical well-being, psychological well-being, parents, school, friends*

Introduction

The global population of forcibly displaced people has grown to more than 70 million [1]. The armed conflict in Syria has caused one of the largest mass movements since World War II, with more than six million on the move. Most are internally displaced, but millions also cross the borders to neighbouring countries such as Jordan and Turkey. About one million have fled to Europe and received asylum, with Germany and Sweden receiving the highest number of such applications at 550,000 claims [2]. Syrians are also one of the largest groups of refugees in Norway, totalling about 22,000, and almost all are granted permanent settlement [3]. Half of the displaced Syrians are children <18 years of age [2].

Many Syrian children have experienced war and violence at close hand and have been forced to move, leaving their home, family and friends. They have seen or heard guns, bombs and fighting; many have seen someone die, and sometimes these were family members or loved ones [4–6]. Pre-migratory adverse events and the complexities of post-migration settlement involving language acquisition and sociocultural

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Date received 15 July 2019; reviewed 3 December 2019; 2 April 2020; accepted 1 May 2020

DOI: 10.1177/1403494820929833
journals.sagepub.com/home/sjp

adjustment are associated with a range of negative symptoms such as anxiety, depression and post-traumatic stress disorder, and this has been the main focus of an expanding literature on mental health in refugee children and youth [7–11]. However, the majority of refugee youth do not develop psychiatric problems, despite their traumatic experiences [12], and the symptoms often reduce over time [13]. Therefore, knowledge of their general health and well-being is important to monitor health well-being in the whole group. The concept of health-related quality of life (HRQoL) might offer complementary insight, allowing a broader focus on health outcomes not limited to risk and vulnerability, in line with recommendations in the fields of both migration and public-health research [14].

HRQoL is a multidimensional construct covering physical, emotional, mental, social and behavioural components related to health as perceived by the individuals themselves [15]. Some of the related determinants are age, sex, socio-economic status and health [16].

Previous studies have indicated slightly lower well-being among immigrant populations. However, results often vary due to the heterogeneity of the concepts measured, migrant groups included and context [7,17]. For refugee youth, as a subgroup of immigrants, the results also vary. Two Australian studies found HRQoL levels comparable to rates in healthy populations [18,19], whilst a Swedish study found lower scores for foreign-born youth [20], and a UN project reported substantially lower HRQoL scores for Syrian children living in Jordan [21]. In addition to age and sex, some of the related determinants were region of origin, residence time, family situation and war-related events [18,20].

Due to limited knowledge of HRQoL in refugee youth and conflicting results in previous studies, the purpose of this study was to explore the HRQoL in young Syrian refugees who have recently resettled in Norway, and its relationship with settlement factors and war- and flight-related events. The results might help discern dimensions of strengths and areas of concern for refugee youth who resettle in high-income countries.

Methods

The study has a cross-sectional design using a questionnaire in both Arabic and Norwegian. Using strategic sampling to recruit recently resettled youth, 40 schools with introductory classes for newly arrived immigrants were contacted. Of these, 23 schools located in nine different regions of Norway agreed to participate. Reasons for not participating were: no response to request (n=9 schools), no Syrian students (n=6 schools) or already participating in other studies (n=2 schools). The schools participating had between 1 and 23 Syrian students attending. The teachers distributed written information about the study in Arabic and Norwegian to the students in advance, and consent forms were given to parents with children <16 years of age. The youth completed the questionnaire whilst at school with a researcher present to answer questions. Norwegian schools do not regularly record students' country of origin. Therefore, the total number of Syrian students attending each school was not available. Of the students present on the day of the visit, three students declined to participate due to exam preparations or language difficulties. Students absent from school were not included. Due to challenges collecting consent forms from parents of children aged <16 years, efforts were focussed on including upper secondary schools.

Measures

HRQoL. The KIDSCREEN-27 tool was used to assess subjective HRQoL. This is a generic self-report measure used in both healthy and ill children aged 8–18 years all over the world. It is a reliable, sensitive and cross-culturally validated measure in 38 languages [22]. It measures five HRQoL dimensions: physical well-being (physical), psychological well-being (psychological), autonomy and parent relations (autonomy/parents), social support and peers (friends) and school environment (school). We also included the HRQoL Index, which consists of 10 items from all dimensions.

Previous research has shown acceptable reliability of the scale, with a Cronbach's alpha >0.80 [23] and acceptable Rasch measurements [16], also for older youth [24]. In this study, Cronbach's alpha was between 0.82 and 0.88 for all dimensions included, suggesting good internal consistency for the questionnaire. Population norm data for the KIDSCREEN-27 tool based on a large sample of children and youth from 13 different European countries were available for comparison [16]. Higher scores indicate higher self-rated HRQoL.

Stressful events. Adverse war- and flight-related experiences have different connotations in the literature. Based on previous research, we modified a list of potentially traumatic or stressful events (SE) to fit the age and context of the participants [25]. The list consisted of 10 dichotomous items (yes/no): witnessing war, forced to leave friends/family, someone you love disappearing, someone trying to hurt you or

someone you love, having a life threatening illness or injury, lacking food or shelter, having to hide, torture, seeing someone die and other frightening experience where you thought your life was in danger.

Sociodemographic and settlement factors. Age, sex, mother tongue, time as a refugee (time since they left their own house in Syria), residence time (time since arrival in Norway), moves (number of times they have moved during the last five years) and family situation were included. The latter was dichotomised into living with parents (one or both parents, or one parent and step-parent) or not living with parents (living alone, in an orphanage or other).

Statistical analyses

All KIDSCREEN-27 scores were summed and converted to sum scores with a range of 0–100 according to KIDSCREEN scoring manuals. In dimensions with one missing value, the missing value was replaced with the individual mean for the dimension estimated by the remaining items [16]. The comparison of mean HRQoL sum scores in the study and population norms were tested with an independent two-tailed *t*-test using Bonferroni corrections for multiple comparisons. One-way analysis of variance (ANOVA) was used to investigate differences in mean HRQoL scores between three age groups in the sample. Lastly, Pearson's correlation coefficients together with hierarchical multiple regression were used to explore the relationships among the variables. All analyses were conducted using IBM SPSS Statistics for Windows v21.0 (IBM Corp., Armonk, NY), with statistical significance set at $p<0.05$ (two-tailed). This study was reviewed and approved by the Regional Research Ethics Committee of Norway East (reference number 2018/192).

Results

Characteristics of the sample

In total, 160 youth were included in the study. The mean residence time in Norway for the study population was two years (range 0–8 years). The mean age was 18.6 years (range 13–24 years). The sex distribution was slightly uneven, with 62.5% boys and 36.9% girls. For the majority of the youth (76.3%), Arabic was their mother tongue, and they lived with their parents (75%; see Table I). The youth not living with their parents were mostly >19 years of age (M_{age}=20.1 years, range 16–24 years), lived alone and were mostly male (89%).

From data obtained from Statistics Norway (SSB), we know that there were 5553 Syrian youth between the ages of 13 and 24 years registered in Norway at the start of the study. The mean age and sex distribution in this population is close to that of our study population.

Table I. Characteristics of the sample.

Demographic variables	*n* (%), *N*=5553	*n* (%), *N*=160
Age (mean)	18.7 years	18.6 years
13–16 years	1804 (32.5)	48 (30)
17–18 years	836 (15)	47 (29.4)
19–24 years	2913 (52.5)	65 (40.6)
Sex		
Boys	3523 (63.5)	100 (62.5)
Girls	2030 (36.6)	59 (36.9)
Mother tongue		
Arabic		121(76.3)
Kurdish		34 (21.9)
Other		3 (1.8)
Time as refugee		5.3 years
Number of moves		3.7 times
Residence time (mean)		2.0 years
<2 years		62 (38.8)
≥2 years		85 (53.1)
Living with parents		
Yes		120 (75)
No		35 (21.9)

SE

Participants (n=147) reported a mean of 4.2 SE (SD=2.76), the most prevalent being witnessing war (68%), feeling your life was in danger (59%) and seeing someone die (55%). A total of 88% reported at least one event, with 61% reported having experienced four or more events.

HRQoL

The mean HRQoL Index for the sample was 64.06 (SD=18.97; range from 10–100). The dimensions where the youth indicated best satisfaction were autonomy/parents, with a mean score of 69.50 (SD=21.43) and school, with a mean score of 67.25 (SD=21.40). The dimensions with the lowest scores were physical and psychological well-being, with mean scores of 58.82 (SD=23.00) and 59.02 (SD=21.07), respectively. This is a distinctly different HRQoL profile than the European population norm data, where friends and psychological well-being are the dimensions with the highest scores, and school the lowest (see Table II).

When we compare each dimension to the European population norms, we find that the HRQoL Index is significantly lower in our sample (64.06 vs. 71.93) with a moderate effect size. The three dimensions that contribute to the lower HRQoL Index are

Table II. Comparison between HRQoL scores in study population and European population norms.

HRQoL dimensions	Study (13–24 years)			European population norms (12–18 years)			*t*	*p*	Cohen's *d*[a]
	n	*M*	*SD*	*n*	*M*	*SD*			
Physical	157	58.82	23.00	15,239	68.24	18.71	6.26	**<0.001*** **	0.5
Psychological	155	59.02	21.07	15,239	75.06	16.95	11.66	**<0.001*** **	0.9
Parents	156	69.50	21.43	15,239	72.98	18.7	2.31	0.02*	0.2
Friends	160	65.64	25.53	15,239	76.29	19.7	6.78	**<0.001*** **	0.5
School	160	67.25	21.40	15,239	66.25	19.9	0.63	NS	
HRQoL Index	157	64.06	18.07	14,932	71.93	15	6.52	**<0.001*** **	0.5

In dimensions missing one value, the missing value was replaced by the mean of the remaining values. Total missing values:

- Physical: 8 missing one value, 3 missing more than one value. Total: 11.
- Psychological: 12 missing one value, 5 missing more than one value. Total: 17.
- Parents: 1 missing one value, 4 missing more than one value. Total: 5.
- Friends: 1 missing one value, 0 missing more than one value. Total: 1.
- School: 1 missing one value, 0 missing more than one value. Total: 1.

[a]Effect size (convention): 0.20=small; 0.50=moderate; 0.80=large.
*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$. Significance after Bonferroni correction in shown in bold.
HRQoL: health-related quality of life; NS=not significant.

Table III. Comparison between HRQoL scores in study population (age 13–18 years) and European population norms.

HRQoL dimensions	Study (13–18 years)			European population norms (12-18 yrs)			*t*	*p*	Cohen's *d*[a]
	n	*M*	*SD*	*n*	*M*	*SD*			
Physical	93	62.75	23.1	15,239	68.24	18.7	2.82	**0.005** **	0.3
Psychological	93	63.12	21.42	15,239	75.06	17	6.74	**<0.001** **	0.7
Parents	91	72.93	22.07	15,239	72.98	18.7	0.03	NS	
Friends	94	68.77	24.15	15,239	76.29	19.7	3.68	**<0.001** **	0.4
School	94	70.53	22.34	15,239	66.25	19.9	2.08	0.038*	0.2
HRQoL Index	92	67.53	18.51	14,932	71.93	15	2.80	**0.005** **	0.3

[a]Effect size (convention): 0.20=small; 0.50=moderate; 0.80=large.
*$p \leq 0.05$; **$p \leq 0.01$. Significance after Bonferroni correction shown in bold.

physical well-being, psychological well-being and friends. The effect size for the difference in physical well-being and friends are moderate, but for psychological well-being they are large.

The age range of the European population norm data is up to 18 years of age, whereas we included youth up to 24 years of age. Assuming age was relevant to HRQoL, we ran the same comparison including only our study participants in the same age range as a sensitivity analysis. The adjustment increased the mean scores for all dimensions in our study sample (see Table III). The significant differences between the study sample and the population norms remained, but the effect sizes diminished.

In further analysis, we investigated the impact of different sociodemographic variables, including settlement factors, starting with age. Dividing the sample into three age groups, Table IV shows the mean HRQoL values and results of the ANOVA. This shows a gradual decrease in the mean scores for all dimensions of HRQoL with increasing age, with the oldest age group scoring significantly lower than the youngest age group. However, with Bonferroni correction, only psychological well-being and autonomy/parents remained significantly different, suggesting that these dimensions contribute the most to the difference in the HRQoL Index between the youngest and the oldest. However, the effect sizes were relatively small.

To investigate the relationship between HRQoL, SE and sociodemographic variables, Pearson's product moment correlation coefficients were calculated. As Table V shows, the correlations between HRQoL and SE were negative and significant ($r=-0.36$, $p<0.001$). Of the sociodemographic variables, increasing age, not living with parents and number of

Table IV. Mean values and results for ANOVA for study sample divided into age groups.

HRQoL dimensions	13–16 years Group 1 (N=46)	17–18 years Group 2 (N=47)	19–24 years Group 3 (N=63)	F (df)	p	Post-hoc groups	η^2
Physical	63.84 (25.1)	61.03 (21.3)	53.42 (21.9)	3.1 (2, 154)	0.046	1 vs. 3	0.04
Psychological	65.64 (23.4)	60.02 (19.2)	53.15 (19.1)	5.0 (2, 152)	**0.008**	1 vs. 3	0.06
Parents	77.42 (22.3)	68.48 (20.9)	64.53 (19.8)	5.2 (2, 153)	**0.007**	1 vs. 3	0.06
Friends	73.05 (23.6)	63.87 (24.1)	61.44 (27.1)	3.1 (2, 157)	0.048	1 vs. 3	0.04
School	74.22 (23.3)	66.58 (20.7)	62.60 (21.4)	4.3 (2, 157)	0.016	1 vs. 3	0.05
HRQoL Index	70.9 (19.9)	63.8 (16.4)	59.3 (16.5)	5.9 (2, 154)	**0.003**	1 vs. 3	0.07

Significance after Bonferroni correction shown in bold.
Effect size η^2 (convention): 0.01=small; 0.06=moderate; 0.14=large.
ANOVA: analysis of variance.

Table V. Pearson's correlation between HRQoL Index, sociodemographic variables and stressful events.

Variables	1	2	3	4	5	6	7	8	9	10
1. HRQoL Index	–									
2. Age	**−0.29*****	—								
3. Sex	0.03	**0.32*****	–							
4. Living with parents	**0.27*****	**−0.47*****	**−0.29*****	—						
5. Number of siblings	0.05	**−0.28*****	**−0.30*****	**0.42*****						
6. Residence time	−0.12	**0.28*****	0.13	−0.26	0.14	—				
7. Number of moves	**−0.22****	0.16	0.17	**−0.22****	−0.10	0.11	–			
8. Father's education	**0.**04	0.10	0.06	−0.04	0.03	0.05	−0.05	–		
9. Mother's education	0.12	0.02	−0.08	−0.06	0.04	−0.01	0.09	**0.68*****	–	
10. Missed schooling	0.01	0.01	**0.24****	−0.01	0.15	−0.05	−0.14	0.12	0.09	
11. Stressful events	**−0.36*****	**0.40*****	**0.26*****	**−0.33*****	**−0.31*****	**0.26****	**0.27****	0.14	0.12	−0.12

Significance after Bonferroni correction shown in bold.
Correlation coefficient effect size (convention): 0–0.29=small; 0.30–0.49=moderate; 0.50–1.0=large.
Sex: 0= female; 1=male. Living with parents: 0=no; 1=yes.
*p≤0.05; **p≤0.01; ***p<0.001.

moves had significant negative effects. Age correlated significantly with an increase in SE, longer residence time and not living with parents.

Hierarchal multiple regression analyses were done to examine the predictive value of SE and settlement variables on the HRQoL Index and the highest and lowest scoring dimensions (school, autonomy/parents and psychological well-being), controlling for age and sex (Table VI). The variables included were chosen based on the correlation analysis in Table V and previous research suggesting age, sex, family situation, residence time and war-related events are important determinants of HRQoL in immigrant youth [18,20]. The variables were added in chronology of occurrence, as suggested by other authors [6]. Age and sex were entered in step 1, explaining 10% of the variance in the HRQoL Index scores. After entering SE in step 2, the total variance explained was 18% (F(3, 127)=9.39, p<0.001). SE therefore explained an additional 8% of the variance in HRQoL Index scores after controlling for age and sex (R^2 change=0.08, F change (1, 127)=12.93, p<0.001). After adding the settlement factors, the p-levels were similar in models 3 and 2, and the total variance explained was 21%. Repeating the same procedure for the two highest scoring dimensions, we found similar influences, with 19% of variance explained in autonomy/parents, but less of the variance was explained for school environment (12%). When repeated for the dimension with the lowest score, psychological well-being, 23% of the total variance was explained. In the fully adjusted models, being female decreased the scores significantly for the HRQoL Index and psychological well-being scores, and in the latter, increasing age reduced the scores significantly. Having experienced SE was a significant negative factor across all dimensions analysed. The other variables were not significant.

A sensitivity analysis including only the age group 13-18 years (n=95) showed that the effect of age as a predictor for psychological wellbeing was reduced (β −.22 vs −.08). This suggests that the effect of age is only present in the older age group (see Supplemental Material).

Table VI. Summary of hierarchical regression analysis for stressful events (SE), family situation, number of moves in the past five years and residence time, predicting dimensions of HRQoL, after controlling for age and sex.

Predictor		HRQoL Index				Autonomy/parents				School environment				Psychological well-being			
		b	SE *b*	β	*p*	*b*	SE *b*	β	*p*	*b*	SE *b*	β	*p*	*b*	SE *b*	β	*p*
Step 1																	
	Constant	116.05	14.20			118.50	17.10			97.24	17.31			121.03	16.60		
	Age	−2.50	0.67	−0.33	**<0.001*** **	−2.50	0.80	−0.28	**0.002****	−1.78	0.82	−0.20	**0.032***	−3.05	0.78	−0.35	**<0.001*** **
	Sex	5.03	3.28	0.14	0.127	2.90	3.95	0.07	0.465	−1.51	4.02	−0.03	0.709	4.98	3.83	0.12	0.196
Step 2																	
	Constant	112.17	13.63			114.30	16.57			93.32	17.00			116.29	15.84		
	Age	−1.66	0.68	−0.22	**0.016***	−1.59	0.82	−0.18	0.056	−0.93	0.85	−0.10	0.275	−2.03	0.79	−0.23	**0.011***
	Sex	6.83	3.20	0.18	**0.035***	4.84	3.86	0.11	0.212	0.31	3.96	0.01	0.937	7.18	3.69	0.17	0.054
	SE	−2.08	0.58	−0.32	**<0.001*** **	−2.26	0.70	−0.29	**0.002****	−2.12	0.72	−0.27	**0.004****	−2.55	0.67	−0.33	**<0.001*** **
Step 3																	
	Constant	115.79	13.77			118.14	16.63			95.58	17.32			117.96	16.15		
	Age	−1.27	0.74	−0.17	0.087	−0.83	0.89	−0.09	0.352	−1.01	0.92	−0.11	0.278	−1.90	0.86	−0.22	**0.029***
	Sex	7.94	3.22	0.21	**0.015***	6.33	3.88	0.14	0.106	0.21	4.04	0.01	0.958	7.66	3.77	0.18	**0.044***
	SE	−1.79	0.60	−0.27	**0.003****	−1.76	0.72	−0.23	**0.016***	−1.99	0.75	−0.26	**0.009****	−2.44	0.70	−0.32	**<0.001*** **
	Residence time	0.25	1.35	0.02	0.850	−1.64	1.63	−0.09	0.314	−0.02	1.69	−0.00	0.999	0.51	1.58	0.03	0.749
	Moves	−8.02	5.26	−0.13	0.130	−8.09	6.35	−0.11	0.205	−6.31	6.62	−0.09	0.342	−3.71	6.17	−0.05	0.548
	Living w/ parents	5.78	4.05	0.13	0.156	8.49	4.90	0.17	0.086	−1.62	5.10	−0.03	0.751	2.46	4.76	0.05	0.606

Sex: 0= female; 1=male. Living with parents: 0=no; 1=yes.
*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.
Index: R^2=0.10*** for step 1, ΔR^2=0.08*** for step 2, ΔR^2=0.03 for step 3 (NS).
Autonomy and parents: R^2=0.07** for step 1, ΔR^2=0.07** for step 2, ΔR^2=0.05 for step 3 (NS).
School environment: R^2=0.05 (NS) for step 1, ΔR^2=0.06** for step 2, ΔR^2=0.01 for step 3 (NS).
Psychological well-being: R^2=0.11*** for step 1, ΔR^2=0.09*** for step 2, ΔR^2=0.01 for step 3 (NS).

Discussion

The main objectives of this study were to explore HRQoL in young Syrian refugees within the resettlement context in relation to norms from other youth populations, and to investigate if earlier SE and settlement factors contributed to their levels of HRQoL. We found that the level of HRQoL in the group was moderately good, but lower than population norms. Areas of concern were the dimensions of friends, physical well-being and psychological well-being, the latter showing the most difference from population norms. Areas of strength were school environment and autonomy/parents. Being female affected the scores negatively in terms of the HRQoL Index and psychological well-being, also with increasing age in the latter. These effects disappeared when young adults (19–24 years) were excluded. SE had a small and negative impact on scores in all dimensions. Settlement factors (residence time, number of times moved or living with parents) showed no influence, apart from living with parents which was significant only for the 13- to 18-year-olds in the dimension of autonomy/parents. The results will now be discussed in relation to each dimension, and the cultural and developmental sensitivity of the measurements.

HRQoL Index

The overall HRQoL Index in our study population of young Syrians was moderately good, with an average of 64 for the age range 13–24 years and 67.5 for the age range 13–18 years. This is lower than European population norm data and Norwegian youth, with HRQoL Index scores of 72 [16,26]. The youngest age group in our study, 13- to 16-year-olds, had a HRQoL Index score of 71, similar to the population norm. Fewer studies have looked at HRQoL in refugee youth in particular, but a UN project assessed the HRQoL of Syrian children (median age 14 years) living in Jordan [21]. Their HRQoL Index score was 63, which is close to our result for the whole study population but much lower than the similar age group of 13- to 16-year-olds in our study, suggesting that not only age but also contextual factors contribute to the scores. The majority of our participants reported experiencing SE, which corresponds closely to other studies [4–6]. Boys and the oldest age groups reported more SE, possibly being less shielded from war events before leaving Syria. Combined with less support from family, as they were more likely to live alone, this might partly explain the lower HRQoL in the eldest age group in our sample.

Physical well-being

This dimension had the lowest score in this study and was significantly lower than the population norm data. Some studies have found that exposure to violence is an important predictor for physical health [27], but this was not apparent in our study. Other studies have found high levels of somatic complaints in refugee youth, which might affect the scores in this dimension [28]. Self-rated health is an important predictor for future health [29], and the low scores indicate the need for interventions.

Psychological well-being

This dimension explored positive and negative emotions, life satisfaction and self-esteem. A substantial portion of the literature concerning refugee youth shows a high prevalence of mental and emotional health problems [7]. These results correspond with the significantly low scores in the psychological well-being dimension in this study. Mental-health problems are strongly related to poorer HRQoL, although the two constructs are not synonymous [30]. Direct experience of adverse events is associated with an increased likelihood of psychological disturbance in refugee children and youth [7], and in our study SE explained 9% of the variance in psychological well-being after controlling for age and sex, suggesting that factors such as mental and emotional health problems are mediators to experienced HRQoL. The results indicate that psychological well-being is an area of concern for the whole group, not only for the youth with many experienced SE.[7]

Autonomy and parent relations

This dimension explored the perceived autonomy, financial resources, interaction and support from parents. Lower scores for the oldest age group living alone could potentially be connected to financial resources. Family and home life is important for general well-being, and unaccompanied refugee minors are therefore regarded as an especially vulnerable group lacking the support from parents or family [7]. However, parental presence does not ensure protection. For example, parents are more likely than their children to have experienced violence from war, and their experiences are a stronger predictor than direct experiences of the children's mental health [4,7]. Parental struggles are also associated with harsher parenting styles and higher levels of conduct problems in the children [4]. Adult Syrian refugees have high rates of SE and psychological symptoms [31], and we therefore expected that the satisfaction scores

in this dimension would be low. Instead, it is one of the highest scored dimensions, similar to the European population norms, contributing strongly to positive HRQoL. Illustrating the complexity and importance of the family dimension, Daud et al. [32] found that the level of parental symptoms and family communication affected how the children developed either symptoms similar to their parents or forms of resilience. Addressing distress and supporting the families of refugee youth that live at home is therefore important to ensure that parental influence continues to be positive [10]. A holistic and family-oriented strategy is also seen as important in a recent guidance document from the World Health Organization (WHO), addressing the health needs of refugee and migrant children [33]. For those youth not living with parents or family, other support networks would be equally important to explore.

Social support and peers

This dimension relates to both social support and friendships, vital to the experience of well-being for adolescents [34]. A strong peer attachment is also associated with greater levels of well-being in refugee youth [19]. Friends is the highest scoring dimension in the European population norm data, but in this study, the mean score was significantly lower. In many instances, friendship and social relationships are intertwined with the experience of belonging and being a valued member of a group or larger society, which is a central concept to integration [19]. The lower scores in this dimension, combined with rates of bullying and discrimination that are higher in migrant groups [11,20], strongly suggest that interventions need to focus on these factors.

School environment

This dimension explores perceptions of concentration, learning, feelings about school and relationships with teachers. Many Syrian youth have interrupted and incomplete education before arrival [35], and our participants reported a mean of 4.4 years of missed schooling. They also need to learn a new language when they start school in Norway. School environment is the dimension with the lowest satisfaction in the European population norms, and minority youth are less satisfied with the school environment than majority youth [36]. We therefore expected mean scores in this dimension to be low, but instead it was the HRQoL dimension with one of the highest levels of satisfaction, with scores even higher than the norm for the younger participants. Of the variables included, only SE had a significant albeit small effect. Most of the participants attended introductory classes with a multi-ethnic make-up located in adult learning centres or upper secondary schools. These educational services might be more tailored to the needs of the group, and have staff with more knowledge of acculturation processes, contributing to higher student satisfaction. Another explanation might lie in the multi-ethnic make-up of the classes, as a Swedish study found a systematic tendency for students in schools with a high proportion of migrant youth, irrespective of their origin, to report higher levels of well-being and lower levels of bullying compared to less multi-ethnic schools [20]. The results reiterates schools' important role not only as educational facilities but also as arenas for socialisation, integration and rehabilitation [37]. School-based programmes focussing on health and well-being therefore carry great potential, as is suggested by the recent guidance document from the WHO [33].

Cultural, contextual and developmental sensitivity

When interpreting the present findings, the cultural and developmental sensitivity of the measurements needs to be considered. Cultural differences in perceptions of health, illness and the meaning of quality of life might influence responses. KIDSCREEN was therefore chosen due to its cross-cultural development and validation on several continents in order to ensure that concepts were culturally relevant with some level of universality [38]. Some studies indicate that migrants from Middle Eastern countries report lower levels of HRQoL than, for example, their African counterparts [18,20]. However, a sample of healthy youth in Jordan [39] reported HRQoL scores much closer to the European population norm data than Syrian refugees in Jordan [21] or our participants, suggesting that the context of being an immigrant or refugee might have influenced the scores rather than cultural interpretations. This is also illustrated by the small but persistent influence of experienced SE across all dimensions also found in other studies [18]. However, the relatively static sociodemographic and settlement factors included – residence time, number of moves and living with parents – did not correlate or affect HRQoL scores, which is also similar to other studies [18]. We found that length of residence time, a factor associated with reduced mental-health problems in refugees [13], did not affect the HRQoL scores in this study. This might be due to recruiting recent settlers, and that changes in HRQoL occur over longer time spans. Further investigations, possibly including more modifiable factors such as social support, acculturation and settlement stress over longer periods of

time, might offer more insight into risks and resilience. Mental-health problems should also be explored further, as a higher prevalence is reported in refugees [4–10], which might reflect the lower scores in the psychological well-being dimension in this study [30].

The same consideration when interpreting the results should apply to developmental aspects, as developmental differences in cognitive, emotional, social and relational dimensions may affect the measure of HRQoL. In studies including children and adolescents, increasing age predicts a reduction in HRQoL [22,26], which is similar to our population. However, in this study, increasing age also increased the difference between our study sample and the population norms, suggesting a larger reduction in HRQoL than expected. Lower levels of HRQoL, often associated with higher levels of mental-health problems, have been reported in older adolescents [16]. This might account for the age differences seen in the HRQoL Index and psychological well-being scores, which disappeared in the sensitivity analysis.

For some of the HRQoL dimensions in this study, the developmental context varied greatly between a 13-year-old and a 24-year-old, especially for autonomy and parental relations. Other studies using KIDSCREEN-27 in young adults also suggest that autonomy/parents must be interpreted with more caution for older age groups. However, a Rasch evaluation also suggests acceptable results for all other dimensions in the KIDSCREEN-27 [24].

Strengths and limitations

One important shortcoming is the lack of information on the actual number of Syrian students attending the schools included in the study, as students' country of origin is not normally noted in their records. The total attrition rate and whether participants and non-participants differed in any respect is not known, and evaluating their representativeness is difficult. There were fewer girls than boys participating. However, this reflects the sex distribution for the age group residing in Norway. Although care was taken to inform the participants, language difficulties, fear or compliance might have affected their answers and might have contributed to the difficulties in obtaining consent forms from parents. Considering the high levels of poor mental health in unaccompanied refugee youth [7], it would have been beneficial to have information about their immigration status or contact with their family, especially for those registering as 'living alone'. Lastly, quality of life is not static. Therefore, longitudinal or prospective studies would provide changes over time. Due to its cross-sectional design, it is not possible to make causal inferences from the study.

The strengths include the use of well-validated measures and recruiting resettled refugee youth living with their families. Using HRQoL highlights its importance as an important outcome that enables an ecological and developmental perspective, describing the health and well-being of a whole population to complement other measurements. A common critique of studies on migration and health is the heterogeneity of participants originating from all over the world [7], which this study avoids to some extent. However, this limited the size of the sample, making it harder to generalise findings.

Conclusions

For most participants, the overall HRQoL was moderately good, despite possible risk factors. Autonomy/parents and school environment contributed the most to a positive HRQoL. Friends, physical well-being and especially psychological well-being were lower than population norms, highlighting areas of strength and concern. Sociodemographic factors had little explanatory value, but SE had an impact across all dimensions. Age was only predictive for reduced psychological wellbeing in the eldest age group. Total variance explained was only 21%, suggesting that more modifiable factors are relevant to explore in future research.

Implications

For future research, HRQoL is a non-invasive measure with the potential of exploring dimensions of strengths and concerns, and an important complement to mental-health measures in studies of refugees. To improve contextual relevance, the generic HRQoL measurements could be augmented by adapting the general measure or developing more migration or refugee specific modules. These modules could include impact or stress related to acculturation, identity or discrimination, for example, inspired by how disease-specific modules in HRQoL measures for disabled or chronically ill children have been developed (DISABKIDS [40]).

For schools, this study illustrates their importance as a resource for well-being, and this role needs to be continually supported. Teachers' competence and multicultural environments might be important contributing factors, since lower school satisfaction is reported in other studies. Being a safe arena means interventions targeting areas of concern, such as social support and psychological well-being, could be based here. Such interventions could be network

building, mentorships and school-based mental-health services.

For public-health professionals, this study shows that HRQoL was good for most youth, despite difficult circumstances, suggesting resilience. Parents seemed to be an important resource, emphasising the importance of including families in interventions. SE showed a small but consistent explanatory power, indicating that traumatic events are central. However, more universal public-health interventions targeting a wider range of mental-health problems might be just as beneficial, especially as HRQoL might also be a valuable resource for negotiating other settlement stressors in refugee youth.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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Supplemental material

Supplemental material for this article is available online.

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Quality of Life Research
https://doi.org/10.1007/s11136-021-02811-7

Health-related quality of life in refugee youth and the mediating role of mental distress and post-migration stressors

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Accepted: 24 February 2021

Abstract

Purpose The aim of this study is to explore how potentially traumatic events (PTEs) from war and flight influence health-related quality of life (HRQoL) in young refugees after recent resettlement. In a model based on earlier theory, we tested if post-migration stressors and mental distress mediated the effect of PTEs on HRQoL, individually and in serial. We also explored how different types of post-migration stressors influenced different dimensions of HRQoL.

Methods This study used a cross-sectional design where 160 Syrian youth recently resettled in Norway completed questionnaires at school between May and December 2018. Correlations between types of post-migration stressors and dimensions of HRQoL were explored and a serial multiple mediator model was tested. Models were adjusted for age and gender, using two types of mental distress; post-traumatic stress disorder (PTSD) and general mental distress.

Results Higher levels of PTEs reduced experienced HRQoL, but this direct effect was mediated by post-migration stressors alone and in serial with mental distress. Despite high levels of mental distress, this did not affect HRQoL independently, only in serial mediation with increased post-migration stressors. Economic concerns and discrimination were types of post-migration stressors affecting several dimensions of HRQoL.

Conclusion Quality of life in refugee is affected by past events from war, stressors in current resettlement and elevated mental distress through complex interrelations. The study reiterates the importance of considering structural and everyday post-migration stressors in policy and intervention to improve the health and wellbeing of refugee youth.

Keywords Health-related quality of life · Mental distress · Post-migration stressors · Post-traumatic stress disorder · Refugee · Youth

Introduction

Forced migration due to conflict is increasing worldwide, resulting in people seeking refuge in other countries. The war in Syria has led to one of the largest mass migrations since the WWII with no signs of abating, and an estimated half of these are children and youth [1]. It is well documented that refugee children and youth are vulnerable to mental distress such as depression, anxiety and post-traumatic stress disorder (PTSD). This mental distress has been related to experiences of potentially traumatic events (PTEs) during war and flight, such as war action, witnessing death and violence [2, 3]. Similar results are described in studies of children and youth from Syria where the majority have experienced several PTEs [4–6]. Additionally, findings suggest that the impact of war and forced migration on mental health is compounded or alleviated by the post-migration resettlement context[1] [3]. A constellation of stressors related to resettlement in a new country, such as discrimination, uncertainties related to asylum status, poor economy, lack of social support, parental illness and acculturation, have shown both a cumulative effect and differential associations depending on type of stressor [7–9]. These stressors have shown significance above and beyond pre-migration PTEs, even more prominently so in children and youth [7,

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Published online: 13 March 2021

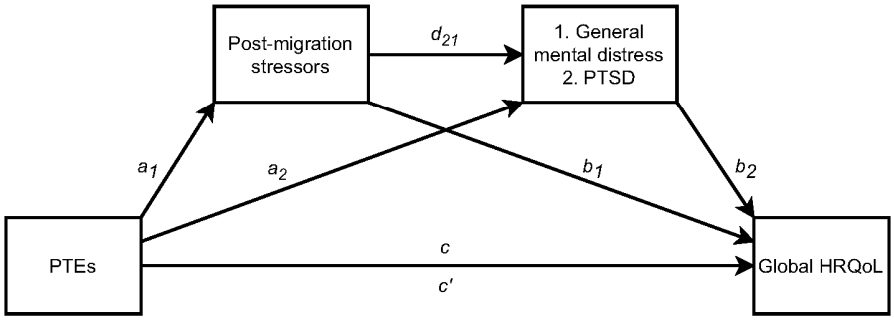

Fig. 1 Conceptual serial mediation model. Path c is the total effect of the predictor (Potentially Traumatic Events) and outcome variable (Health-Related Quality of Life) both directly and indirectly through the mediators. Paths a_1 and a_2 represent the relationship between the predictors and the mediators (Post-migration stressors and general mental distress/PTSD). Path d_{21} is the relationship between the two mediators. Paths b_1 and b_2 indicate the association between the mediators and outcome whilst the predictor value is controlled. The c' path is the direct effect between the predictor and the outcome excluding the mediator variables. The indirect effect ($c–c' = a_1b_1 + a_2b_2 + a_{121}b_2$) is indicated by a statistically significant difference between c and c'. The indirect effect would be significant with CIs not including zero ([30])

8]. Suggesting that previous research overlooked the importance of post-migration stressors, Miller and Rasmussen [10] proposed a model including both previous war exposure and current resettlement stressors to explain mental distress in refugees. This "ecological model of refugee distress" builds on social ecological models such as Bronfenbrenner [11], in which factors at multiple levels influence human development. This model has shown greater explanatory power, however, it is still important to explore the interrelated pathways of these pre- and post-migration factors to understand how and when to implement interventions [3].

Building on earlier stress theories, Miller and Rasmussen [12] argued that the chronicity of daily stressors has the potential to deplete coping mechanisms, affecting the capacity to cope with PTEs. Hence, post-migration stressors seem to have a direct effect on mental distress, as well as indirect effects by preventing recovery and[1] exacerbating symptoms from trauma [13, 14]. The hypothesis of post-migration stressors mediating, or partially explaining the effect of PTEs on mental distress in refugees, has been supported in several studies [7, 10, 15–18].

However, it is important to note that most refugees do not develop mental health problems [19], and previous research stresses the importance of assessing signs of adaptive functioning or resilience in this group [20]. Concepts suitable for capturing both positive and negative psychological adjustments in this population such as quality of life are therefore important to assess [18, 21]. Quality of life is the individuals' perceptions of many life dimensions such as their health, relationships, learning and participation [22]. Exploring outcomes relevant to a wider refugee population, not only those suffering from distress, is important within a public health perspective and for services supporting refugees. Yet, it is less investigated in refugee populations, and the results vary. For example, some studies report similar or better quality of life [18, 23, 24] for refugee youth resettled in high-income countries compared to other groups; others find slightly reduced levels [25]. A UN report of Syrian youth in Jordan found greatly reduced levels [26]. Context and measurements could be contributors to these differences, but pre- and post-migration variables are also consistently associated with quality of life [7, 27]. It might therefore be relevant to consider quality of life as an alternative outcome to mental distress, in the "ecological model of refugee distress". However, the association between mental distress and quality of life has also been repeatedly verified among youth in general [28] and in refugees [27, 29], and purely replacing quality of life as an outcome, would not account for the potential influence of mental distress on quality of life. Hence, this study aims to further explore the "ecological model of refugee distress" by including quality of life as an outcome, and mental distress as an additional mediator (see Fig. 1).

Our first hypothesis was that PTEs negatively influence quality of life, in this study measured as health-related quality of life (HRQoL), the health aspect of quality of life [22]. Our second hypothesis was that post-migration stressors, mediate the effect of PTEs on HRQoL, similar to the "ecological model of refugee distress". Thirdly, we hypothesised that two types of mental distress (general mental distress

[1] *Terms related to the period before, during and after flight or forced migration are used interchangeably in research. In this article, the terms pre- and post-migration are chosen to reflect the measures used. Pre-migration includes experiences or events prior to and during flight (Potentially Traumatic Events), whilst post-migration refers to factors after arrival or resettlement in a host country, independent of asylum status.*

and post-traumatic stress disorder (PTSD)) also mediate the effect independent of post-migration stressors. Lastly, assuming there is a relationship between them, we hypothesised that mental distress (both general mental distress and PTSD) and post-migration stressors both act as mediators in a sequence. The order of the mediators will be based on the "ecological model of refugee stress" where mental distress is affected by post-migration stressors, but also reversed as the ordering is unknown. Considering the proposed importance of post-migration stressors in previous research, we also want to explore how different post-migration stressors influence different quality-of-life dimensions.

Methods

Participants

Syrians were the largest group of forced migrants to enter Norway at the time of the study, and 5553 were registered in the age groups recruited in 2018 [25]. The inclusion criterion for age was 12–24 years, as they have the right to attend secondary and upper secondary schools. Using strategic sampling to recruit recently resettled youth, 40 schools with introductory classes for newly arrived immigrants were contacted. 23 schools located in nine different regions of Norway agreed to participate. Reasons for not participating were *no response to request* (nine schools), *no Syrian students* (six schools) or *already participating in other studies* (two schools). The participating schools had between one and 23 Syrian students attending. Three students declined to participate due to exam preparations or language difficulties. The recruitment period lasted from May to December 2018 and a total of 160 youth from Syria were included in the final study sample.

Design and setting

The present study utilised a cross-sectional, questionnaire-based design. Questionnaires were administered in both Arabic and Norwegian. The teachers distributed written information about the study in Arabic and Norwegian to the students in advance, and consent forms to parents with children under the age of 16. The youth consenting to participate completed the questionnaire whilst at school with a researcher present to answer questions.

Measures

All measures had validated Arabic language versions available and permission to use these were sought from all copyright holders. Measures for PTE and Post-migration stressors were translated from Swedish to Norwegian and reviewed to detect and remove any discrepancies in meaning. A cultural expert reviewed the questionnaire for cultural appropriateness and comprehensibility, and a pilot was conducted in a refugee learning centre.

Potentially traumatic events (PTEs)

The Refugee Trauma History Checklist was modified to fit the age of respondents and the context of recent resettlement [31]. The list consisted of 10 dichotomous items (yes/no): witnessing war, being forced to leave friends/family, someone you love disappearing, someone trying to hurt you or someone you love, having a life-threatening illness or injury, lacking food or shelter, having to hide, torture, seeing someone die and other frightening experience where you thought your life was in danger. All positive responses were added as a cumulative score (range 0–10) with higher scores indicating higher number of events experienced.

Post-migration stressors

The Post-migratory Stress scale was modified to fit the age of the respondents and the Norwegian context [32]. Ten indicators representing different types of stressors experienced since their arrival in Norway were used: perceived discrimination, language difficulties, economic strain, missing family, family cultural conflicts, feeling lonely, missing previous life, feeling unsafe, worrying about having to move or worrying about having to leave Norway. All indicators were scored on a 5-point Likert scale ranging from 0 (Never) to 4 (Very often) and were added as a cumulative score. Higher scores indicate higher frequencies of experienced stressors, range 0–40, and the Cronbach's alpha was 0.77 in this study.

General mental distress

The Hopkins Symptom Checklist (HSCL-10) consists of four items related to anxiety and six related to depression that collectively indicate general mental distress [33]. All items have four response categories ranging from 1 (Not at all) to 4 (Extremely) regarding how much the symptoms bothered the respondents in the past 7 days. The response values are added and then divided by the number of items (range 1–4), higher scores indicate greater symptom load. A cut-off score ≥ 1.85 was used as an indication of general mental distress [33]. Lower thresholds have been suggested for youth, however, the more conservative cut-off was chosen as the average age of our participants were older than the reference group in this study [34]. The HSCL-10 has previously shown satisfactory validity and reliability as a measure

of mental distress both in young and displaced populations [35]. The Cronbach's alpha in this study was 0.89.

Post-traumatic stress disorder (PTSD)

The Child Revised Impact of Events Scale (CRIES-8) is a screening tool measuring the severity of post-trauma intrusion and avoidance symptoms during the last week. Eight items are rated on a 4-point scale ranging from 0 (not at all), 1, 3 to 5 (often) and then added (range 0–40), with higher scores indicating greater symptom loads. The scale is recommended by the Children of War foundation and cross-culturally validated with good psychometric properties, with a cut-off value of ≥ 17 indicating possible PTSD [36]. The Cronbach's alpha in this study was 0.86.

Health-related quality of life (HRQoL)

HRQoL is a multidimensional construct considered to be the health aspect of quality of life that focuses on people's daily functioning and ability to experience a fulfilling life [22]. KIDSCREEN-27 is a generic self-report measure used to assess subjective HRQoL and is cross-culturally validated in 38 languages [37]. The items are rated on a scale from 1 to 5 for experiences in the last week, grouped into five dimensions: Physical wellbeing (Physical, 5 items), Psychological wellbeing (Psychological, 7 items), Autonomy and Parent relations (Autonomy/Parents, 7 items), Social support and peers (Friends, 4 items), and School environment (School, 4 items). We also used KIDSCREEN-10 as a measure of global HRQoL consisting of 10 of the 27 items from all dimensions. This was previously developed through Rasch analysis ensuring that only items which represent a global, unidimensional latent trait are included [38]. Permission was sought from the KIDSCREEN organisation, and the Arabic and Norwegian versions were downloaded from their member webpages. A scoring algorithm was used to calculate T-scores with a mean of 50 and a standard deviation of 10 with higher scores indicating higher self-rated HRQoL [38]. In this study, Cronbach's alpha was between 0.82 and 0.88 for all dimensions and 0.82 for KIDSCREEN-10.

Statistical analyses

Our conceptual model was based on previous theory and included pre-migration PTEs as the main predictor, post-migration stressors and mental distress (1. general mental distress and 2. PTSD) as potential mediators and HRQoL as the outcome (see Fig. 1).

The mediating effect was examined by a regression-based approach in the SPSS PROCESS 3.4 macro (model 6), with 5000 bootstrap samples in the procedure suggested by Hayes [30]. This serial mediation procedure enables the isolation of each mediator's indirect effect as well as the indirect effect passing through both mediators in a series. Considering that the mediators could act in reverse order to the conceptual model, this was tested in separate models. An indirect effect is assumed to be significant at an alpha level of 0.05 if its 95% confidence interval (CI) does not include zero. Gender and age were controlled for as covariates. Initially, residence time was also controlled for, but as this was not significant in the final models, it was removed to increase power of the estimates. Missing values from KIDSCREEN were replaced according to the KIDSCREEN manual using calculated estimates based on Rasch analyses [38], whilst responses missing two or less items in HSCL-10 or CRIES-8 were replaced with individual means. Responses missing more items were categorised as below cut-off values (CRIES-8 and HSCL-10) when assessing the prevalence as not to inflate frequency of cases but were not included in further analyses. A total of 19 participants opted for a shortened questionnaire due to language difficulties. This shortened questionnaire did not contain HSCL-10, CRIES-8 or post-migration stressors. General descriptive statistics, t-tests and correlation analyses were used to explore the variables.

Results

Sample characteristics.

The sample included 160 youth from Syria (37.5% female, mean age 18 years) (Table 1). All participants attended school full time and were located in either local secondary or upper secondary schools or adult learning centres. The majority were living with their parents (75%) and of the ones that were not, mostly were > 19 years of age (M_{age} = 20.1 years, range 16–24 years), lived alone and were

Table 1 Socio-demographics of the participants

Descriptives	Mean (SD)	range	N (%)
Gender			60 (37.5)
Female			100 (62.5)
Male			
Age	18.1 (2.4)	13–24	
Years as refugee	5.3 (1.9)	0–10	
Years of residence in Norway	2.0 (1.2)	0–8	
No. of moves	3.7 (2.9)	1–15	
Mother tongue			121 (76.3)
Arabic			34 (21.9)
Kurdish			3 (1.8)
Other			
Living with parents			120 (75)
Yes			35 (21.9)
No			5 (3.1)
Unknown			

mostly male (89%). The average time since they left Syria was 5.3 years, and the mean residence time in Norway was 2 years. Most had Arabic as their mother tongue (76.3%).

Descriptives and correlations between study variables

The means and correlation coefficients are presented in Table 2. The participants (n = 151) reported a mean of 4.5 PTEs (SD = 2.64), the most prevalent being *witnessing war* (68%), *feeling your life was in danger* (59%) and *seeing someone die* (55%). A total of 88% reported at least one event, and 61% four or more events. Youth older than 18 years had experienced significantly more PTEs (19–24 years: $t(151) = -3.60$, $p < 0.001$) and boys more so than girls (Boys: $t(151) = -3.43$, $p = 0.001$). Scores for post-migration stressors were an average of 13.56 (SD = 7.56), and dichotomising scores into experiencing each stressor rarely (never, rarely, sometimes) or often (often or very often) showed that participants (n = 127) reported an average of 2.2 post-migration stressors ($SD = 2.0$) they experienced often. The most common were *missing family* (33%), *economic concerns* (29%), *missing previous life* (28%) and *language problems* (26%). Least common was *feeling unsafe* (8%) and *perceived discrimination* (6%). There were no gender differences, but again the youth over 18 years reported more frequent stressors ($t(123) = -2.19$, $p = 0.031$). The mean score for general mental distress (HSCL-10) (n = 132) was 1.77 ($SD = 0.61$) and 36% had scores above the recommended threshold (≥ 1.85) considering an indication of mental distress [33]. Almost half the participants (48%) had scores above the recommended threshold for PTSD (≥ 17) [36]. The mean score for global HRQoL (44.63, $SD = 10.0$) was slightly lower than norm data (48.51 $SD = 9.28$) and 26% reported low HRQoL [38]. All the main study variables were negatively correlated to the main outcome with moderate-to-high correlation coefficients (Small = 0.1 to 0.3, medium = 0.3 to 0.5, large = 0.5 to 1). The negative correlation between PTEs and HRQoL ($r = -0.318$, $p < 0.001$) supports the first hypothesis. No correlations between the independent (PTEs) and the mediator variables (Post-migration stressors, mental distress/PTSD) exceeded the 0.80 multicollinearity threshold suggested by Field [39].

Serial multiple mediation analyses

The first analysis with post-migration stressors and general mental distress as mediators is presented in Fig. 2.

Supporting our second hypothesis of post-migration stressors as an independent mediator, we found that PTEs influence quality of life indirectly through post-migration stressors and that this indirect effect was significant

Table 2 Correlations between main study variables

Variables	1	2	3	4	5	Mean (SD)	Range
1 Global HRQoL	-					44.63 (10.0)	19–84
2 PTE	– .318***	1				4.50 (2.64)	0–10
3 Mental distress	– .572***	.299***	1			1.77 (.61)	1–4
4 PTSS	– .384***	.576***	.416***	1		17.33 (10.22)	0–38
5 Post-migration stressors	– .435***	.556***	.358***	.518***	1	13.56 (7.56)	0–40
6 Age	– .307***	.416***	.143	.149	.323***	18.06 (2.38)	13–24
7 Gender	.001	.273***	– .165	– .011	.110		
8 Residence time	– .104	.245**	.047	.064	.164	2.03 (1.20)	0–8

Global HRQoL: Global Health-related quality of life (KIDSCREEN-10). PTE: Potentially traumatic events pre-migration (Refugee Trauma History Checklist). Mental distress (HSCL-10). PTSS: Post-traumatic stress symptoms (CRIES-8). Post-migration stress (Post-Migration Stress Scale). *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$

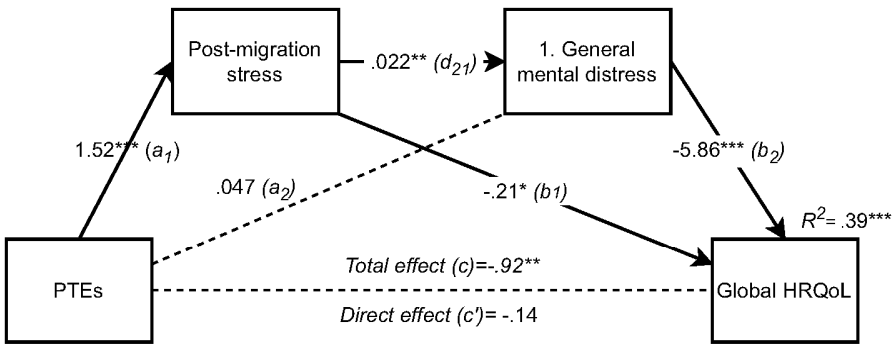

Fig. 2 Serial multiple mediation of PTEs' (Refugee trauma history checklist) relationship to Global HRQoL (KIDSCREEN-10), including post-migration stressors (Refugee post-migration stress scale) as the first mediator and general mental distress (HSCL-10) as a second mediator (n = 117). *p < 0.05. **p < 0.01. ***p < 0.001. Values shown are unstandardised coefficients

(*indirect effect* (a_1 and b_1): -0.32, 95% CI (-0.66, -0.03)). Hypothesis three was not supported, as general mental distress did not act as an independent mediator (*indirect effect* (a_2 and b_2): -0.27, 95% CI (-0.94, 0.67)). However, as the relationship between the mediators (path d_{21}) was positive and significant, there was support for a serial mediation model (hypothesis 4) (*indirect effect* (a_1 d_{21} b_2): -0.19, 95% CI (-0.42, -0.05)). The model including these variables accounted for 39% of the variance in HRQoL scores ($F(5,111) = 13.97$, $p < 0.001$, $R^2 = 0.386$).

Repeating the same analysis, but replacing general mental distress with PTSD, reiterated the support for the second hypothesis of post-migration stressors as an independent mediator *(indirect effect* (a_1 and b_1): -0.46, 95% CI (-0.89, -0.14)), see Fig. 3. Contrary to general mental distress, PTEs were significantly associated with PTSD, even after controlling for post-migration stressors (path a_2). There was also a significant association between the two mediators. In fact, PTEs and post-migration stressors contributed to 41% of the variance in PTSD ($F(5,109) = 19.15$, $p < 0.001$, $R^2 = 0.412$). However, when controlling for PTEs, there was no significant association between PTSD and quality of life (path b_2), and hypotheses 3 and 4 were therefore not supported in this model. Considering that the direction of influence is unknown, we reversed the order of the mediators in a new analysis (see Fig. 4). This reversal resulted in the confirmation of hypothesis 4 also for PTSD with a small, but significant indirect effect via serial mediation (*indirect effect* (a_1 d_{21} b_2): -0.18, 95% CI (-0.35, -0.05)). In this reversed model, PTEs are associated with increased PTSD, which in turn increases the frequency of experienced post-migration stressors, which negatively affects quality of life. The total model accounted for 25% of the variance in HRQoL scores ($F(5,108) = 7.27$, $p < 0.001$, $R^2 = 0.251$).

Types of post-migration stressors associated with different dimensions of HRQoL

Lastly, we explored the pathway between post-migration stressors and HRQoL further by analysing types of stressors and dimensions of HRQoL as well as the global HRQoL used in the mediation models (see Table 3).

Economic concerns had the highest means and showed significant correlation with almost all dimensions. The second last item, *perceived discrimination*, also had significant correlation across several outcomes despite having lower means. Two of the items with higher means (*missing family* and *my previous life*) did not affect the outcomes greatly. Global HRQoL and *psychological wellbeing* were affected by several of the same stressors, while few stressors were significant for *physical wellbeing*. *Worrying about being able to stay in Norway* was uniquely associated with the dimension for Parents/Autonomy.

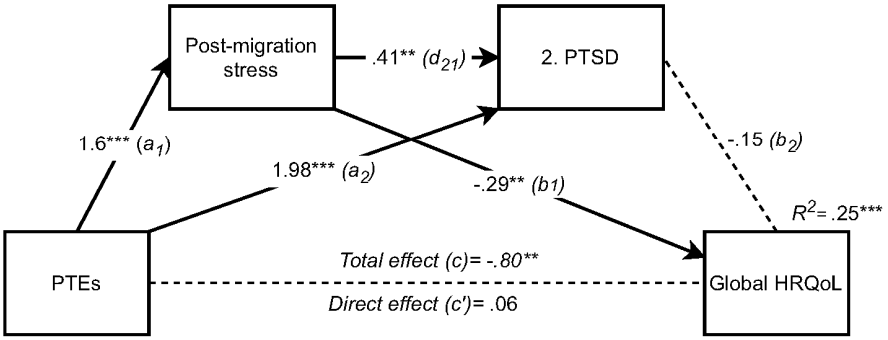

Fig. 3 Serial multiple mediation of PTEs' (refugee trauma history checklist) relationship to Global HRQoL (KIDSCREEN-10), including post-migration stressors (Refugee post-migration stress scale) as the first mediator and PTSD (CRIES-8) as a second mediator (n = 114), *p < 0.05. **p < 0.01. ***p < 0.001. Values shown are unstandardised coefficients

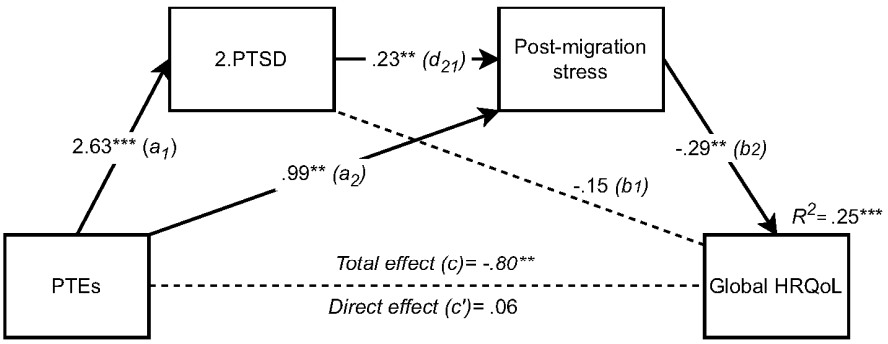

Fig. 4 Reversed serial multiple mediation of PTEs' (refugee trauma history checklist) relationship to Global HRQoL (KIDSCREEN-10), including PTSD (CRIES-8) as the first mediator and post-migration stressors (Refugee post-migration stress scale) as a second mediator (n = 114), *p < 0.05. **p < 0.01. ***p < 0.001. Values shown are unstandardised coefficients

Table 3 Correlations between post-migration stressors (organised by descending mean item scores) and dimensions of HRQoL (KIDSCREEN-27) and Global HRQoL (KIDSCREEN-10)

	Mean (SD)	Global HRQoL	Physical Wellbeing	Psychological wellbeing	Parents/ Autonomy	Friends	School
I worry about not having enough money	1.78 (1.30)	**− .436*****	− .164	**− .484*****	**− .360*****	**− .278****	**− .334*****
I find schoolwork difficult because of language problems	1.77 (1.22)	**− .246****	− .202*	**− .244****	− .209*	− .190*	**− .241****
I miss things I used to do before I came to Norway	1.70 (1.36)	− .189*	− .098	− .211*	− .102	− .049	− .134
I am sad because I miss my family	1.70 (1.66)	− .211*	− .050	− .232*	− .063	− .150	− .146
I worry about having to move again	1.53 (1.29)	**− .301*****	− .066	**− .308*****	− .104	− .154	− .175
I feel lonely or like an outsider	1.31 (1.27)	**− .277****	− .149	− .229*	− .164	− .157	− .196*
I feel split between my parents and my friends' expectations about how to behave	1.15 (1.27)	**− .271****	− .012	− .301***	− .245**	− .165	− .129
I worry about not being able to stay in Norway	1.20 (1.26)	− .210*	− .059	− .148	**− .251****	− .108	− .128
I felt badly treated because of my background	.81 (1.13)	**− .313*****	**− .272****	**− .226***	**− .246****	− .142	− .224*
I feel unsafe in my neighbourhood	.61 (1.05)	− .149	− .033	− .119	− .114	− .153	− .085
Total post-migration stressors	13.56 (7.56)	**− .457*****	− .208*	**− .434*****	**− .320*****	− .243**	**− .295*****

Spearman's Rho is used due to skewness and ordinal data. *p < 0.05. **p < 0.01. ***p < 0.001

Significance after Bonferroni–Holmes correction is shown in bold

Discussion

Predictors, mediators and outcome levels

The aim of this study was to explore how experiences from war and forced migration influence quality of life after recent resettlement. Based on the "Ecological model of refugee distress", we explored models including both post-migrations stressors and mental distress as mediators. We found that PTEs reduced quality of life and that this was mediated by post-migration stressors alone or in sequence with mental distress, but not by mental distress alone. The participants had high levels of reported PTEs (61%), general mental distress (36%) and PTSD (48%), akin to other studies of resettled Syrian children and adolescents [4, 5, 40–42]. The HRQoL was moderately good but lower than population norms [38]. The level of post-migration stressors was slightly lower compared to Syrian adults [43] or other resettlement contexts such as refugee camps [16], low-income host countries [15] and among asylum seekers [17, 44].

Serial mediation analyses

Our analyses suggest that negative experiences from forced migration reduce quality of life after resettlement, as proposed in our first hypothesis. As proposed in the "Ecological model of refugee distress", post-migration stressors independently and fully mediated the relationship between PTEs and HRQoL, supporting its relevance and as a mediator also for HRQoL. This reflects earlier findings of post-migration stressors as a mediator to mental distress [7, 10, 15–18] but is contrary to the results of a recent meta-analysis that found no mediating effect of post-migration stressors on wellbeing indicators [7]. This could be due to only a handful of studies being relevant and the use of different measures in a variety of contexts, but is also an indication of the need to replicate our results in larger studies. Although numerous studies have found that mental distress predict quality of life [27, 28], few have investigated this as a mediator between trauma and quality of life as we proposed in our third hypothesis. One study of adult Ethiopians in refugee camps found that trauma from displacement had both a direct effect upon HRQoL and an indirect effect through mental distress [29]. However, in our study mental distress did not act as an independent mediator, and hypothesis three was not supported. The different results could be due to differences in age, contexts

and levels of distress. Conversely, we found that mental distress acted as a mediator in conjunction with post-migration stressors, supporting our fourth hypothesis, and reaffirming the importance of including both factors when assessing HRQoL in refugees.

Longitudinal studies on refugee youth suggest differential impact of pre- and post-migration factors throughout the resettlement process, as traumatic experiences before arrival predict short-term reactions and stressors in exile better predict psychological problems a decade after arrival [45]. In the present study, the impact of pre- and post-factors also varied with type of mental distress, as post-migration stressors seemed to be more relevant for general mental distress and explained more variance in HRQoL, whilst PTEs seemed to have more relevance for PTSD and explained less of the variance. These differences have also been found in other studies [46] and suggest that discussions on pre- and post-migration influence should not be an either/or debate, but relate to their differential impact throughout the settlement process. Type of mental distress is also pertinent to consider in addition to levels above thresholds, as there was no significant association between PTSD and HRQoL after controlling for earlier experiences (PTEs), despite almost half of the participants scoring above the thresholds.

A cumulative effect of post-migration stressors was supported by our analyses, but further exploration also revealed differences between types of stressors and dimensions of HRQoL. Global HRQoL and the dimension of psychological wellbeing were most affected by post-migration stressors and physical wellbeing the least, suggesting that other factors (e.g. somatic symptoms) could be relevant for the latter. Some stressors were relevant across several dimensions, notably *economic concerns* and *perceived discrimination*, which are repeatedly found as detrimental to health and wellbeing [3, 7, 47]. In contrast, two of the most commonly reported experiences (*missing family or previous life*) had low correlation, possibly indicating less severe emotional distress [17]. These results reflect the "ecological model of refugee distress" where factors at multiple levels influence health and wellbeing. They also inspire hope as the most influential stressors are malleable factors. However, it also highlights the responsibility of host nations for protecting against or alleviating unnecessary pressure on an already vulnerable population as the most influential types of stressors seem to be embedded in social structures.

As mentioned earlier, Miller and Rasmussen [12] suggested that post-migration stressors could deplete coping mechanisms, affecting the capacity to recover from trauma. Other theories, such as the "Stress sensitivity theory" propose that past trauma activates an overreaction to ongoing demands thus decreasing the tolerance for stressors perceived as manageable by others [48]. These could be explanations as to why increasing numbers of PTEs were associated with higher frequencies of post-migration stressors in our study. Emotion dysregulation has been found to mediate mental distress in refugees [4, 49]. Also, psychological processes such as emotion regulation, memory and executive functions are susceptible to the influence of trauma or elevated stress during development with long-lasting effects, as this in turn affects the capacity to regulate future stress responses [50]. The proposed model might also be reversed in a "Stress generation model" [51], as tested in Fig. 4. Mental distress would then make people behave and react in ways that create more stressful situations, for example, by avoiding social interaction or making impulsive financial choices. The general burden of mental distress could also act as a worry or stressor in itself and is in fact included in some post-migration stressor scales [52]. The interaction between distress and stressors suggests a bidirectional relationship where both processes occur, also shown in other studies [53, 54], creating a more complex and transactional model [51]. These proposed processes could inform current treatments for mental distress or general psychosocial interventions in schools. For example, the models could help explain why some experience reduced symptom burden after treatment for PTSD but not increased quality of life, and vice versa. Implications for a therapeutic approach would be the importance of addressing currents stressors, not only symptoms, as failure to do so may limit the effectiveness of treatment [10] and also to include holistic treatment goals such as quality of life. Lastly, broader and structural interventions, including all refugee youth, may alleviate or prevent post-migration stressors and mental distress and should be implemented by host nations.

Although psychological problems are frequent in refugee children, the extents are reduced over time in settlement [13, 45] and wellbeing remains high [23]. This could be a sign of natural recovery processes or resilience, where youth develop new resources such as cultural competence, language skills or networks. Resettlement can therefore be stressful, but also involve personal growth and resilience [55], and as such it supports Antonovsky's criticism of early stress theories for assuming that stressors were inherently negative and the importance of focussing on health resources [56]. Social support and positive coping styles are suggested as protective factors buffering mental distress in refugee children and youth [3, 4] and are also associated with increased quality of life [18, 27]. Our models did not investigate any protective factors, and further studies should include such measures.

Limitations

Limitations of this study relate to its cross-sectional nature and the interlinked nature of variables under analysis, which prevents any assertion of causality and direction. Although the dose–response association between the number of PTEs and mental distress is well documented in the literature, an additional limitation of this analysis was the equal weighting of such events. Similar events might incur different reactions in individuals and, depending upon the type of event, one event might be enough to qualify as the highest trauma. Also, the measure for post-migration stressors was not validated for this sample and therefore some items might not be appropriate for the group. Despite evidence of resilience factors' significance, these models did not include protective factors which future studies should include. A non-probabilistic sample of recently resettled youth with few participants does not reflect the true prevalence of mental distress, although the levels were similar to other studies. Even though the sample used in our data was comparable to Syrians registered in Norway at the time, the generalisability of our findings to other countries or other groups of immigrant youth remains a question to be investigated in further research.

Conclusion

Building on previous knowledge, our models propose that experiences from forced migration influence quality of life negatively through increasing mental distress and post-migration stressors. Despite high levels of mental distress, these symptoms did not affect HRQoL directly, but only through an increase in post-migration stressors. There were differences between the two types of mental distress analysed and their relationship between the variables. Post-migration stressors mediated the influence of PTEs on HRQoL, independently and in serial mediation with mental distress. This reiterates the importance of addressing current stressors, which must be a focus of host nation policies. This would also reframe attention from individual capabilities often targeted in interventions to more structural factors in the resettlement environments, as the most influential types of post-migration stressors seem to be embedded in social structures. HRQoL is a relevant measure for refugee youth in public health surveillance and as an outcome of interventions, and this study adds to the knowledge of psychological processes important for wellbeing in refugee youth. However, future research should include protective and resilience factors to further our understanding on how to promote positive development and quality of life in refugee youth after resettlement.

Acknowledgements The authors would like to thank all schools for allowing access, and participants for their contribution to the study. Furthermore, we would like to thank our colleagues Anne Kjersti Stelfenak Myhrene and Sevald Høye for their contributions to study conception, design and analysis.

Author contributions All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Cecilie Dangmann. The first draft of the manuscript was written by Cecilie Dangmann and all authors commented on the previous versions of the manuscript. All authors read and approved the final manuscript.

Funding Open access funding provided by Inland Norway University Of Applied Sciences.. Inland Norway University of Applied Sciences.

Data Availability Not applicable.

Code availability Not applicable.

Declaration

Conflict of interest The authors declare that they have no conflicts of interest or financial disclosures.

Ethical approval All procedures performed in studies involving human participants were in accordance with ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was reviewed and approved by the Regional Research Ethics Committee of Norway East (Reference number 2018/192).

Informed Consent to participate Written informed consent was obtained from all individual participants included in the study.

Consent for publication Not applicable.

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3

frontiers in Public Health

ORIGINAL RESEARCH
published: 23 September 2021
doi: 10.3389/fpubh.2021.711451

Syrian Refugee Youth Resettled in Norway: Mechanisms of Resilience Influencing Health-Related Quality of Life and Mental Distress

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Background: The importance of resilience factors in the positive adaptation of refugee youth is widely recognised. However, their actual mechanism of impact remains under-researched. The aim of this study was therefore to explore protective and promotive resilience mechanisms to inform future interventions and policy. Promotive resilience is seen as a direct main effect and protective resilience as a moderating effect.

Methods: This was a cross-sectional study of Syrian youth recently resettled in Norway, aged 13–24 years. Regression and moderation analyses were used to explore different interactions, including moderated mediation using the PROCESS macro for SPSS.

Result: A direct main effect of promotive resilience was found for health-related quality of life (HRQoL) and general mental distress, but not for post-traumatic stress disorder (PTSD). No moderating effects of protective resilience were found. Post-migration stressors mediated the effects of potentially traumatic events (PTE) from war and flight, and this indirect effect was present at all levels of resilience.

Conclusion: Despite high risk exposure and mental distress, resilience was also high. Broad resilience interventions targeting multiple factors would likely benefit the group, but these should include both individual assets and building supportive environments. Additionally, reducing current stress and providing treatment for those in need could enable recovery and increase the efficacy of resilience factors already present.

Keywords: health-related quality of life, mental distress, post-migration stressors, post-traumatic stress disorder, refugee, resilience, Syria, youth

OPEN ACCESS

Edited by:
Hanna Kienzler, King's College London, United Kingdom

Reviewed by:
Ram P. Sapkota, McGill University, Canada
Eva Heim, University of Lausanne, Switzerland

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Specialty section:
This article was submitted to Public Mental Health, a section of the journal Frontiers in Public Health

Received: *18 May 2021*
Accepted: *26 August 2021*
Published: *23 September 2021*

Citation:
Dangmann C, Solberg Ø, Myhrene Steffenak AK, Høye S and Andersen PN (2021) Syrian Refugee Youth Resettled in Norway: Mechanisms of Resilience Influencing Health-Related Quality of Life and Mental Distress. Front. Public Health 9:711451. doi: 10.3389/fpubh.2021.711451

INTRODUCTION

The refugee experience of war, violence, and forced migration is associated with negative impacts on the mental health of children and youth, lasting well into their resettlement (1, 2). Whilst it is important to understand and address refugees' mental health problems, their capacity for resilience must be respected (3). Despite the potentially traumatic events (PTEs) caused by warfare, studies suggest that resilience is the norm. Findings indicate that the majority of refugees retain or

achieve positive health and well-being during the resettlement process (4–6). Resilience factors—such as social support or access to services—are generally associated with better mental health in displaced populations (7, 8). However, the underlying mechanisms remain under-researched; as such, resilience processes central to mental health in refugee youth may be overlooked (9, 10). This knowledge is important for protecting and promoting the individual and environmental resources necessary for positive adaptation.

The framework of resilience can be used to answer the question of why some children and youth adapt whilst others develop problems in response to stress and trauma. Several conceptions of resilience exist, but in this study we refer to the socio-ecological and cross-culturally relevant definition of resilience proposed by Ungar: "In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their wellbeing, and their capacity individually and collectively to negotiate for these resources to be provided in culturally meaningful ways" (11).

Socio-ecological explanations define resilience as a process that is co-facilitated by individuals and their physical and social ecologies: this contrasts an exclusive focus on individual factors (12). Supporting this, reviews of resilience in refugee children and youth reveal a plethora of interlinked factors on several levels. At an individual level, self-regulation, coping mechanisms, and self-efficacy have shown protective effects (13, 14). Family and parental factors are of utmost importance for refugee children and youth; these emphasise how the family may function as a key emotional regulator, buffering, or exacerbating the impact of earlier PTEs from war and flight (10, 15–17). Family cohesion, perceived parental support, and parental mental health—particularly in mothers—are associated with fewer psychological difficulties in children (7). Friends and the subjective experience of peer relationships are also integral to healthy psychological development in children and youth (7, 17, 18). Friendships may prevent social isolation and loneliness and infer a sense of belonging, especially in school (19). Perceptions of acceptance and belonging within schools and wider communities are linked to self-esteem, identity development, and acculturational processes (6, 10). It is also suggested that cultural identity and specific competencies—such as language skills—play an important role for well-being in resettlement (4, 16).

However, the above resilience factors and processes are often investigated separately and scattered throughout several contexts, despite the acknowledgement of complex interactions (9). Evidence supports a multiple factor model where the total constellation of resilience factors promotes better functioning after adversity, not one specific driving factor (7, 10, 17, 20). A composite measure was therefore included in this study. The Child and Youth Resilience Measure (CYRM) is cross-culturally developed (21) and includes resilience factors also identified as important for refugee children and youth (22).

Although several resilience factors are known, *how* they influence mental health is less explored. Resilience mechanisms are the theoretical and operational process by which the outcome is thought to be achieved (23). Two of the more influential models are *promotive* and *protective resilience* models (24–27). *Promotive resilience* models are also termed "compensatory" or "additive," suggesting that positive resilience factors compensate for the presence of negative risk. The mechanism is manifest when a resilience factor has a direct influence on the outcome (i.e., a main effect in the analysis) and does not interact with a risk factor in predicting the outcome. Thus, the factor influences all participants in the same manner, both those exposed and not exposed to the risk. On the other hand, a *protective resilience* model proposes that factors buffer the influence of risk, identified when the resilience factor interacts with the risk factor to predict the outcome. Thus, the protective resilience factor is especially influential when risk is present. A protective effect would imply that for someone with low resilience, experiencing trauma or stress would lead to a steep increase in mental distress. By contrast, experiencing similar trauma or stress for someone with high resilience would lead to a much smaller increase in mental distress—or no increase at all.

When exploring resilience, it is also important to consider the relevant outcomes and risk exposure (28). Mental distress, such as post-traumatic stress disorder (PTSD), anxiety, and depression, are frequently used as outcomes in refugee studies (1, 7). However, seeing mental health as more than the absence of mental distress requires broader and multidimensional outcomes, and these are under-researched in this population (29). Three outcomes were therefore examined in this study: (1) general mental distress (symptoms of depression and anxiety), (2) PTSD (symptoms of intrusion and avoidance), and global health-related quality of life (HRQoL) (a quality of life index related to multiple dimensions of health and well-being). It is suggested that, since quality of life and mental distress are different concepts and not opposite ends of a scale, different resilience mechanisms may be relevant in reducing mental distress or increasing quality of life (10); as such, all outcomes were analysed separately.

With regards to relevant risk exposure for refugee children and youth, experiences from war and flight—such as violence, seeing someone die, or fearing for one's life—are commonly reported among refugee children, including Syrian youth (30). These PTEs are repeatedly associated with negative outcomes, such as increased mental distress (7, 8) and reduced quality of life (29, 31). In addition, studies suggest that risk factors after settlement—*post-migration stressors*—may impact health and wellbeing above and beyond those of PTEs, even more prominently so in children and youth (32, 33). Stressors such as uncertain legal status, language difficulties, economic concerns, and discrimination are shown to directly increase mental distress in refugees, including Syrian youth (30).

In their *ecological model of refugee distress*, Miller and Rasmussen proposed a mediational effect where PTEs increase the amount of experienced post-migrations stressor (34). Later studies have found empirical support for this model (33, 35–37). One proposed mechanism is that trauma sensitises a person to future adversity, triggering an overreaction to ongoing demands (5, 38). To our knowledge, few have explored if this indirect effect of post-migration stressors is affected by resilience.

The aim of this study was to analyse the main and moderating effect of resilience on mental distress and quality of life outcomes, related to risk factors from both pre- and post-settlement. Firstly, we hypothesised that resilience has a direct main effect on all the outcomes, suggesting *promotive resilience*. Secondly, we hypothesised that resilience buffers the negative effects of all risk factors on all outcomes, suggesting *protective resilience*. Our third hypothesis was two-fold: (1) that post-migration stressors mediate the association between PTEs and all outcomes; and (2) that resilience moderates the relationship between pre-and post-migration risks and the potential mediation (see **Figure 1**).

MATERIALS AND METHODS

Design and Setting

This study forms part of a larger research project "Good starts—mental health and resilience in Syrian refugee youth" with two previously published articles including the same study sample (31, 37). The present study utilised a cross-sectional, questionnaire-based design. Questionnaires were administered in both Arabic and Norwegian. The teachers distributed written information about the study in Arabic and Norwegian to the students in advance and consent forms to parents with children under the age of 16. The youth consenting to participate completed the questionnaire whilst at school, with a researcher present to answer questions.

Participants

The inclusion criterion for age was 12–24 years, as refugees in Norway have the right to attend secondary and upper secondary schools. Using strategic sampling to recruit recently resettled youth, 40 schools with introductory classes for newly arrived immigrants were contacted. Twenty-three schools located in nine different regions of Norway agreed to participate. Reasons for not participating were *no response to request* (nine schools), *no Syrian students* (six schools), or *already participating in other studies* (two schools). The participating schools had between 1 and 23 Syrian students in attendance. Three students declined to participate due to exam preparations or language difficulties. The recruitment period lasted from May to December 2018, and a total of 160 youth from Syria were included in the final sample. For further details concerning methods and materials, see also (31, 37).

Measures

All measures had validated Arabic language versions available, and permission to use these were sought from all copyright holders. Measures for PTE and post-migration stressors were translated from Swedish to Norwegian and reviewed to detect and remove any discrepancies in meaning. A cultural expert reviewed the questionnaire for cultural appropriateness and comprehensibility, and a pilot study was conducted in a refugee learning centre.

Potentially Traumatic Events

The Refugee Trauma History Checklist was developed for self-report data on refugee trauma history in community samples, considering intrusiveness, and relevance of the included events (39). Adjustments to fit local context and group are advised, the measure was therefore modified to fit the age of respondents and the context of recent resettlement e.g., by reducing the number of items in the scale. The list consisted of 10 dichotomous (yes/no) items: witnessing war; being forced to leave friends/family; having someone you love disappear; experiencing someone trying to hurt you or someone you love; having a life-threatening illness or injury; lacking food or shelter; having to hide; being tortured; seeing someone die; or feeling as though your life was in danger. All positive responses were added as a cumulative score (range 0–10), with higher scores indicating a higher number of experienced events.

Post-migration Stressors

Post-Migration Stress Scale (RPMS) is an instrument for assessing post-migration stressors, validated in Syrian refugees in Sweden (40). This was modified to fit the age of the respondents and the Norwegian context, e.g., by reducing the number of items and rewording to fit a Norwegian context. Ten indicators were used, representing different types of stressors experienced since the respondents arrival in Norway: perceived discrimination, language difficulties, economic strain, missing family, family cultural conflicts, feeling lonely, missing their previous life, feeling unsafe, worrying about having to move, or worrying about having to leave Norway. All indicators were scored on a five-point Likert scale, ranging from 0 (never) to 4 (very often) and were added as a cumulative score. Higher scores indicate higher frequencies of experienced stressors (range 0–40), and the Cronbach's alpha was 0.77 in this study.

General Mental Distress

The Hopkins Symptom Checklist (HSCL-10) consists of four items related to anxiety and six related to depression that collectively indicate general mental distress (41). All items have four response categories ranging from 1 (not at all) to 4 (extremely), regarding how much the symptoms bothered the respondents over the past 7 days. The response values are added together and then divided by the number of items (range 1–4): higher scores indicate greater symptom load. A cut-off score of $\geq$1.85 was used as an indication of general mental distress (41). The HSCL-10 has previously shown satisfactory validity and reliability as a measure of mental distress in both young and displaced populations (42). The Cronbach's alpha in this study was 0.89.

Post-traumatic Stress Disorder

The Child Revised Impact of Events Scale (CRIES-8) is a screening tool measuring the severity of post-trauma intrusion and avoidance symptoms over the past week. Eight items are rated on a four-point scale ranging from 0 (not at all), 1, 3–5 (often); they are then added together (range 0–40), with higher scores indicating greater symptom loads. The scale is recommended by the Children of War Foundation and has been cross-culturally validated with good psychometric properties, with a cut-off value of $\geq$17 indicating possible PTSD (43). The Cronbach's alpha in this study was 0.86.

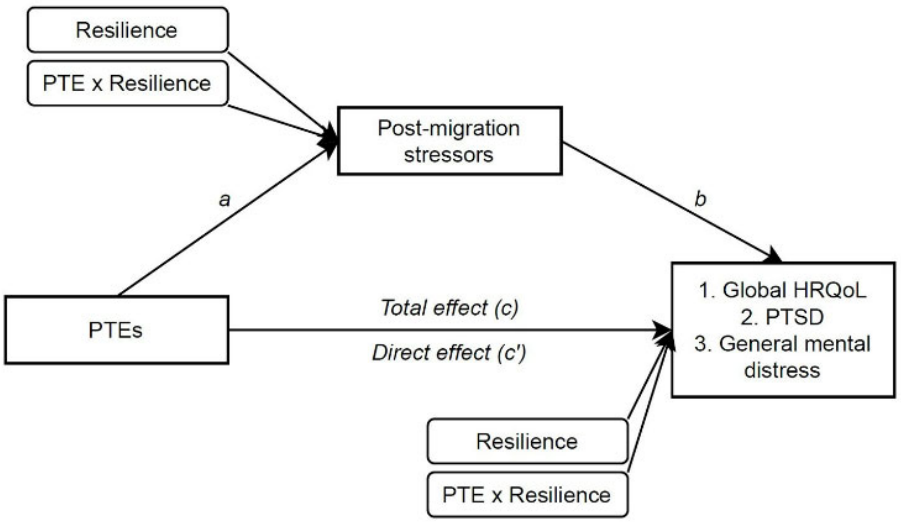

FIGURE 1 | Conceptual model of moderated mediation analyses, SPSS PROCESS model 8. Paths *a* represent the relationship between the predictor and the mediator, and path *b* between mediator and outcome whilst the predictor value is controlled. The *c'* path is the direct effect between the predictor and the outcome excluding the mediator variables. The indirect effect is indicated by a statistically significant difference between *c* and *c'*. The indirect effect would be significant if CIs do not include zero. "Resilience" indicates the direct main effect (promotive resilience), and "PTE × Resilience" indicates the interaction term (protective resilience).

Global Health-Related Quality of Life

Health-Related Quality of Life is a multidimensional construct considered to represent the health aspect of quality of life, focusing on people's daily functioning and ability to experience a fulfilling life (44). KIDSCREEN-10 is a self-report measure of global HRQoL developed through Rasch analysis, ensuring that only items that represent a global, unidimensional latent trait are included (45). It has been cross-culturally validated in 38 languages and includes elements from physical and psychological well-being, relationships, autonomy, and school environment. The items are rated on a scale from 1 to 5 for experiences in the past week; a scoring algorithm was used to calculate T-scores with a mean of 50 and a standard deviation of 10, with higher scores indicating higher self-rated HRQoL (45). Permission was obtained from the KIDSCREEN organisation, and the Arabic and Norwegian versions were downloaded from their member web pages. The Cronbach's alpha in this study was 0.82.

Resilience

The CYRM is based on a socio-ecological framework and assesses resilience factors within individual, relational, and contextual dimensions. It was cross-culturally developed and validated through the gathering of data from youth in 11 western and non-western countries (21, 46). The CYRM-12 is a brief measure derived from the original 28 items and including items from all dimensions (47). The items are rated on a scale from 1 to 5 (range 12–60) regarding experiences in the last week, where higher scores indicate higher resilience. The Arabic version of this measure was translated and validated for Syrian refugee youth resettled in Jordan (22). The measure was then reviewed by Syrian youth living in Norway and teachers in introductory classes before it was piloted. The Cronbach's alpha in this study was 0.79.

Statistical Analyses

General descriptive statistics, *t*-tests, and correlation analyses were used to explore the variables. In multiple regressions, the variables were entered sequentially in multiple regressions to examine the main effect of resilience after controlling for risk and interaction effects (hypothesis 1). Interaction effects between both risks and resilience was also evaluated in the same regression (hypothesis 2). Mediation, and any moderating effect on this mediation (hypothesis 3) were analysed in in a regression- based approach using 5,000 bootstrap samples in the SPSS PROCESS 3.4 macro (models 4 and 8), in a procedure suggested by Hayes (48). The models assess possible mediation or indirect effects, the moderation of the relationship between the predictor and mediator (*a*), the residual direct effect (c'), and the total indirect effect (*ab*) (see **Figure 1**). An indirect or moderation effect is assumed to be significant at an alpha level of 0.05 if its 95% confidence interval (CI) does not include zero. Gender and age were controlled for as covariates, when relevant. To further explore the multidimensional aspect of resilience, a *post-hoc* correlational analysis of each resilience factor was done. Missing analyses for all measures showed that all items were missing at random. Any participant with two or more missing items from the measures were excluded from analyses, including 19 participants who opted for a shortened questionnaire due to language difficulties, which did not contain HSCL-10, CRIES-8, or post-migration stressors. Remaining missing items (<2%) were replaced by methods advised in separate instrument manuals, such as the KIDSCREEN handbook (45). Central assumptions of linearity, homoscedasticity, normality,

TABLE 1 | Sociodemographics of the participants ($n = 160$).

Descriptives	Mean (SD)	Range	*n* (%)
Gender			
Female			60 (37.5)
Male			100 (62.5)
Age	18.1 (2.4)	13–24	
Years as refugee	5.3 (1.9)	0–10	
Years of residence in Norway	2.0 (1.2)	0–8	
No. of moves past 5 years	3.7 (2.9)	1–15	
Mother tongue			
Arabic			121 (76.3)
Kurdish			34 (21.9)
Other			3 (1.8)
Living with parents			
Yes			120 (75)
No			35 (21.9)
Unknown			5 (3.1)

and multicollinearity were tested and no violations of these assumptions were detected (49). Also, no significant bias due to imputed values was observed.

RESULTS

Sample Characteristics

The sample included 160 youth from Syria (37.5% female, mean age 18 years) (**Table 1**). All participants attended school full-time in either local secondary or upper secondary schools or adult learning centres. The average time since they left Syria was 5.3 years, and their mean time in Norway was 2 years. Most had Arabic as their mother tongue (76.3%). The majority were living with their parents (75%); of those who were not, most were >19 years of age ($M_{age} = 20.1$ years, range 16–24 years), lived alone and were male (89%).

Descriptives and Correlations Between Study Variables

The means and correlation coefficients are presented in **Table 2**. The participants ($n = 145$) reported a mean of 4.6 PTEs ($SD = 2.61$), the most prevalent being *witnessing war* (68%), *feeling your life was in danger* (59%), and *seeing someone die* (55%). A total of 88% reported at least one event, and 61% four or more events. Youth older than 18 years had experienced significantly more PTEs [19–24 years: $t_{(145)} = -3.36$, $p = 0.001$] and boys more so than girls [Boys: $t_{(145)} = -3.38$, $p = 0.001$]. Scores for post-migration stressors were an average of 13.48 ($SD = 7.54$) with no gender differences, but again the youth over 18 years reported more frequent stressors [$t_{(122)} = -2.35$, $p = 0.020$]. The mean score for general mental distress (HSCL-10) ($n = 127$) was 1.77 ($SD = 0.61$), and 36% had scores above the recommended threshold (≥1.85) considered an indication of mental distress (35). Almost half the participants (48%) had scores above the recommended threshold for PTSD (≥17) (37). The mean score for global HRQoL (44.52, $SD = 10.05$) was lower than norm data (48.51, $SD = 9.28$) and 26% reported low HRQoL (39). The resilience mean score was 47.11 ($SD = 8.10$), and 49% had scores above the median (47.0). Although age and resilience were correlated, there was no significant difference in resilience between age groups (13–18 vs. 19–24 years).

Resilience was positively correlated with HRQoL and negatively correlated with general mental distress and PTSD, whilst risk factors (PTEs and post-migration stressors) were negatively correlated with HRQoL and positively correlated with PTSD and general mental distress. No correlations between the predictors exceeded the 0.80 multicollinearity threshold suggested by Field (50).

Promotive and Protective Resilience Mechanisms

Variables were entered sequentially in multiple regressions for the three separate outcomes: HRQoL, PTSD, and general mental distress. Age and gender were entered first as covariates, and the risk factors (PTEs and post-migration stressors) second. Resilience was entered separately in the third model to assess its individual contribution to each outcome (main effect or *promotive resilience*). The interaction term between risk factors and resilience were entered last, to assess possible moderation as suggested in hypothesis 2 (*protective resilience*) (see **Table 3**).

Of the two risk factors, only post-migration stressors had a significant main effect on HRQoL, contributing to 12.4% of the variance [R^2 change = 0.12, F change$_{(2,115)} = 9.33$, $p < 0.001$]. However, resilience contributed to almost double that amount individually [R^2 change = 0.22, F change$_{(1,114)} = 44.77$, $p < 0.001$]. The interaction terms were not significant. The final model was significant and explained 46% of the total variance in HRQoL [*Adjusted* $R^2 = 0.42$, $F_{(7,112)} = 13.52$, $p < 0.001$]. For PTSD as an outcome, PTE and post-migrations stressors were the only significant contributors explaining 38% of the variance [R^2 change = 0.38, F change$_{(2,110)} = 35.44$, $p < 0.001$]. The final model explained about 41% of the variance in PTSD symptoms [*Adjusted* $R^2 = 0.37$, $F_{(7,107)} = 10.52$, $p < 0.001$]. Lastly, for general mental distress as an outcome, only post-migration stressors contributed significantly to model 2, and risk factors explained 13% of the variance [R^2 change = 0.13, F change$_{(2,112)} = 9.11$, $p < 0.001$]. Introducing resilience in model 3 significantly increased the explained variance with another 13% [R^2 change = 0.13, F change$_{(1,111)} = 20.74$, $p < 0.001$]. The interaction terms were not significant, and the final model explained a total of 32% of the variance in mental distress [*Adjusted* $R^2 = 0.28$, $F_{(7,109)} = 7.40$, $p < 0.001$].

To explore the last hypothesis, PTE and post-migrations stressors were analysed in mediational analyses for each outcome (PROCESS model 4). Moderation effects of resilience (protective resilience) were entered on paths *a* and *c'* *(PROCESS model 8)* (see **Figure 1**). Considering the results of the final regression models, only age was included as a covariate in the model for HRQoL and gender for general mental distress, to maintain the highest possible power of the estimates. The results for HRQoL as the outcome are presented in **Figure 2**.

TABLE 2 | Correlations between main study variables.

	Mean (SD)	Min–max	1	2	3	4	5	6
1. Global HRQoL	44.52 (10.05)	18.5–83.8	–					
2. PTSD	17.20 (10.17)	0–38	**−0.34*****	–				
3. General mental distress	1.77 (0.61)	1–3.8	**−0.60*****	**0.39*****	–			
4. PTEs	4.56 (2.61)	0–10	**−0.30*****	**0.55*****	**0.27****	–		
5. Post–migration stressors	13.48 (7.54)	0–33	**−0.45*****	**0.48*****	**0.33*****	**0.55*****	–	
6. Resilience	47.11 (8.10)	20–60	**0.61*****	−0.23*	**−0.45*****	**−0.20***	**−0.27****	–
7. Age	18.12 (2.41)	13–24	**−0.32*****	0.11	0.14	**0.38*****	**0.27****	**−0.23****
8. Gender			0.02	0.004	−0.13	**0.29*****	0.15	−0.09

Outcomes: HRQoL, health-related quality of life (KIDSCREEN-10); PTSD, post-traumatic stress disorder (CRIES-8); general mental distress (HSCL-10); Risks: PTE, potentially traumatic events; RTHC, post-migration stressors (RPMSS); Resilience (CYRM-12). Covariates: Age (continuous) and gender (female = 0). Spearman's rho was used in analyses due to skewness in some variables. Significant values after Bonferroni–Holmes correction are shown in bold.
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$ (two tailed).

The mediation analysis supported our third hypothesis (**Figure 2A**), showing that PTEs influenced quality of life indirectly through post-migration stressors, and that this indirect effect was significant [*indirect effect* (*a* and *b*): −0.50, 95% CI (−0.86, −0.23)]. The model accounted for 23% of the variance in HRQoL scores [$F_{(3,116)} = 11.27$, $p < 0.001$, $R^2 = 0.226$], where age contributed to about half of this variance (see also **Table 2**). Adding resilience as a moderator (**Figure 2B**) did not result in significant interaction in the first stage of the model (*a*): resilience therefore did not moderate PTEs' influence on the amount of experienced post-migration stressors, nor contribute significantly to the amount of post-migration stressors. The residual direct effect between PTEs and HRQoL (c') was not moderated by resilience, however resilience scores contributed directly to the variance in HRQoL [total model: $F_{(5,114)} = 18.30$, $p < 0.001$, $R^2 = 0.445$]. Lastly, the indirect effect of PTEs through an increase in post-migration stressors was significant at all levels of resilience (see **Table 4**), indicating no moderation of the indirect effect.

Repeating the same analyses for PTSD as an outcome showed that post-migration stressors mediated the effect of PTEs on PTSD, and that this was significant despite the direct effect (c') also remaining significant [*indirect effect* (*a* and *b*): 0.63, 95% CI (0.23, 1.1); **Figure 3A**]. Adding resilience as a moderator (**Figure 3B**) did not result in significant changes.

Lastly, the same analysis was conducted for general mental distress and, as shown in **Figure 4A**, the same mediating effect of post-migration stressors was found [*indirect effect* (*a* and *b*): 0.04, 95% CI (0.01, 0.07)]. The model accounted for 18% of the variance in distress scores [$F_{(3,113)} = 8.36$, $p < 0.001$, $R^2 = 0.182$], where gender contributed to about 5% of this variance (see **Table 3**). Adding resilience as a moderator (**Figure 4B**) did not result in significant interaction in the first stage of the model (*a*), nor the residual direct effect (c'); however, resilience directly contributed to the variance in general mental distress [total model: $F_{(5,111)} = 10.47$, $p < 0.001$, $R^2 = 0.321$]. Lastly, the indirect effect of PTEs was significant at all levels of resilience, and therefore resilience did not moderate the indirect effect. To summarise, the indirect effect of post-migration stressors was significant for all three outcomes, and this indirect effect was the same strength for all levels of resilience. Hence the index of moderated mediation was not significant (see **Table 4**).

A *post-hoc* correlational analysis with all resilience factors from the CYRM-12 scale was done to explore multidimensional aspects resilience, assessing differential impact by type of resilience factors, and not purely additive effects. As can be seen in **Table 5**, almost all items were positively correlated with HRQoL, and general mental distress showed very similar patterns but with negative correlations of somewhat lower values. Only four items were significant for PTSD.

DISCUSSION

Previous articles from the "Good Start" project (31, 37), have established the importance of direct and indirect pre- and post-migration risk factors on quality of life. This study adds to this knowledge by exploring the role of resilience factors, specifically promotive and protective mechanisms of influence. This also includes exploring outcomes separately, to distinguish between "positive" and "negative" pathways.

In this study, HRQoL was moderately good but lower than population norms (31, 45), similar to findings in other studies with refugees (51). Levels of general mental distress (36%) and PTSD (48%) were high, reflective of studies with Syrian youth resettled in neighbouring countries such as Jordan and Turkey (52, 53). However, Syrian youth in Sweden had much lower levels (34%) (54), suggesting a possible overestimation in this study. The participants reported high amounts of adverse experiences from war and flight akin to other studies of resettled Syrian children and youth (30, 52). The level of post-migration stressors was slightly lower compared both to Syrian adults (55) and other resettlement contexts, such as refugee camps and reception centres (36, 56). Nevertheless, they were a significant influence in all analyses. The resilience scores were skewed towards the positive end of the scale, and means were similar to Syrian and Jordanian youth in Jordan (22) but much higher than for example

TABLE 3 | Multiple regression for resilience effects on HRQoL, PTSD, and general mental distress.

		HRQoL			PTSD			General mental distress		
		b	*p*	ΔR^2	*b*	*p*	ΔR^2	*b*	*p*	ΔR^2
Model 1										
	Age	−10.26	<0.001***		0.66	0.138		0.05	0.050*	
	Gender	10.53	0.322		−0.21	0.917		−0.27	0.030*	
	ΔR^2			0.114***			0.020			0.056*
Model 2										
	Age	−0.80	0.014*		−0.22	0.548		0.03	0.342	
	Gender	10.98	0.180		−20.30	0.163		−0.33	0.005**	
	PTE	−0.38	0.252		10.91	<0.001***		0.05	0.079	
	Post-stress	−0.33	0.003**		0.40	0.001***		0.02	0.014*	
	ΔR^2			0.124***			0.384***			0.132***
Model 3										
	Age	−0.62	0.027		−0.23	0.537		0.01	0.641	
	Gender	10.80	0.153		−20.29	0.167		−0.31	0.004**	
	PTE	−0.25	0.380		10.90	<0.001***		0.04	0.132	
	Post-stress	−0.24	0.011*		0.39	0.002**		0.02	0.047*	
	Resilience	0.53	<0.001***		−0.04	0.727		−0.03	<0.001***	
	ΔR^2			0.215***			0.001			0.128***
Model 4										
	Age	−0.64	0.025*		−0.25	0.501		0.01	0.634	
	Gender	10.93	0.128		−20.29	0.172		−0.31	0.005**	
	PTEs	−0.29	0.311		10.93	<0.001***		0.031	0.201	
	Post-stress	−0.24	0.012**		0.39	0.002**		0.02	0.046*	
	Resilience	0.54	<0.001***		−0.06	0.619		−0.03	<0.001***	
	PTE x Resilience	−0.02	0.612		0.030	0.520		−0.01	0.384	
	Post-stress x Resilience	−0.01	0.520		−0.009	0.573		0.00	0.922	
	ΔR^2			0.005			0.003			0.006
Final model R^2			0.458***			0.408***			0.32***	

Outcomes: HRQoL, health-related quality of life (KIDSCREEN-10); PTSD, post-traumatic stress disorder (CRIES-8); general mental distress (HSCL-10). Risks: PTE, potentially traumatic events (RTHC); post-stress, post-migration stressors (RPMSS). Moderator: resilience (CYRM-12). Covariates: age (continuous) and gender (female = 0). Interaction variables are all centred.

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

a group of Eritrean unaccompanied refugee minors (URM) in Sudan (57). However, making comparisons between different groups and contexts is difficult, as resilience is highly contextual and norm scores or cut-offs are less relevant (21).

Our findings support the presence of *promotive resilience* for HRQoL and general mental distress, supporting the first hypothesis of a direct main effect of resilience factors. However, no moderation effects were significant; as such, our second hypothesis of *protective resilience* buffering against negative effects was not supported. As proposed in the third hypothesis, the two risk factors (PTEs and post-migration stressors) created a mediational pathway where previous experiences increased post-migration stress, which in turn worsened outcomes. However, resilience did not moderate any part of the model, therefore not supporting the second part of the same hypothesis. A *post-hoc* correlation analysis indicated that relational and environmental factors were of particular importance, but also an additive effect of resilience factors.

Promotive Resilience

Promotive resilience is described as resilience factors that directly improve healthy functioning despite—or independent of—exposure to risks (24–26). From this perspective, mental health can be viewed as a balance of "positives and negatives," where positive resources increase healthier functioning whilst cumulative adversity impedes health. Descriptions of this mechanism often use scales as a metaphor, depicting the balancing act whereby individuals continually strive for homeostasis, and well-being is achieved when the scale is balanced (58). Our results found support for this mechanism, with a main effect explaining more than 20% of the variance in HRQoL and 12% in general mental distress. Some also describe this mechanism as compensatory or additive, similar to the results in **Table 5** here, higher numbers of relevant items in the CYRM-12 scale increased explained variance. Seeing resilience as a balance of positives and negatives, differences between outcomes could be explained in terms of their levels: as HRQoL levels were only slightly reduced and a minority had high levels

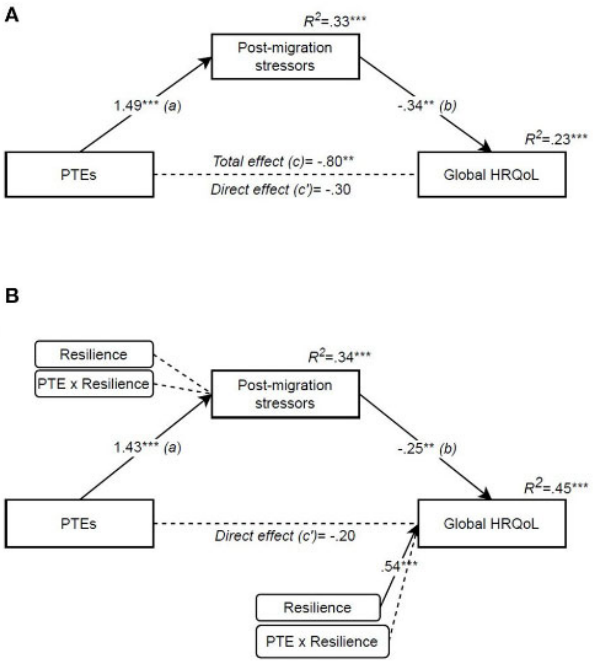

FIGURE 2 | Potentially traumatic events' effect on Global HRQoL mediated by post-migration stressors and moderated by resilience. **(A)** Mediation (PROCESS model 4), **(B)** Moderated mediation (PROCESS model 8). Independent variable: PTE [potentially traumatic events (RTHC)]. Mediator: post-migration stressors (RPMSS). Outcome: global HRQoL [health-related quality of life (KIDSCREEN-10)]. Moderator: resilience (CYRM-12). Covariate: age. All coefficients are unstandardized. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

TABLE 4 | Conditional indirect effects of PTEs on HRQoL, PTSD, and general mental distress.

Level of resilience	Effect	Boot CI	Boot CI
Health-Related Quality of Life			
−1 SD	−0.34	−0.73	−0.10
Mean	−0.35	−0.64	−0.012
+1 SD	−0.37	−0.66	−0.10
Index of moderated mediation	−0.002	−0.02	0.03
Post-Traumatic Stress Disorder			
−1 SD	1.66	0.18	1.14
Mean	1.77	0.21	1.04
+1 SD	1.87	0.16	1.12
Index of moderated mediation	0.004	−0.04	0.03
General Mental Distress			
−1 SD	0.024	0.001	0.056
Mean	0.025	0.001	0.054
+1 SD	0.026	0.001	0.061
Index of moderated mediation	0.0008	−0.002	0.002

Effect sizes of indirect effects of PTEs through post-migration stressors at different levels (at the mean and 1 SD above and below the mean) of the moderator resilience (CYRM-12), with bootstrapped confidence intervals (Boot CI).

of general mental distress (negatives), the levels of resilience were enough to partly compensate (positives). However, since levels of PTSD were very high, higher levels of resilience might therefore be needed to compensate for these symptoms.

Several authors have tried to identify the driving force for the balance tipping towards resilience in contexts of risk; in this study, the relational and environmental factors seemed to be more important. However, socio-ecological models suggest that there is not one but several interactive resilience processes. In support of this, a review of resilience in children and youth affected by armed conflict found that participants perceived resilience to be a combination of personal strengths and supportive contexts (10). In this sense, individual *assets* and environmental *resources* are seen as independent contributors to mental health—both directly affecting feelings, competencies, and symptoms, but also interacting (12, 24, 25). For example, some individual coping mechanisms are not sustainable unless other environmental systems, such as family and school, support the adaptive behaviour (59, 60). A purely additive effect of separate resilience factors might therefore be too simplified, and both assets and resources need to be addressed in interventions. As such, the composite measure of CYRM-12 including individual, relational and contextual elements could be relevant, but the interactions between resilience factors need to be explored.

Protective Resilience

The second resilience mechanism we explored was a potential moderating effect on the relationship between risks and outcomes, or *protective resilience*. This is described as resilience factors moderating or reducing the impact of a risk or stressor, with the metaphor of an umbrella shielding someone from the rain (25). This effect is found in several resilience studies (20), including those using CYRM (61, 62). However, we did not find support for this mechanism of resilience in any of our analyses. Other studies including refugee youth also show mixed results: some find that resilience moderates the relationship between risks and mental distress (63), whilst others do not (57, 64). The different results could be due to studies assessing different risk factors or measures of resilience. Or, that the *protective resilience* mechanism is relevant for some types of risk and resilience and not others (65). A lack of fit would then explain the absence of the buffering effects (66). Others suggest that the absence of *protective resilience* effects could be due to very high levels of current stress in the group—for example in detention, asylum or transit situations—as stress could overwhelm individuals or deplete their coping resources (66, 67). This result is also described in resilience theories, where risk factors can decrease the amount of resilience or inhibit it from having an effect (12). Our analyses also suggest that current post-migrations stressors had a large impact on all outcomes, even with levels being lower than in asylum or transit situations; moreover, results confirm their importance in worsening outcomes or delaying recovery (2, 33, 34, 37). Looking closely at effect sizes in **Table 4**, they appear to increase with higher resilience: this could be interpreted as the relationship between resilience and outcomes weakening with increasing amounts of PTEs. While this tendency should be explored further in future studies, it indicates that

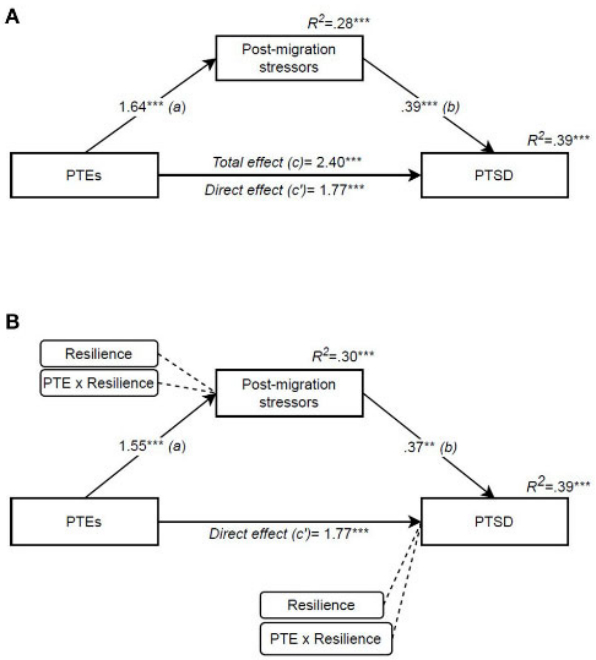

FIGURE 3 | Potentially traumatic events' effect on PTSD mediated by post-migration stressors and moderated by resilience. **(A)** Mediation (PROCESS model 4), **(B)** Moderated mediation (PROCESS model 8). Independent variable: PTE [potentially traumatic events (RTHC)]. Mediator: post-migration stressors (RPMSS). Outcome: PTSD [post-traumatic stress disorder (CRIES-8)]. Moderator: resilience (CYRM-12). All coefficients are unstandardized. *p < 0.05, **p < 0.01, ***p < 0.001.

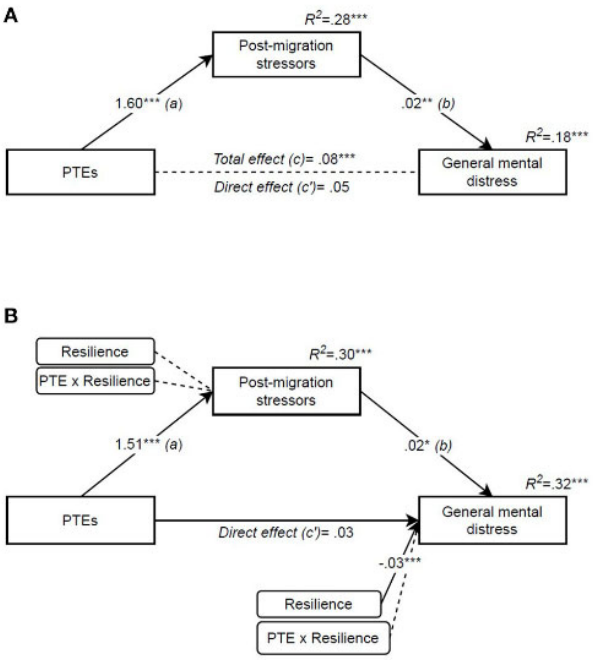

FIGURE 4 | Potentially traumatic events' effect on general mental distress mediated by post-migration stressors and moderated by resilience. **(A)** Mediation (PROCESS model 4), **(B)** Moderated mediation (PROCESS model 8). Independent variable: PTE [potentially traumatic events (RTHC)]. Mediator: post-migration stressors (RPMSS). Outcome: general mental distress (HSCL-10). Moderator: resilience (CYRM-12). Covariate: gender. All coefficients are unstandardized. *p < 0.05, **p < 0.01, ***p < 0.001.

reducing stress may increase the resilience resources available to an individual (34).

Following this argument, it could be reasoned that *protective resilience* depends on the context of resettlement for refugees. Studies comparing refugee samples with other groups, such as majority youth, indicate that resilience shows different associations depending on the group. For example, type of coping (engagement or disengagement) has far greater impact on mental health in majority youth than in URM in Norway, and the interaction between daily hassles and disengagement coping is only a significant moderator for majority youth (14). Similarly, in a Dutch study, individual resilience moderated the negative effects of PTEs in majority youth but not in refugee youth (64).

Differences Between Outcomes

With the notion that HRQoL and mental distress are different concepts and not opposing ends of a scale, each outcome was assessed separately. As in previous studies, we found that resilience correlated with higher HRQoL and less mental distress (52, 57). However, when controlling for risks, resilience was no longer associated with PTSD, a finding we share with other studies on Syrian youth (67, 68). The differences might have several explanations: for example, HRQoL and resilience are both socio-ecological constructs and may therefore share more variance, whilst PTSD symptomology is a narrower psychological construct. Another is that PTSD is more closely linked to past experiences, and HRQoL and general mental distress to more current stressors.

Some resilience factors were significant across all three outcomes. Two concerned the relationship with parents/caregivers, a third community acceptance (being treated fairly), and a fourth the opportunity for personal development. Interestingly, peer support and school belonging were very important for HRQoL and general mental distress, but not for PTSD: this might indicate that the traumatic experiences and symptoms are not easily shared between friends or at school. In this analysis, relational and contextual factors seemed more important for positive outcomes than individual assets. Lastly, getting an education was not significant for any of the outcomes, despite having a high mean score. This may indicate a ceiling effect, where education is inherently important to nearly all the participants and thus explains little variance. The considerable overlap between HRQoL and general mental distress—and the differences between types of mental distress—contradicts the idea that unique resilience pathways lead to "positive or negative" outcomes (10). However, it reiterates the importance of considering several relevant outcomes (28).

Another notable finding is that both mental distress and resilience were high in the group, which could support the notion

TABLE 5 | Correlations between items in CYRM-12 and HRQoL, PTSD, and general mental distress.

CYRM-12 items	Mean	HRQoL	PTSD	General mental distress	Dimension
I have people I look up to	3.23	**0.365*** **	0.048	−0.106	Context
Getting an education is important to me	4.61	−0.018	0.056	−0.016	Context
My parents/caregivers know me well	4.03	**0.453*** **	−0.235**	**−0.371*** **	Caregiver
I try to finish what I start	3.91	0.180*	−0.056	−0.188*	Individual
I am able to solve problems without harming myself	4.11	**0.195***	0.007	−0.118	Individual
I know where to go in my community to get help	3.72	**0.452*** **	−0.171	**−0.367*** **	Individual
I feel I belong at school	3.63	**0.434*** **	−0.097	**−0.281*** **	Context
My family stands by me in difficult times	4.28	**0.407*** **	**−0.345*** **	**−0.287*** **	Caregiver
My friends stand by me in difficult times	3.69	**0.501*** **	−0.020	**−0.398*** **	Individual
I am treated fairly in my community	3.55	**0.398*** **	**−0.256****	**−0.440*** **	Context
I have opportunities to develop skills useful to me in later life	4.25	**0.330*** **	**−0.270****	**−0.251****	Individual
I enjoy my family's/caregiver's cultural and family traditions	4.11	**0.285*** **	−0.133	**−0.234****	Caregiver
CYRM-12 total	47.11	**0.605*** **	−0.226**	**−0.445*** **	

*Spearman's rho was used due to skewness and categorical values. Values significant after Bonferroni–Holmes correction are in bold. *p < 0.05, **p < 0.01, ***p < 0.001. Green: Context resilience dimension. Orange: Caregiver resilience dimension. Blue: Individual resilience dimensions.*

that these co-exist (69). Studies have found that migrants and refugees have higher resilience than compared groups (22, 46). They also describe how positive growth and memories of trauma and hardship co-exist in their post-settlement narratives (70). This could be what some describe as resilient outcomes with loss (71), and indicate that individuals with PTSD are just as resilient as those without PTSD (72). Either way, it reiterates the importance of not labelling refugees as "vulnerable populations" and complicates evaluating resilience purely by outcome (69).

IMPLICATIONS

One overall goal of exploring resilience is to enable the design and evaluation of evidence-based interventions or social policy which promote mental health. Our results suggest that promoting a range of resilience factors—both individual and environmental—could improve HRQoL and reduce general mental distress in refugee youth. However, a resilience focus must not distract attention from risks, nor obscure the suffering of children who are in need of clinical support. Interventions should address exposure to previous events and current stressors, as well as build individual capacities and provide support (73). Further, the lack of protective effects in this study does not mean that this mechanism is irrelevant in interventions, but rather that further studies are needed to clarify its role.

LIMITATIONS

The cross-sectional design and interlinked nature of the variables under analysis prevent any assertion of causality or direction; moreover, self-report can overestimate the association between variables, as all measures are from the same source. Although the resilience measure was validated for this group and for face validity in this context, it may not contain other protective factors important for this context. The inclusion of a control group could have identified resilience factors of specific importance for the group, or determined whether direct main effects are unrelated to risk. Despite the power of calculations being sufficiently high, a larger sample size and strategic inclusion of individuals with more risk or lower resilience—such as the students who were absent from school—could have increased the likelihood of finding moderating effects. Although the sample used in our data was comparable to Syrians registered in Norway at the time, the generalizability of our findings to other countries or other groups of immigrant youth remains a question to be investigated in further research.

CONCLUSION

In this study, the Syrian youth had high levels of resilience, as well as high levels of risk. The presence of *promotive resilience* suggests that broad interventions and policy targeted at whole groups would be beneficial for HRQoL and general mental distress, independent of risk factors or symptoms. These should aim to strengthen individual assets—such as coping mechanisms—and also build supportive environments in schools and families. However, reducing current stress and providing treatment for those in need could enable recovery and increase the efficacy of resilience interventions and already present resilience factors. No buffer effects—or *protective resilience*—were found, which could be due to high amounts of stressors inhibiting this mechanism, or that relevant resilience factors were not included in the resilience measure used. This should be explored in further studies.

The youth had high levels of PTSD and resilience factors had seemingly little influence on these symptoms. Instead, high resilience and symptomology seemed to co-exist, indicating that individuals with PTSD are just as resilient as those without.

DATA AVAILABILITY STATEMENT

The datasets used in the article will be made publicly available when the doctoral theses is complete and accepted.

ETHICS STATEMENT

The study was reviewed and approved by Regional Research Ethics Committee of Norway East (Reference number 2018/192). Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by CD. The first draft of the manuscript was written by CD and all authors commented on previous versions of the manuscript. All authors have read and approved the final manuscript.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

12 Appendices

Har du flere spørsmål?

Besøk vår hjemmeside

www.inn.no/prosjektsider/god-start-i-norge

Her finner du mer informasjon, spørreskjemaet og nyheter.

Kontakt

Om oss

Vi er mange som samarbeider om prosjektet, men under finner du kontaktinformasjon til daglig ansvarlig. Ta gjerne kontakt!

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Foto: Lucy Lyon

God start i Norge

En oppfølgingsstudie om helse og trivsel hos unge syriske flyktninger nylig bosatt i Norge

God start i Norge

Det er over 60 millioner på flukt i verden, og halvparten av disse er barn. Hvert år får rundt 200 000 av disse opphold i andre land, som for eksempel Norge. Hvordan har de det når de kommer hit?

Vi vet faktisk veldig lite om hvordan flyktninger har det når de kommer til Norge, spesielt mangler vi informasjon fra flyktningene selv. Dette kan hjelpe oss å forstå hva som er viktig for å få en god start i Norge.

God start i Norge-studien har hovedfokus på syrisk ungdom mellom 12 og 18 år som er bosatt i en norsk kommune.

Hva mener de om sin egen helse? Hvordan har de det på skolen? Hva tenker de om fremtiden?

Vi ønsker oss også kunnskap om hvordan helse og trivsel utvikler seg over tid, og hva ungdommen selv mener er viktig for å ha det godt. Dette vil hjelpe oss å forstå mer om ulike måter å mestre en ny hverdag i Norge, og hvordan dette påvirker utviklingen i helse og trivsel over tid.

Gjennomføring

Utvalgte skoler blir kontaktet med spørsmål om deltakelse. Gjennom skolen vil ungdommen få tilbud om å delta i undersøkelsen, som i første omgang er et spørreskjema (del 1). Utfylling av skjema skjer på skolen, og tar ca 1 skoletime. Skjemaet er på norsk, engelsk og arabisk. I forkant av utfyllingen vil ansvarlig for studien informere om hensikt og gjennomføring.

Deltakerne vil få tilbud om å fylle ut skjemaet på nytt etter ett år, for å se hvordan helse og trivsel endrer seg over tid (del 3). Noen vil også få tilbud om å delta i et intervju for å fortelle om hva de mener er viktig for å ha det godt (del 2). Studien består derfor av tre deler og vil gå over 4 år, fra august 2017 til 2021.

Studien er en del av et doktorgradsarbeid ved Ph.d.-program i barn og unges deltakelse og kompetanseutvikling ved Høgskolen i Innlandet.

Vil din skole delta? Ta kontakt med oss!

Et samarbeid

Studien er et samarbeid mellom flere aktører, blant annet Høgskolen Innlandet, Nasjonalt kunnskapssenter om vold og traumatisk stress og Folkehelseinstituttet.

Foto UNHCR

Hva spør vi om?

Spørsmålene i spørreskjemaet handler om hverdagslige ting som venner, trivsel på skole og forholdet til foreldre. Noen spørsmål handler om flukt og vanskelige opplevelser. Fordi dette kan være utfordrende for noen, ber vi ungdommen om å si ifra om de vil snakke med noen etter deltakelse. Helsesøster på skolen blir derfor også informert om at undersøkelsen gjennomføres.

Det hjelper å snakke med noen

Det er selvfølgelig frivillig å delta, og ungdommen kan trekke seg når som helt uten å begrunne dette, eller hoppe over spørsmål i undersøkelsen. Samtidig er det viktig at vi får så mange svar som mulig for å gjengi et så riktig som mulig bilde på ungdommens helse og trivsel.

Invitasjon til deltakelse
16-24 år

NKVTS.NO

HØGSKOLEN i INNLANDET

GOD START I NORGE

Helse og trivsel for unge syrere nylig bosatt i Norge

Vi vil gjerne invitere deg til å delta i en forskningsstudie om helse og trivsel. Dette er viktig informasjon for de som jobber for god helse og trivsel for alle som bor i Norge, blant annet i helsetjenester og skole. Vi inviterer derfor syriske ungdommer mellom 12 og 24 år som har kommet til Norge de siste årene, til å fylle ut et spørreskjema.

Denne forskningsstudien er en del av en doktorgradsprosjekt ved Høgskolen innlandet, og gjennomføres i samarbeid med Nasjonalt kunnskapssenter om vold og traumatisk stress (NKVTS). NKVTS gjennomfører en liknende spørreundersøkelse for voksne.

Om du ønsker mer informasjon om «God start i Norge» studien, se gjerne vår nettside.

HVA INNEBÆRER DELTAKELSE I STUDIEN?

Du får mulighet til å svare på et spørreskjema på skolen i skoletiden. De fleste av spørsmålene i spørreskjemaet er om helt hverdagslige ting som; Hvilken utdanning vil du ta? Har du følt deg frisk eller hatt tid sammen med venner den siste uken?

Noen av spørsmålene kan oppleves som vanskelige eller ubehagelige. Blant annet er det er spørsmål om du har opplevd krig og vold på nært hold i Syria eller på flukt, om du har skader eller sykdommer, og om noe av dette plager deg. Du kan stoppe eller la være å fylle inn disse spørsmålene om du vil.

Daglig ansvarlig for forskningsstudien, som er helsesøster, vil komme på skolen og fortelle deg hvordan du fyller ut skjemaet og hjelpe deg om du lurer på noe. Lærer vil også være tilgjengelig. Skjemaet er på arabisk, norsk eller engelsk. Spørsmålene er utformet for barn 8 år og eldre, så de er ikke så vanskelig formulert. Det tar ca 30-40 minutter å fylle ut skjemaet.

Vi kommer til din skole __ september 2018.

Om du trenger noen å snakke med etter spørreundersøkelsen så si ifra til lærer. Helsesøster på din skole er informert om undersøkelsen og tar gjerne imot deg. Helsesøster kan også henvise deg til andre hjelpeinstanser om du ønsker det. Dersom du opplever skade etter deltakelse så dekkes dette av helseforskningsloven § 50 og pasientskadeloven.

HVA SKJER MED INFORMASJONEN OM DEG?

Svarene dine lagres på en sikker database der ingen andre enn de som er tilknyttet forskningsstudien har tilgang. Informasjonen brukes bare i denne forskningsstudien. Alle forskere har taushetsplikt og deler ikke din personlige informasjon med andre myndigheter, lærere eller helsetjenester. Vi bruker et deltakernummer og ikke navn eller noe som kan gjenkjennes på skjemaet. Kontaktinformasjon

lagres på en separat liste som brukes for å kontakte deg om deltakelse videre i studien, om du samtykker til dette (se «hva skjer videre»).

HVA SKJER VIDERE?

Denne studien har tre deler. Den første er spørreskjemaet som du er invitert til å svare på nå. For å vite hvordan det går med deg videre, så ønsker vi å bruke det samme spørreskjemaet om ett år. Hvordan har du det da? Om du synes det er greit, kan du svare under at vi kan kontakte deg om ett års tid for å fylle ut skjemaet på nytt. Du kan fremdeles takke nei til å delta når vi kontakter deg.

I den tredje delen av studien, kan du bruke din mobiltelefon eller låne en Ipad fra oss for å ta bilder av noe du mener er viktig for å ha et godt liv. Er det skole, venner eller en myk seng? Du får mulighet til å selv fortelle hva du mener er viktig. Du tar bilder, som du viser frem og forteller om i et intervju. Vi kan bestille tolk til intervjuet om du vil. Om du er interessert i å delta på dette kan du krysse av under, så tar vi kontakt. Du kan fremdeles takke nei til å delta når vi kontakter deg.

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SAMTYKKE TIL DELTAKELSE I STUDIEN

Det er frivillig om du vil svare på skjemaet, du kan trekke deg når som helst uten å forklare hvorfor, og du kan be om at dine svar blir slettet fra studien hvis du angrer på deltakelse. Ta kontakt hvis du ønsker dette etter du har fylt ut spørreskjemaet.

- ☐ Jeg har mottatt informasjon om studien fra daglig ansvarlig, og ønsker å delta i spørreundersøkelsen
- ☐ Jeg kan kontaktes for å fylle ut nytt spørreskjema om ett år (del 3)
- ☐ Jeg er interessert i å delta i fotografering og intervju (del 2) og kan kontaktes om dette

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(Signert av prosjektdeltaker, dato)

Signert samtykke samles inn av daglig ansvarlig - dato

HØGSKOLEN i INNLANDET

NKVTS.NO

دعوة للمشاركة

الشباب من سن 16 حتى 24 سنة

بداية طيبة في النرويج

دراسة حول أحوال الشباب السوريين وصحتهم من القادمين حديثا إلى النرويج

نود دعوتك للمشاركة في دراسة بحثية حول الصحة ومدى الشعور بالراحة، وهو ما يعطي معلومات مهمة لكل من يعمل من أجل صحة طيبة وشعور بالراحة لكل من يقيم في النرويج، ومن بين تلك الجهات الخدمات الصحية والمدارس، ولهذا السبب فندعو كل الشباب السوريين ممن تتراوح أعمارهم بين 12 و18 عام والذين قدموا إلى النرويج خلال السنوات الأخيرة لملء الاستبيان.

إن هذه الدراسة البحثية جزء من مشروع رسالة دكتوراه بجامعة إنلاندا ويتم تنفيذها بالتعاون مع مركز المعرفة الوطني حول العنف والضغط النفسي الناجم عن الصدمات (اختصارا NKVTS)، ويقوم المركز أيضا بإجراء دراسة مشابهة خاصة بالكبار.

إذا كنت ترغب في المزيد من المعلومات عن دراسة "بداية طيبة في النرويج"، يرجى زيارة صفحتنا على الإنترنت.

ما الذي تعنيه المشاركة في الدراسة؟

تحصل على إمكانية الإجابة على الاستبيان في المدرسة خلال اليوم الدراسي. وتتناول معظم الأسئلة الموجودة في الاستبيان موضوعات من الحياة اليومية العادية مثل ما هو نوع التعليم الذي تريد أن تلتحق به؟ هل تشعر بأن صحتك جيدة؟ وهل قضيت وقتا مع الأصدقاء خلال آخر أسبوع؟

بعض الأسئلة قد تراها صعبة أو مزعجة، مثل هل عايشت أجواء الحرب والعنف عن قرب؟ سواء كان ذلك في سوريا أو أثناء النزوح؟ هل تعاني من إصابات أو أمراض؟ وهل تسبب لك هذه الأمور مصاعب؟ يمكنكم التوقف على الإجابة أو ترك هذه الأسئلة إذا أردت ذلك.

المشرفة العامة عن الدراسة البحثية، وهي ممرضة في شئون الصحة العامة، ستأتي إلى المدرسة وستتحدث معك عن كيفية ملء الاستمارة وتجيب على استفساراتك، كما سيكون المعلم متاحا أيضا للمساعدة. الاستمارة مكتوبة باللغة العربية والنرويجية أو الإنجليزية. وضعت الأسئلة للأطفال من سن 8 سنوات وما فوق، ولهذا فصياغة الأسئلة ليست صعبة. يستغرق ملء الاستمارة ما بين 30 إلى 40 دقيقة.

ستأتي يوم ---------- إلى مدرستك

إذا احتجت للحديث مع أحد عقب مشاركتك في الدراسة، يمكنك الحديث مع المعلم حول هذا الأمر. تم إعلام الممرضة المدرسية حول الدراسة وهي ترحب بك للمشاركة في الدراسة. وبإمكان الممرضة المدرسية أن تحولك إلى الجهات المساعدة إذا رغبت في ذلك. عند حدوث أضرار عقب المشاركة في الدراسة، يتم تغطية نفقاتها بموجب المادة رقم 50 من قانون التامين الصحي وقانون إصابات المرضى.

ما الذي سيحدث مع المعلومات الخاصة بك؟

تحفظ الإجابات التي تعطيها في قاعدة بيانات آمنة، والعاملون في الدراسة فقط هم من لهم الحق في الاطلاع عليها. وتستخدم البيانات في هذه الدراسة البحثية فقط. كل الباحثين ملزمون بواجب الحفاظ على سرية المعلومات ولا يقومون باطلاع جهات أخرى أو المعلمين أو الخدمات الصحية بالمعلومات الشخصية التي تخصك. تحصل على رقم المستخدم ولا نستعين بالاسم أو أي بيانات أخرى يمكن من خلالها التعرف عليك في الاستبيان. يتم حفظ الاسم ومعلومات الاتصال في قائمة خاصة منفصلة، والتي تستخدم فقط في التواصل معك لمواصلة المشاركة في الدراسة في حالة موافقتك على ذلك (أنظر إلى "ماذا سيحدث بعد ذلك").

ماذا يحدث بعد ذلك؟

تتكون هذه الدراسة من ثلاثة أجزاء، أما الجزء الأول فهو الاستبيان الذي ندعوك للإجابة عليه، ولكي نعرف كيف تسير أمورك فيما هو قادم، فنرغب في استخدام نفس الاستبيان بعد مرور عام. كيف تسير أمورك؟ إذا لم يكن لديك أي مانع، يرجى الإجابة أدناه أنه

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دعوة للمشاركة

الشباب من سن 16 حتى 24 سنة

بإمكاننا الاتصال بك بعد مرور عام من الآن لملء الاستمارة مرة أخرى. وسيكون بإمكانك التراجع عن المشاركة في الدراسة عندما نتصل بك مرة أخرى إذا رغبت في ذلك.

وفي الجزء الثالث من الدراسة يمكنك أن تستخدم هاتفك الجوال أو تستعير منا كمبيوتر لوحي لأخذ صور لأشياء تراها مهمة لكي يتمتع الإنسان بحياة طيبة. من الممكن أن تكون المدرسة أو الأصدقاء أو سرير ناعم ومريح؟ تحصل على الإمكانية في التعبير عما تراه مهما، حيث تقوم بالتقاط الصور وتعرضها لنا وتتحدث عنها في مقابلة معنا. هناك إمكانية في الاستعانة بمترجم إذا رغبت في ذلك. إذا كان لديك اهتمام بالمشاركة فعليك وضع علامة أدناه، ثم نقوم بالاتصال بك. سيكون بإمكانك التراجع عن المشاركة في الدراسة عندما نقوم بالاتصال بك مرة أخرى إذا رغبت في ذلك.

الاتصال

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موافقة على المشاركة في الدراسة

إجابتك على الاستبيان طوعية، يحق لك في أي وقت سحب الموافقة دون إبداء الأسباب وطلب مسح المعلومات المسجلة في حالة تراجعك عن المشاركة. اتصل بنا إذا كنت ترغب في ذلك عقب ملء الاستمارة.

- ☐ حصلت على معلومات من المشرف العام عن الدراسة وأوافق على المشاركة في الاستبيان.
- ☐ يمكن الاتصال بي لملء استمارة جديدة بعد مرور عام (الجزء 3).
- ☐ أرغب في المشاركة في التصوير وإجراء المقابلة (الجزء الثاني) ويمكن الاتصال بي بخصوص هذا الأمر.

(توقيع المشارك في المشروع، التاريخ)

تقوم المشرفة العامة بجمع الموافقة الموقعة – التاريخ.

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Good start in Norway

Hi!

How are you? How do you feel? This is what we would like you to tell us.

Please read every question carefully. What answer comes to your mind first? Choose the box that fits your answer best.

Remember: This is not a test so there are no wrong answers. We hope you answer all questions even if some are alike.

You do not have to show your answers to anybody. Also, nobody who knows you will look at your questionnaire once you have finished it.

1. *Participant number (you will get this from the person responsible for the study before you start)

2. *What is your mother tongue?

3. How old are you?

16

4. Are you a boy or a girl?

Boy Girl

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HØGSKOLEN i INNLANDET

مرحباً,

كيف حالك ؟ كيف تشعر؟ هذا ما نود منك أن تخبرنا عنه.

يرجى ق ا رءة كل سؤال موجود بعناية. ما هي أول إجابة تأتي إلى ذهنك؟ اختر المربع الذي يناسب إختيارك وضع علامة فيه.

تذكر: هذا لا يعد إختبا ا رً لذا ليس هناك إجابات خاطئة. من المهم أن تجيب على جميع الأسئلة وأن نستطيع رؤية إختيا ا رتك بوضوح. عندما تفكر بإجاباتك، يرجى أن تحاول أن تتذكر الأسبوع الماضي لست مضط ا رً لعرض إجاباتك على أي شخص آخر. أيضاً، عندما تفرغ من الإستبيان لن يطلع عليه أي شخص على معرفة بك.

1. رقم المشترك (تحصل على هذا الرقم من المسئول عن الدراسة قبل البدء في إجرائها)*

2. ما هي لغتك الأم؟*

3. كم عمرك؟

16

4. هل أنت أنثى أم ذكر؟

أنثى ذكر

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Inland Norway University of Applied Sciences

Refugee youth have a hazardous journey behind them and a new journey ahead, adjusting to a new life in Norway. Despite this, most refugee youth display remarkable resilience and manage the transitions well. The overall aim of this thesis was to explore mental health and resilience in Syrian refugee youth who recently resettled in Norway. 160 youth participated by answering questionnaires at their schools.

The participants reported high levels of mental distress and reduced quality of life. Friendship, physical and mental wellbeing were low-scoring dimensions in quality of life, whilst home and school life contributed positively. Previous experiences from war and flight was a significant influence but acted mainly through increasing the amount of everyday post-migration stress, which in turn affected mental health. On the other hand, resilience factors were related to better mental health, independent of risk factors.

The inequities in health indicate the need for interventions to improve mental health and resilience in refugee youth. The results also contribute to further nuancing the complex interactions of factors affecting their health. Findings indicate that environmental and relational risk and resilience factors after resettlement, should be given increased attention. Continued efforts to better understand the health and resilience in refugee youth, could help us contribute to a good start in a new country.