An investigation into the association of pre- and post-migration experiences on self-rated health among new humanitarian refugees to Australia: a mixed methods longitudinal study

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Abstract

Background: Refugees are at an increased risk of poor health outcomes, which may result from the process and specific circumstances of migration. However, the ways in which migration factors shape the health of resettling refugees is not well understood. Such information is important to help resettlement nations design services that best meet the needs of refugees

Aim: The aim of this thesis was to examine how migration factors shaped the self-rated health of resettling adult refugees to address the current knowledge gap.

Methods: Using a sequential explanatory mixed methods study design, this study began with a quantitative analysis of the first three waves of data from the 'Building A New Life in Australia' survey of humanitarian refugees in Australia. Generalised linear mixed models were applied to investigate the relationship between self-rated health and migration and demographic factors. Then, drawing on a qualitative phenomenological perspective in the second stage, semi-structured interviews were conducted with 19 adult refugees living in Australia to examine the relationship between their health and migration experiences. Data were analysed using interpretative phenomenological analysis.

Findings and Discussion: The quantitative study identified poor general health persisting among refugees at high levels throughout the initial years of resettlement in Australia. Female gender, increasing age and post-migration financial stressors were positively associated with poorer health. Having a university degree and the absence of chronic health conditions were seemingly protective against declining health. Findings from the qualitative study indicated that the health of participants was influenced by pre-migration violence and loss, as well as stressors associated with living in transit and resettlement countries. Social support, religiosity and future aspirations were commonly reported enablers of health and well-being. Gender played a significant role in the health outcomes

of the refugee population. Taken together, the results of the quantitative and qualitative studies highlighted that financial adversity resulting from under- and unemployment experienced across the migration journey had a significant, negative impact on the general health of refugees in Australia as it created barriers to appropriate health care and the achievement of personal stability. Gender emerged as an important interrelated determinant of general health during the post-migration era because it was related to employability and the healthcare-seeking behaviours of refugees.

Conclusion: Given that little is known about the longitudinal course of health of refugees, this mixed methods study provides a useful insight into the general health of refugees as they resettle into a new society. Using a mixture of quantitative and qualitative approaches, this study highlighted the multidimensional, transitional and contextual nature of the migration factors that influence the long-term health of refugees in Australia. The findings underscore the importance of refugee health professionals and resettlement policymakers to recognise the contribution that each individual migration phase makes to health outcomes among refugees, as well as the continuity of these factors across the migration journey when considering the needs of this population group.

Publications During Enrolment

Peer reviewed publications arising from this thesis

- Dowling A, Enticott J & Russell G. Measuring self-rated health status among resettled adult refugee populations to inform practice and policy – a scoping review. *BMC Health Services Research.* 2017;17(1):817–25

- Dowling A, Enticott J, Kunin M & Russell G. An investigation into the association of pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia: a protocol for a mixed methods study. *BMC International Health and Human Rights (*2019) 19:15

- Dowling A, Enticott J, Kunin M & Russell G. The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study. *International J Equity Health.* (2019) 18(1):130.

- Dowling A, Kunin M & Russell G. The impact of migration upon the perceived health of adult refugees resettling in Australia: a phenomenological study. (Under review)

Thesis Including Published Works Declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes 3 original papers published in peer reviewed journals and one submitted publication. The core theme of the thesis is self-rated health among adult refugees as they resettle in Australia. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, Alison Dowling, working within the Department of General Practice under the supervision of Professor Grant Russell, Dr. Joanne Enticott and Dr. Marina Kunin.

The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research. None of the co-authors were students at Monash University.

In the case of the four publications included in Chapters 2, 3, 5 and 6, my contribution to the work involved the following:

Thesis chapter	Publication title	Status	Nature; % of my contribution	Co-authors; nature; % of contribution
2	Measuring self-rated health status among resettled adult refugee populations to inform practice and policy – a scoping review.	Published	Design of study; data collection; analysis & synthesis; draft & preparation of manuscript 85%	Russell: Design; editing 10% Enticott: Editing 5%
3	An investigation into the association of pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia: a protocol for a mixed methods study.	Published	Design of study; data collection; analysis & synthesis; draft & preparation of manuscript 75%	Russell: Design; editing 10% Enticott: Design; editing 10% Kunin: Design; editing 5%
5	The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study.	Published	Design of study; data collection; analysis & synthesis; draft & preparation of manuscript 75%	Russell: Design; editing 10% Enticott: Design; editing 10% Kunin: Design; editing 5%
6	The impact of migration upon the perceived health of adult refugees resettling in Australia: a phenomenological study.	Under review	Design of study; data collection; analysis & synthesis; draft & preparation of manuscript 80%	Russell: Design; editing 10% Kunin: Design; editing 10%

I have renumbered sections of submitted or published papers to generate a consistent presentation within the thesis.

Student name: Alison Dowling

Student signature:

Date: 5 May 2020

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author, I have consulted with the responsible author to agree on the respective contributions of the authors.

Main Supervisor name: Grant Russell

Main Supervisor signature:

Date: 10 May 2020

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Signed:

Print Name: Alison Dowling

Date: 5 May 2020

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Abbreviations

AIFS	Australian Institute of Family Studies
BNLA	Building A New Life in Australia
DIBP	Department of Border Protection and Immigration
GLMMs	Generalised Linear Mixed Models
GP	General Practitioner
HSP	Humanitarian Settlement Program
IPA	Interpretative Phenomenological Analysis
MBS	Medicare Benefits Schedule
MU	Migrating Unit
MUHREC	Monash University Human Research Ethics Committee
NMHRC	National Health and Medical Research Council
NSW	New South Wales
PA	Principal Applicant
PRISMA	Preferred Reported Items in Systematic Reviews and Meta-analysis Flowchart
PTSD	Post-Traumatic Stress Disorder
RESP	Refugee Employment Support Program
SA	Secondary Applicant
SD	Standard Deviation
SDOH	Social Determinants of Health
SF-36	36-Item Short Form Health Survey
SRGH	Self-Rated General Health
SRH	Self-Rated Health
UNHCR	United Nations High Commission for Refugees
USA	United States of America

Glossary

Asylum seeker	Asylum seeker is a person who has left their country and applied for protection as a refugee.
Host nation	Nation (or country) in which refugees are permanently resettled.
Pre-migration stage	The period prior to leaving their home country, when violent and traumatic experiences occurred. During this stage, refugees are in their home countries and are deciding and preparing to move to a safe country.
Peri-migration stage	Also referred to as the transit period, this is the middle stage in the migration process and involves the physical transition and journey from the home countries of the refugees to a safer country. During this stage, refugees may be living in refugee camps and/or communities of transit countries.
Post-migration stage	Also referred to as the resettlement period, this is the final stage in the migration process when refugees are living in a developed host nation where they are applying for asylum or have been granted permanent residence visas by the host nation government.
Refugee	A refugee is defined as any person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his/her nationality and is unable, or owing to such fear, is unwilling to avail himself/herself of the protection of that country.

Refugee resettlement	The selection and transfer of refugees from a State in which they have sought protection to a third State that has agreed to admit them – as refugees – with permanent residence status.
Refugee settlement	Defined as the 'experience of belonging'. People from refugee backgrounds are resettled or relocated to a third country which offers them protection from persecution, they settle into that country aiming to belong in the new community.
Self-rated health	Also known as self-assessed health or self-perceived health, whereby individuals rate the current status of their own health; usually on a scale ranging from *excellent* to *very poor*.

Chapter 1: Introduction

This chapter begins with an overview of the structure of the thesis, followed by the background of the study. To provide some context around the research, short descriptions of the current global refugee situation and history of refugee resettlement in Australia are provided and the chapter concludes with an introduction to the concept of self-rated health as a measure of health.

1.1 Structure of the thesis

This thesis is divided into seven chapters and contains three published manuscripts and one unpublished manuscript. Supplementary information (eg. additional files associated with manuscripts) discussed in the thesis is provided in the relevant appendices.

Chapter 1 presents the context from which this thesis study emerged, a description of the current global refugee situation and an overview of Australia's history and ongoing commitment to the resettlement of refugees. The chapter concludes with an introduction to the concept of self-rated health and its use in research.

Chapter 2 presents a scoping review of the literature to describe how self-rated health measurement tools are used to collect health information from refugee populations living in the communities of developed nations. This information allowed the author to understand the appropriateness of self-rated health assessment tools to measure health within refugee groups. This chapter includes a manuscript of the scoping review published in *BMC Health Services Research.*

Chapter 3 presents the study protocol for this thesis and outlines the methodology and methods underpinning the research, including the research aim and research questions. Chapter 3 also provides a discussion of variations made to the protocol, which pertain to the quantitative study

(Chapter 5). Included in the chapter is a manuscript of the study protocol published in *BMC International Health and Human Rights.*

Chapter 4 builds upon Chapter 3 and provides greater detail of the thesis study methodology including the rationale for the thesis study design and ethical considerations in refugee research.

Chapters 5 and 6 consist of manuscripts presenting the main findings of the research. Chapter 5 presents the quantitative study that was an exploration of self-rated health to determine the prevalence of health problems in a group of adult humanitarian refugees during their first three years of resettlement in Australia. Included in Chapter 5 is a manuscript of the quantitative study published in the *BMC International Journal for Equity in Health.* Chapter 6 aimed to augment or explain the findings described in Chapter 4 through a contextualised qualitative study of the perceived health of adult refugees through the pre-, peri- and post-migration journey. The qualitative study manuscript which is under review with the *Journal of Ethnic and Migration Studies* is provided.

Chapter 7, the final chapter, is a general discussion of the overall findings of the research. The chapter synthesises and discusses the findings from the four papers in the preceding chapters in the context of the wider literature. The purpose of this chapter is to present findings, interpret data collected during the study, and analyse data in terms of the research questions posed. Following this, a discussion of the implications of the findings for policy and practice interventions with adult refugee populations is provided, as are the study limitations. The chapter concludes with suggested directions for future research and concluding remarks.

1.2 Background to the research

As a member of the global community, Australia shares responsibility for protecting refugees worldwide via a system of international refugee protection and resettlement (1). This commitment is expressed through its Humanitarian Program, which allocates a set number of resettlement places each year to refugees and others with humanitarian needs (1). For the period 2018–19, Australia's annual Humanitarian Program was set at 18,750 places (1).

Refugees who are accepted for resettlement are among the most vulnerable groups in our society in terms of risk of poor health (2-6). Refugees often have unique health needs reflecting the epidemiology of diseases in their country of origin (7, 8); inadequate and disrupted health care; and stressors experienced during the migration and resettlement periods, including trauma, torture and poverty (9-12). Many have been exposed to or suffered direct pre-migration trauma including torture, human rights violations and systematic violence (9-12) that may have a lasting influence on their psychological and physical well-being (6, 13). The post-migration period is often experienced as a time of crisis, stress and adjustment (14) and there is evidence suggesting that resettlement issues, such as housing, employment and financial stress, worsens the health of refugees (15-19). In addition, over the course of resettlement, a predominance of acute to more chronic diseases have been documented (20-22). Therefore, resettling refugees are potentially at an increased risk of mental and physical health problems due to their migration experiences.

However, the effect that migration experiences have on the long-term health of resettling refugees is not well understood. Limited information is available on *if* and *why* health outcomes change over time among refugees as they settle into a new society. This is important because, without such information, resettlement support services may not be able to effectively deal with the range of challenges that have evolved from the refugee journey and new settlement. Some of this knowledge gap can be attributed to methodological limitations in current studies. For example, most of the

research into refugee health have been cross-sectional, quantitative examinations of associations between pre-migration trauma and mental health or post-migration stressors and mental health that have utilised a variety of health measurement tools (23). The selection of robust and appropriate measurement tools for use among this population group is challenging due to methodological variation in the use of assessment tools across refugee health studies. Therefore, refugee health data is often conflicting and difficult to interpret and compare and can provide only a 'snapshot' of a single moment in the refugee resettlement experience. The use of self-rated health as a health indicator in refugee research may be one way to overcome some of these issues. Self-rated health is an unusually strong predictor of mortality, morbidity and health service utilisation (24) and can be collected using measurement tools that are less resource intensive than clinical assessments, less burdensome on participants and can capture individual perceptions of health, such as psychosocial factors, geographical location and individual characteristics (25). However, the potential of using self-rated health as a health index among populations of resettling refugees in Australia has rarely been examined.

Another gap in the refugee health literature are approaches that can adequately capture the multidimensional, transitional and contextual elements of the refugee resettlement experience. Given that the refugee resettlement experience is a time of great change and resilience, refugee research must be responsive to such change. Mixed methods studies that combine longitudinal quantitative and qualitative research can answer both 'what' and 'how' questions and enables the uncovering of the complexity of refugee health experiences and behaviours (26). Thus, the combination of quantitative and qualitative research allows for both measurement and meaning (26) of refugee health because the qualitative approach gives voice and context to the refugee experience, while the quantitative approach can be used to provide population-based evidence (27). Therefore, the mixed methods design is important in refugee health research as it enables exploring

the phenomenon from multiple perspectives, thereby contributing to an in-depth understanding of the long-term health issues experienced by resettling refugees.

To address the current knowledge gap in the refugee health literature, this thesis presents a program of mixed methods research investigating the self-rated health of adult refugees living in Australia as a way of understanding the long-term health and health needs of this population group.

1.3 The global refugee situation

The United Nations High Commission for Refugees (UNHCR) has reported that the number of people forcibly displaced by conflict is currently at the highest levels ever recorded (28). Conflicts, violence and human rights violations, particularly in the Middle East and North Africa, have forced millions of people to leave their homes and flee from destruction and persecution. At the end of 2018, 70.8 million people had been forcibly displaced, including 25.9 million refugees and 3.5 million asylum seekers (28). The proportion of the world's population who have been displaced has continued to rise as the increase in the world's forcibly displaced population outstripped global population growth (28, 29). In 2017, this figure was one out of every 110 people, but in 2018 it was one out of every 108 people (28). A decade ago, by comparison, this stood at approximately one in 160 people (28). Overall, the refugee population under UNHCR's mandate has nearly doubled since 2012.

1.4 Refugee resettlement in Australia

1.4.1 The 1951 Refugee Convention

The 1951 Refugee Convention is a United Nations multilateral treaty that defines who is a refugee and sets out the rights of individuals who are granted asylum and the responsibilities of nations that grant asylum (30). The Convention is the centrepiece of international refugee protection today and

it was formally enacted on 22 April 1954 (30). Initially, it was drafted to meet the needs of European refugees in the aftermath of World War II and applied only to individuals who had been displaced as a result of events occurring before 1 January 1951 (30). The 1967 Protocol removed the geographic and temporal limits of the Convention.

The 1951 Convention defines a refugee as:

> *As a result of events occurring before 1 January 1951 and owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it. (30)*

Currently, 143 countries have agreed to the obligations under the Refugee Convention (30), of which Australia is one. Countries that have ratified the Convention are obliged to protect refugees on their territory, in accordance with its terms. For example, under the Refugee Convention, refugees cannot be sent to a place where they may be persecuted. This fundamental principle is known as *non-refoulment* (30). Countries who have signed the Refugee Convention also cannot send a refugee overseas (or 'expel' them) except if they pose a risk to national security or public order (30).

1.4.2 Refugee resettlement

'Resettlement' is used to describe the identification and transfer of refugees from a State in which they have sought protection to a third State that has agreed to admit them—as refugees—with permanent residence status (31). In other words, resettlement is a mechanism that protects refugees

whose life, safety, human rights and health are at risk in the country where they sought refuge (32). Resettlement is regulated by strict criteria, policies and processes that can only benefit a very small percentage of the refugee population (approximately 1% per year) (32). Resettlement, being one of three durable solutions available to refugees, is considered by the UNHCR for eligible individuals while also considering other solutions. Refugees do not have a right to be resettled to a third country and the final decision to accept refugees for resettlement is made by the authorities of the country of resettlement and not by the UNHCR (32). The other two durable solutions are local integration in the country of refuge and voluntary repatriation (i.e. returning to one's home country) and are considered by the UNHCR if the other two options are not available (31, 32).

1.4.3 Australia's Humanitarian Program

Australia has a long history of supporting refugee and humanitarian arrivals, having settled more than 880,000 refugees and others in humanitarian need since the end of the Second World War (33). However, it wasn't until 1977 that the first official refugee policy was created under the Humanitarian Program for refugees and those in refugee-like situations (33). Each year, the Australian Government sets the cap on the number of visas that may be granted under this program. In 2016–17, the program included 13,750 places, increasing to 16,250 places in 2017–18 and 18,750 places in 2018–19. In 2015, the Australian Government also provided an additional 12,000 places for people displaced by conflict in Syria and Iraq (1). Australia is one of only a small number of countries that operate an annual permanent resettlement program and consistently ranks among the top three permanent resettlement countries, along with Canada and the United States (1). Every year, the Australian Government sets the number of settlement visas that may be granted under the Humanitarian Program.

The main aims of Australia's Humanitarian Program are to:

- provide permanent resettlement to those most in need, including those in refugee camps and protracted refugee situations;
- reunite refugees and families who are in refugee-like situations overseas with their family in Australia;
- be flexible and responsive to changing global resettlement needs and emerging humanitarian situations to ensure Australia's approach remains comprehensive and high quality; and
- meet Australia's international protection obligations (1).

Australia's Humanitarian Program has the following two main components: the offshore program, for people who are resettled in Australia from overseas (usually after either being referred to Australia by the UNHCR or being sponsored by a person or organisation in Australia and the onshore program for people who apply for refugee status after arriving in Australia as asylum seekers and are found to require Australia's protection (1).

1.4.4 Settlement assistance to Humanitarian Program entrants

Resettlement services are designed to provide early, tailored and intensive support to refugees and humanitarian entrants in the first five years of their arrival in Australia. The Humanitarian Settlement Program (HSP) provides on-arrival resettlement support and orientation to services to individuals who have been granted a permanent residency visa in Australia (1). The HSP provides individuals and families with a range of services and support through a coordinated case management approach. The program is tailored to addressing client needs and strengthening their ability to participate in the economic and social life of Australia. It aims to equip them with the skills and knowledge to independently access services beyond the initial resettlement period

(1). Clients are eligible to access the program up to 5 years after arriving in Australia and can receive services for up to 18 months (1).

For example, upon arrival, individuals are met at the airport by HSP appointed case managers and will then work with entrants to ensure that their accommodation and basic needs are being met (1). The case manager will develop a case management plan that includes key activities to achieve the resettlement goals of their clients. Case managers help clients register with relevant services such as free public health care and social security, attend medical appointments, enrol in English language classes and schools for children, secure a property lease; public transport use, register with an employment provider and a range of other universal services. Once refugee clients are referred to major universal services, are in long-term accommodation and have gained major competencies regarding various aspects of life in Australia, they are transferred to other resettlement and community programs, which are designed to assist with their longer-term resettlement needs (1).

1.5 Self-rated health as a measure of health

Self-rated health (SRH) has been used extensively in previous studies to measure the complex concept that is one's health. Self-rated health is defined as how an individual rate their own health status (24). Although the factors considered by self-rated health are not yet fully understood, individual self-rated health reflects a comprehensive perception of health, which includes biological, psychological and social aspects unlikely to be captured by more objective measures (34). It can also express health behaviours, psychological and social well-being, socio-economic conditions and overall quality of life (35). It is well established that self-rated health is a strong and independent predictor of mortality, morbidity and health service utilisation (24, 36, 37). Thus, self-rated health measurements might be useful tools for identifying high-risk groups and future events among diverse population groups such as refugees.

The questions for measuring self-rated health can be classified according to three main categories. The first is non-comparative self-rated health, which is typically measured by asking respondents whether they would rate their health as excellent, good, fair, poor or very poor. The next is age comparative self-rated health measured by asking respondents whether they would rate their health as better, the same, or worse if compared to that of other people their age. The last category is time-comparative self-rated health, in which respondents are asked to rate their health compared to how it was at a given time in the past (38, 39). All these forms of the self-rated health item are used in health surveys worldwide as an indicator of an individual's health status. The time-comparative measure is included in the 36-Item Short Form Health Survey (SF-36) (40), which is a widely used instrument for evaluating health-related quality of life (41). It is also one of the items used in the 'Building A New Life in Australia' (BNLA) survey used in this thesis. Time-comparative self-rated health was used as the outcome measure for the quantitative study contained in this thesis. For the purpose of this thesis, health is conceptualised using the World Health Organisation's definition of health:

> *"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."* (42)

Chapter 2 – Measuring self-rated health among resettled refugee populations to inform practice and policy – a scoping review

This chapter will review the literature pertaining to the self-rated measurement of health of refugees, given that this is the most popular method of collecting health information from refugee populations. This review will highlight the themes observed in the literature and observe where more empirical investigation is required, but also consolidate the rationale for this thesis. The following text is adapted from a paper published in the journal BMC Health Services Research, titled: "Measuring self-rated health among resettled refugee populations to inform practice and policy – a scoping review". The paper is presented in its published format in Appendix 1. The citation for this paper is:

> Dowling A, Enticott J & Russell G. (2017). Measuring self-rated health among resettled refugee populations to inform practice and policy – a scoping review. *BMC Health Services Research*. 18(1):817. doi: 10.1186/s12913-017-2771

2.1 Abstract

The health status of refugees is a significant factor in determining their success in resettlement and relies heavily on subjective measures of refugee health. The selection of robust and appropriate subjective measurement tools is challenging due to the number and methodological variation in the use of assessment tools across refugee health studies. The aim of this study was to describe the existing self-report health measures which have been used in studies of adult refugees living in the community. The databases included Electronic databases of Ovid Medline, CINAHL, SCOPUS, Embase and PsychINFO. The results of this review suggest that there are currently a number of reliable and valid measurement tools available for use in refugee health research. However, much variation was found in the methodologies used by researchers in the selection, development and

statistical testing of the tools. Drawing definitive conclusions regarding the most appropriate tools for use among refugee populations is challenging and methodological guidelines are required to assist researchers and clinicians in the development and testing of subjective health measurements.

2.2 Background

Globally, the number of people forcibly displaced by conflict is at the highest levels ever recorded. At the end of 2015, it was reported that the number of refugees had reached 21.3 million (1); an increase of 1.7 million from 2014 (2). A further 3.2 million were asylum seekers (1). Conflicts, violence and human rights violations, particularly in the Middle East and North Africa, are forcing millions of people to leave their homes and to flee from destruction and persecution. A refugee has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion or membership in a particular social group (1).

Resettlement to a third country may be offered to those refugees who cannot return to their home country for fear of persecution or when they cannot be offered a permanent solution in the country they are currently in (3). Resettling refugees are taking on added importance internationally with massive movements of people across continents due to political and economic instability. The long-term health and resettlement prospects of refugees are a matter of continuing relevance for receiving nations as they are recognized as one of the most vulnerable groups in our society in terms of risk for poor health (4-10). They often have unique health needs reflecting the epidemiology of diseases in their country of origin (11); inadequate and disrupted health care; and stressors experienced during the migration and resettlement periods; including trauma, torture and poverty. Exposure to pre-migration trauma may have a lasting impact on their psychological and physical well-being and high levels of stress due to the experiences of living in a new society may also contribute to the health of resettled refugees (12-18). For example, several different types of resettlement experiences have been shown to be associated with poorer health among refugees, including

perceived discrimination (43), low host-country language skills (44), being separated from family (45), financial difficulties and unemployment (44), lack of private accommodation (13), social isolation and poor social support (46).

The collection of refugee health data relies heavily on subjective measures of refugee health because they are less resource intensive than clinical assessments, less burdensome on participants and can capture individual perceptions of health, such as psychosocial factors geographic location and individual characteristics (19). A large number of empirical studies have demonstrated that a person's own appraisal of his/her general health is a powerful predictor of future morbidity and mortality, even after controlling for a variety of physical, socio-demographic and psycho-social health status indices (20-25). Therefore, measurement of self-rated health within resettling refugees may well serve as a surrogate for more traditional clinical assessments of health. Despite this, the selection of robust and appropriate subjective measurement tools for use among this population group is challenging due to methodological variation in the use of assessment tools across refugee health studies. This has meant that refugee health data is often conflicting and difficult to interpret and compare. Several studies have reviewed health measurement instruments used in refugee populations (26-29) and all suggest that the current instruments being used in refugee populations often lack the validity and rigour required to assess constructs of psychological wellbeing, health and other factors that are associated with resettlement outcomes.

This review will build on these earlier reviews by providing an update on the health measurement tools being used in adult refugee research. However, in contrast with these earlier systematic studies, this review will not be limited by specific health concepts; such as trauma (26, 28); refugee gender (27), and we will include refugees living within western and non-western nations; allowing a broader investigation of the literature reporting the use of these measurement tools. The development of such a comprehensive knowledge base is required in the literature; particularly at

this time when refugee movement across the globe is unprecedented and receiving nations are faced with increased pressure to provide immediate and long-term health care that is appropriate, effective and comparative.

2.3 Study aim

The aim of this scoping review is to describe the existing self-report health measures which have been used in studies of adult refugees living in the community. For each measure identified, we will note any reliability and validity testing within refugee groups as well as the settings in which the measures were used. By doing this, we aim to gain a better understanding of how these measures are used in refugee health research. This will allow us to address the challenges of selecting appropriate assessments to measure health within refugee groups.

2.4 Methods

Study design

A scoping review was conducted between October 2016 and February 2017. Scoping reviews are rigorous, with methods that allow for replication, but findings are not synthesized or aggregated to the extent customary in systematic reviews. They allow for the inclusion of diverse study designs and involve an iterative search process where search terms may evolve during the review (30). A scoping review can help to identify gaps in the evidence base and summarize a more broad range of research findings (30). We adopted the Arksey and O'Malley (2005) five stage methodological framework for scoping reviews:

Stage 1: Identifying the research question

Stage 2: Identifying the relevant studies

Stage 3: Selecting studies

Stage 4: Charting the data

Stage 5: Collating, summarizing and reporting the results

Stage 1: Identifying the research question

Our research question was: *"*What is known about the measurement tools used to measure self-rated health within resettled refugee groups?"

More specifically, the present review aims to address the following questions:

1. What settings have been described in studies that have measured self-rated health among refugee populations?
2. What self-rated health instruments have been used in these studies?
3. Which of these self-rated health instruments have been evaluated for validity and reliability criteria within refugee populations?

Stage 2: Identifying the relevant studies

We searched five electronic databases (Medline, CINAHL, EMBASE, SCOPUS and PsychINFO) for English language papers published between January 2000 to March 2017. The following search terms were employed: "refugee", "asylum seeker", "settlement", "humanitarian", "self-perceived health", "subjective health", "mental health", "mental disorder", "physical health", "health status", "surveys and questionnaires", "scales", "screening", "measures" and "instruments". The initial searches were performed in December 2016 and subsequently re-run in Medline in March 2017 to identify additional relevant studies published in 2016 and 2017. No additional studies were identified. This search was supplemented with a general Internet search using Google and Google Scholar to ensure our results were maximal.

Inclusion and exclusion criteria

For a measurement tool to be included in the review, two eligibility steps were required. First, published peer-reviewed articles were required to meet the following criteria:

1. Published in the English language.
2. Published between January 2000 and March 2017.
3. Focused on the collection of self-rated physical and mental health from refugees or asylum seekers using specific health assessment tools.
4. Focused on adults (defined as those aged 18 years and above)
5. Focused on community living refugees; including those living within refugee camps which offer long-term or permanent resettlement and located outside of the refugee or asylum seeker's home country.
6. Included different population groups other than those of interest (eg. immigrants) but reported refugee and asylum seeker data separately.
7. Studies were excluded if they were classified as an incomplete article (eg. Editorial, commentary, letter or conference abstract); were review articles or reported data already used in another included article.

Second, the measurement tool(s) reported in the articles using eligibility criteria 1-7 were required to meet the following inclusion criteria:

8. Had been specifically tested for validity and/or reliability within refugee groups. (Given the limited volume of research in this area, the search was not limited by date of publication).

9. Had not been specifically tested for validity and/or reliability within refugee groups but were described in studies where the:

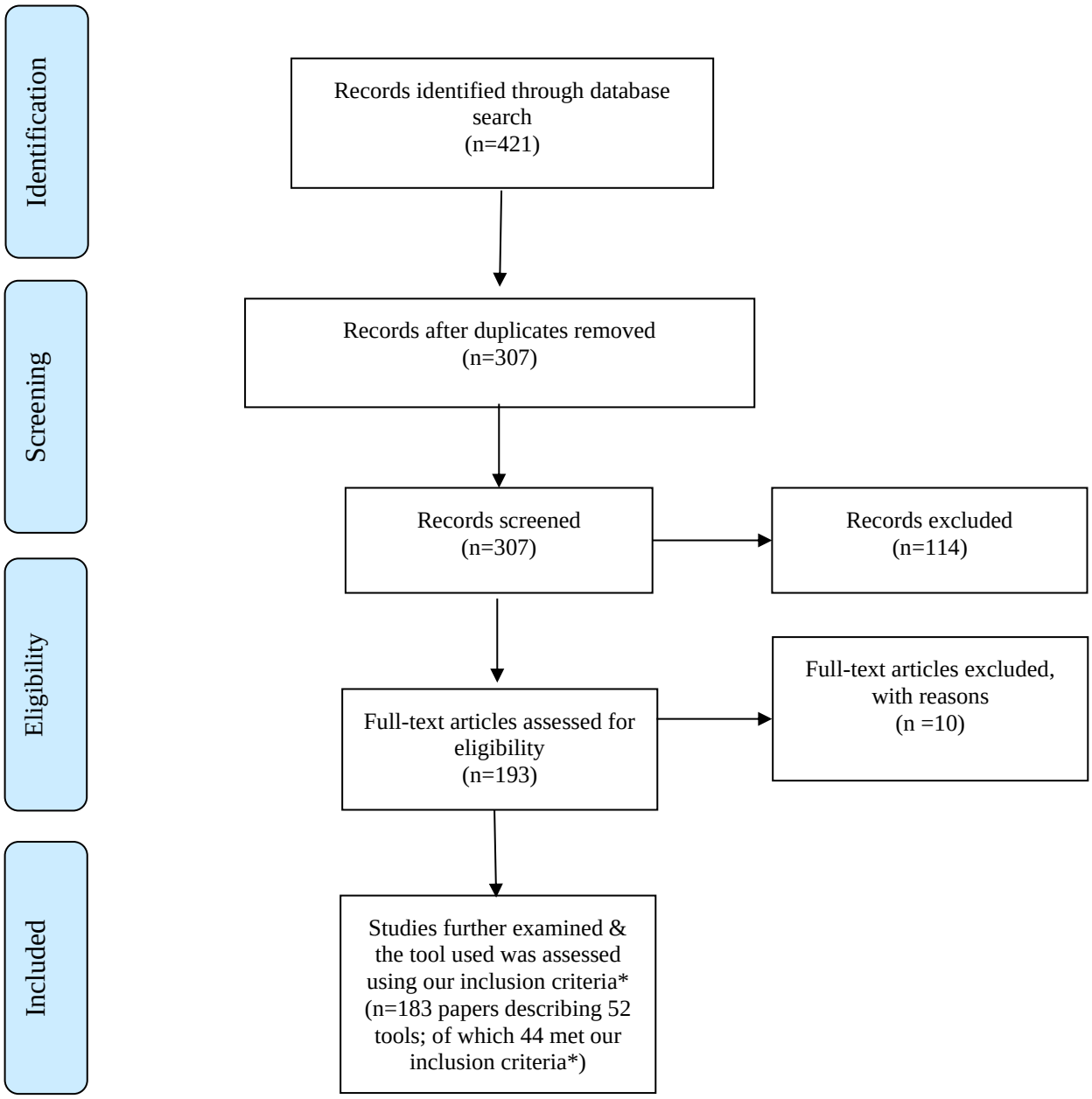
- refugee sample size was ≥150; or
- tool(s) were described in 5 or more research articles.

These tools were included based on their use in research studies of what the study authors considered large sample sizes or in an acceptable number of research studies.

Stage 3: Selecting studies

The screening and selection procedure is shown in Figure 1 using the Preferred Reported Items in Systematic Reviews and Meta-analysis (PRISMA) flowchart (31). A total of 421 references were obtained from the initial search of which 114 studies were duplicates. One author (AD) screened the remaining 276 references, applying the inclusion criteria to the titles and abstracts where possible. Full text review was conducted on 193 articles with a further 10 articles excluded because they did not report on resettled refugees; were studies that included different population groups other than those of interest (eg. immigrants) but did not report refugee and asylum seeker data separately; did not specify the name of the measurement tool(s) used to collect refugee health data; or were studies researching the health of internally displaced persons. The final set of articles was 183 papers with 52 measurement tools identified. To reduce bias caused by human error, two authors (GR and JE) repeated 10% of the study selection process. Rates of agreement were consistently high between the three reviewers, with any discrepancies resolved through discussion.

Figure 1: PRISMA diagram: search and selection process



*****Tools/ instrument(s) were assessed as meeting the inclusion criteria if they reported being tested for validity and/or reliability within refugee groups, or if the refugee sample size was >150, or if described in 5 or more research articles

Stage 4: Charting the data

The 183 articles were charted in Microsoft Excel 2010, using the study characteristics (eg. author information, publication year, study design), participant characteristics (e.g. demographic data), measurement tool name and statistical outcome information (e.g. instrument validation and reliability data).

Stage 5: Collating, summarizing and reporting the results

We devised the following categories of focus: self-rated health instrument name and description; health variable (eg mental health, general health); study setting (eg. clinic, community, refugee camp); study population (eg. refugee, asylum seeker); and reliability/validation data regarding the instrument(s) conducted within refugee or asylum seeker populations. Common themes were identified across articles, and when possible, articles were compared.

Definitions

For the purpose of this scoping review, the following definitions have been applied.

Study population: Refugees included in this study are those who were resettled in a community in a country outside of their own. This included those who had been offered permanent residency in a third country (either through UNHCR mandate; permanent visas) or were living in a refugee camp for over 12 months.

Self-rated health measurement: Self-rated health measures are defined as any report on the status of an individual's health condition that comes directly from the individual, without interpretation of the individual's response by a clinician, researcher or anyone else (32). Modes of data collection in

self-rated health instruments include interviewer-administered instruments, self-administered instruments, computer-administered instruments or interactively administered instruments (33).

Reliability: Reliability was defined as to the extent to which scores are the same for repeated measurement under different conditions (34).

Validity: Validity is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform (34).

2.5 Results

The studies

A total of 183 articles were reviewed for this study (see Table 1 for a summary). Most of the studies were conducted within resettled refugees living in community settings in Western nations. Nineteen studies were conducted in refugee camps. A large proportion of the research focused on populations from the Middle East, although Syrian refugees were under-represented with only 5 studies investigating the health status of this refugee group. Refugee mental health status was the focus of most of the reviewed studies (n=153); particularly symptoms of depression, anxiety and PTSD. Studies were predominantly cross sectional in design and comprised of sample sizes of less than 500 participants. Recruitment mainly involved both sexes with the exception of 10 studies where only females were invited to participate and 2 studies where only males were recruited. The measurement tools were administered to participants using several methods; including face to face oral administration by trained interviewers/interpreters and self-completion.

Table 1: Self-rated health study characteristics

Characteristic	# Studies (n=183)
Country:	
Western	
United States	59
Australia	20
Sweden	14
Norway	8
Canada	7
UK, Denmark, The Netherlands	6
New Zealand	4
Finland, Sth Korea	3
Ireland, Switzerland, Germany	2
Other	6
Non-Western	
India, Uganda	4
Nepal, Rwanda	3
The Gambia, Jordan	2
Other	15
Setting:	
Non-clinical	135
Clinical	48
Health assessment:	
Mental health	153
General health	30
Gender:	
Mixed sex sample	171
Female only sample	10
Male only sample	2
Sample size:	
<500	163
500-1000	12
>1000	8
Population/region:	
Middle East	72
Sth East Asia	58
Sub-Saharan Africa	52
Eastern Europe	35
Study design:	
Cross-sectional	173
Longitudinal	9
Case-control	1
Data type:	
Primary data collection	179
Secondary data collection	4

The measurement tools

A total of 52 tools were identified in the retrieved studies, of which 45 met the study inclusion criteria (see Table 2 for characteristics of these measurement tools). Seven tools were excluded because they had not been specifically tested for validity and/or reliability within refugee groups; were reported in studies where the refugee sample size was ≤150 or where the instrument(s) were described in less than 5 research articles.

Characteristics of measurement tools

The 45 measurement tools were used to measure general health, common mental disorders and trauma/PTSD among refugees. General health was measured using five tools; 19 tools assessed common mental disorders, such as anxiety and depression; and 21 tools investigated trauma/PTSD (see Table 2). No consensus on the suitability of different measurement tools emerged; although the most widely used tools across the studies were the Harvard Trauma Questionnaire for the assessment of trauma/PTSD and the Hopkins Symptom Checklist-25 for anxiety and depression. A third of the identified measurement tools were developed specifically within samples of refugees and were used in half of the reviewed studies.

Aside from the Afghan Symptom Checklist, which was developed within a community sample in Afghanistan; the remaining tools were designed in Western populations; twelve of which were designed for use in clinical settings. Over half of the reviewed studies conducted in non-clinical settings utilized at least one instrument that had been developed within clinical contexts in Western populations. In less than half of the studies, there was evidence that the researchers had undertaken thorough back-translation of the measurement tool(s). Twenty-two studies reported translating English versions of measurement tools word-for-word into the refugee language. Pre-translated versions of the measurement tools were used in 28 of the articles reviewed.

The pre-determined cut-off scores of measurement tools were routinely applied across most studies in spite of the conditions of their original development. Only two studies were identified that adjusted the cut-off score of their selected measurement tools to suit their target population (35-36) using the Kessler Psychological Scale and Self-Reporting Questionnaire; respectively. Measurement tools must also be appropriate for use in non-clinical environments, must be brief, easy to use and interpret, cost-effective and accessible. The Minnesota Multiphasic Personality Inventory, while validated in refugee Asian populations, is 567 items long, takes 60-90 minutes to complete and requires specialist training to administer and score, yet has been used in several community studies of refugees (37-38). Similarly, the Comprehensive Trauma Inventory-104 and New Mexico Refugee Symptom Checklist-121, both developed for use within refugees, are 104 and 121 items long, respectively. The lack of brevity of such tools may make them unsuitable for use in environments where time constraints apply, such as primary care settings.

Statistical testing of measurement tools

More than half of the 45 tools have been evaluated statistically for use among refugee populations. Reliability data was reported for 33 of the tools and 24 tools had published validation data (see Table 2). Prior to the year 2000 only seven of the tools described in this review had evidence of reliability testing and validity within refugee populations. Twenty tools have published reliability *and* validity data among refugee populations. Eight tools had published validity data in refugee groups, but no published reliability data in refugees was found in this review for these measures. This is a notable finding given that a measurement tool cannot be valid unless it is reliable (39) and reasons for the absence of reliability data for these tools could not be ascertained in this review. Six of the reviewed tools have not been tested for either validity or reliability among refugees but meet the criteria of being used in refugee research where the sample size was 150 participants or greater. Eighteen tools were validated by one study each and six tools were validated by two or more studies.

The methods used to conduct reliability and validity testing within studies was highly variable and there appeared an emphasis on conducting reliability testing rather than validation testing of measurement tools. In terms of reliability testing, internal consistency the most commonly reported statistic while test-retest reliability and inter-rater reliability was mostly overlooked. Test-retest reliability was only reported in studies using eleven tools and inter-rater reliability was reported in only 2 studies. Where the validation testing of measurements was conducted, there were inconsistencies across studies in the extent of testing. Ideally, refugee health measures should have, at a minimum, confirmed content and construct validity within refugee populations; however, was only observed in four of the studies. Where a tool was adapted for refugee research, there appeared an emphasis on reliability and criterion validation. Testing only criterion validity does not assess whether the measure appropriately captures culture specific constructs, such as depression, anxiety or PTSD.

Where the development of a measurement tool was described, few studies described efforts to conduct a qualitative analysis of the concepts being measured in the development of the tools; incorporating ten tools. These tools were all designed specifically for use in refugee research, with the exception of the Hopkins Symptom Checklist-25 (Indochinese version) and Medical Outcomes Study Short Form -12, which have been adapted for use in refugee populations.

Modification of measurement tools

Eight of the 45 measurement tools underwent some form of modification to make them more culturally appropriate. The Harvard Trauma Questionnaire was the most commonly modified tool, which is in accordance with the authors' recommendation that the tool be modified and adapted to the characteristics of each cultural group (40). Fourteen of the 62 studies which used the Harvard Trauma Questionnaire, followed the authors recommendations and modified the tool to be more

appropriate for their target refugee population. These modifications included addition/removal of items and cut-off score modification.

The translation of measurement tools across studies was also variable. Ideally, translation of measures should undergo a standard translation/back-translation process to ensure semantic and conceptual equivalence (41) and to avoid culturally sensitive material. In less than half of the studies reviewed, there was evidence that the researchers had undertaken thorough back-translation of the measurement tool(s). A number of studies reported translating English versions of measurement tools word-for-word into the refugee language, which is problematic in cross cultural research as the questions or items may not be communicated correctly, especially if any idioms were used in the source language (42). Attempts to establish conceptual and/or thorough linguistic equivalence of only eleven tools was identified.

Table 2: Overview of the self-rated health measurement tools identified in the scoping review

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT) ; Language Availability (LA)	Publicly available	Reliability testing in refugee population group	Validity testing in refugee population group
General Health	Medical Outcomes Study Short Form - Ware & Sherbourne (1992)	Designed for use in clinical practice and research, and general population surveys.	18	Several versions: 36, 20, 12 or 6 items measuring perceived mental & physical health status across 8 health concepts in past month.	5-10 mins to complete depending on version. Available in 50 languages.	Yes	SF-6: Afghani[47] SF-12: Russian[48] SF-20: Bosnian[49] SF-36: Bosnian[50]	SF-12: Russian[2]
General Health	WHO Quality of Life-BREF - WHO (1998)	Designed to assess self-rated quality of life across different cultures. Appropriate for large research studies, clinical trials, and medical care.	6	26 items measuring 4 quality of life domains (physical health, psychological health, social relationships & environment) in past 2 weeks. Responses scored on 5-point Likert scale.	10-15 mins to complete. Available in multiple languages	Yes	Somalian[51]. Liberian, Togolese, Sierra-Leonean[52].	Somalian[8]
General Health	New Mexico Refugee Symptom Checklist-121 - Hollifield et al (2009)	Designed for use within non-clinical refugee research.	2	121 items; 12 subscales assessing distressing physical and emotional symptoms in past year. Responses scored on 5-point Likert severity scale.	60-90 mins to complete. Available in multiple languages	No	Kurdish & Vietnamese[53]	Kurdish & Vietnamese[7]

General Health	Personal Wellbeing Index - Cummins (2003)	Designed to be a cross-cultural instrument of quality of life.	2	8 items assessing life satisfaction (eg. health, community belonging, future security, religion & spirituality). Responses scored on 11 point Likert satisfaction scale.	5-10 mins to complete. Available in multiple languages	Yes	Afghani & Kurdish[54]	No
General Health	World Health Organisation Disability Assessment Schedule 2.0 - WHO (2004)	Designed to be used within clinical, community and general populations.	1	36 items measuring quality of life (eg. mobility, self-care, interpersonal). Responses scored on 5-point Likert scale.	5-20 mins to complete. Available in multiple languages.	No	Sudanese[55]	No
Common Mental Disorders	Hopkins Symptom Checklist-25 - Mollica et al (1987)	Originally designed for use in Western clinical settings. Indochinese version developed to screen anxiety & depression in clinical refugee samples.	62	25 items; 15 anxiety and 10 depression symptoms. Responses scored on a 4-point scale. An average-item score >1.75 indicates clinically significant distress.	5-10 mins to complete. Available in multiple languages (eg. English, Amharic, Bosnian, Cambodian, Dari, Khmer, Laotian, Pashto, Vietnamese, Tibetan)	No	African [56] [57, 58] [59] [60] [61] [11] Nth & Sth East Asian [62][18][19][20][21][22][25] Middle Eastern [12][13][14][18][19][20] Southern & Eastern Europe [24][12][13][14][22][63][3] Central American [13][64]	Tibetan[17]. Cambodian, Laotian, Vietnamese[18]. Syrian[65].
Common Mental Disorders	General Health Questionnaire - Goldberg & Blackwell (1970)	Designed for identifying psychiatric illness in Western general practice patients.	11	Several versions: 60, 30, 28 or 12 items measure depression, anxiety, social impairment, & hypochondriasis.	2-10 mins to complete depending on version. Available in 38 languages.	No	Somalian[66] Bosnian[67] Kosovan[68] Bhutanese[69]	No

				Responses scored on 4 point Likert scale indicating presence or absence of symptoms. Cut-off scores vary according to version.				
Common Mental Disorders	Centre for Epidemiologic Studies-Depression Scale - Radloff et al (1977)	Designed to measure current depressive symptoms in general populations.	10	20-item measure assessing symptoms of depression in past week. Responses scored on 4-point Likert scale. Suggested cut-off >16.	10-20 mins to complete. Available in multiple languages.	Yes	Iraqi[70] Syrian[28] Iraqi, Lebanese, Yemenese[71] Arabic[72] Bosnian[73]	No
Common Mental Disorders	Beck Depression Inventory - Beck (1961)	Designed to detect/assess/monitor changes in depressive symptoms in clinical setting by trained professionals.	9	21 items of depression rated from 0-3 in terms of intensity. Suggested cut offs: minimal depression <10; mild-moderate depression 10-18; mod to severe depression 19-29; severe depression 30-63.	10-15 mins to complete. Available in multiple languages.	Yes	Hmong[74] Syrian[75] Somalian[29]	Hmong[37]
Common Mental Disorders	Kessler Psychological Scale - Kessler & Mroczek (1994)	Developed to screen for distress/mental illness in Western populations. Has been adopted in Western and non-Western countries as a screening & outcome measure in	8	10 or 6 items measuring psychological distress over previous 4 weeks. Responses scored on 5 point Likert scale. Recommended	10 mins to complete. Available in multiple languages.	Yes	Iraqi[76, 77] Kurdish[39] Afghani[78] Malian[79]	No

		primary care and mental health settings.		cut-off scores: low to mild distress (10-20); moderate (22-29); severe (>=30).				
Common Mental Disorders	Symptom Checklist-90 - Derogatis & Cleary (1977)	Designed as mental health screening tool for Western clinical samples.	8	90 items; 10 subscales asking about anxiety, depression, somatization, hostility, interpersonal sensitivity, phobic anxiety, paranoid ideation, obsessive-compulsive ideation, psychoticism in past week. Responses scored on 5 point scale of distress.	15-30 mins to complete. Available in multiple languages.	No	No	Hmong[80]
Common Mental Disorders	Self-Reporting Questionnaire - WHO (1995)	Designed as psychiatric screening instrument for use in primary health care and/or community settings in low/middle income countries.	5	Depending on version, Items range from 5-20 asking about psychological and somatic symptoms in the past 30 days. Optimal cut-off considered to be 7/8.	5-10 mins to complete. Available in multiple languages.	Yes	No	No
Common Mental Disorders	Internalized Stigma of Mental Illness Scale - Ristcher et al (2003)	Designed to measure internalized stigma within Western clinical samples.	3	29 items; 5 subscales measuring subjective experience of stigma. Responses scored	Completion time: n/a. Available in multiple languages.	Yes	Iraqi, Lebanese, Yemeni[39]	Iraqi, Lebanese, Yemeni[39]

				on 4 point Likert scale. Higher total scores indicate greater internalized stigma.				
Common Mental Disorders	Afghan Symptom Checklist - Miller et al (2006)	Designed to measure psychological distress within non-clinical samples of Afghanis.	2	23 items measuring well-being and distress in the previous 2 weeks. Responses scored on 5 point Likert scale.	10 mins to complete. Available in English & Dari.	No	Afghani[1]	No
Common Mental Disorders	Hospital Anxiety & Depression Scale - Zigmond & Snaith (1983)	Designed for use in Western clinical & research settings.	2	14 items measuring cognitive & emotional aspects of depression and anxiety. Responses on 4-point Likert scale.	5 mins to complete. Available in multiple languages.	No	No	No
Common Mental Disorders	Augmented Anxiety Sensitivity Index -Hinton et al (2006)	Designed to measure culturally specific fears within Cambodian refugee outpatients in USA.	1	ASI: 16 items assessing fear of different anxiety symptoms. Responses scored on 5-point Likert scale. Augmented ASI: ASI with 9-item addendum assessing anxiety-related concerns.	Completion time: n/a. Available in English & Cambodian.	No	Cambodian[81]	No
Common Mental Disorders	Beck Anxiety Inventory - Beck (1988)	Designed to measure anxiety in adults and adolescents in	1	21 items of anxiety rated from 0-3 with total possible	5-10 mins to complete. Available in	Yes	No	No

		clinical & research settings.		score of 63. Suggested cut-offs: 0-7: minimal anxiety; 8-15: mild anxiety; 16-25: moderate anxiety; >26: severe anxiety.	multiple languages.			
Common Mental Disorders	Depression, Anxiety Stress Scale - Lovibond & Lovibond (1995)	Designed to measure symptoms of depression, anxiety & stress in community settings.	1	20-item measure assessing symptoms of depression in past week. Responses scored on a 4-point Likert scale. Suggested cut-off >16.	10-20 mins to complete. Available in multiple languages.	Yes	Arabic[34]	No
Common Mental Disorders	General Perceived Self-Efficacy Scale - Schwarzer & Jerusalem (1995)	Designed to assess self-efficacy within Western non-clinical/clinical populations.	1	10 items assessing ability to cope with daily hassles and flexibility to adapt after experiencing stressful life event(s). Responses scored on 4 point Likert scale. Higher scores indicate stronger patient's belief in self-efficacy.	2-10 mins to complete depending on version. Available in multiple languages.	No	Afghani, Kurdish[8]	No
Common Mental Disorders	Mental Health Inventory - Veit & Ware (1983)	Designed for use in general Western populations to detect mental health disorders.	1	18 items, consisting of two subscales: psychological distress (22	5-10 mins to complete. Available in multiple languages.	Yes	Bosnian[82]	No

				items) and psychological wellbeing (16 items). Responses scored on 6-point Likert scale. Higher scores reflect better mental health.				
Common Mental Disorders	Patient Health Questionnaire - Spitzer & Williams (1994)	Designed to measure depression & severity in Western clinical samples.	1	9 items measuring depressive disorder according to the DSM-IV. Responses scored on 4-point Likert scale indicating degree of severity.	5 mins to complete. Available in multiple languages.	No	No	No
Common Mental Disorders	Refugee Health Screener-15 -- Hollifield et al (2013)	Designed to screen common mental disorders in clinical samples of refugees.	1	15 items assessing distress, anxiety and depression. Items include 1 coping item, 13 symptom items and 1 distress thermometer. Responses scored on 5 point scale. Suggested cut-offs >12 or >5 on distress thermometer (positive cases).	5-10 mins to complete. Available in 11 languages.	Yes	Burmese, Bhutanese, Iraqi[83]	Burmese, Bhutanese, Iraqi[46][84]
Common Mental Disorders	Sheehan Disability Inventory - Sheehan (1983)	Designed to assess functional impairment associated with anxiety disorder	1	3 items measuring impairment due to the disruption of daily activities	5-10 mins to complete. Available in 48 languages.	Yes	No	No

		diagnosis in Western clinical samples.		in the areas of work, social life, family and home life due to current psychiatric symptoms. Responses scored on analogue scale from 1-10 with 10 being the lowest possible level of functioning.				
Common Mental Disorders	Vietnamese Depression Scale -Kinzie et al (1982)	Designed to measure depression among clinical samples of Vietnamese refugees.	1	15 items assessing depression and physical & psychological symptoms associated with depression. 6 depression items are culturally specific for Vietnamese population. Uses 3- and 4-point Likert scales. Optimal cut-off $\geq$13.	5-10 mins to complete. Available in English & Vietnamese.	No	Vietnamese[85, 86]	Vietnamese[48][49]
Trauma/PTSD	Harvard Trauma Questionnaire - Mollica et al (1992)	Designed for clinical samples of refugees. Must be modified and adapted to the characteristics of each cultural group.	62	4 parts: Part 1- measures 17 trauma items. Part 2- respondent describe most traumatic experience/event experienced during their refugee experience. Part	50-60 mins to complete. Available in multiple languages.	No	African [11][12][14][15][16][87] [88] Nthn & Sth East Asian [11][17][20][22][44][45][46] Middle Eastern [12][14][21][24][44][45][54] Sthn & Eastern Europe[12][89][14][90][17] Central American[27]	Cambodian, Laotian & Vietnamese[52][53] Sub-Saharan Africa[50] Chechen & Afghan[12]

				3- assesses likelihood of head injury. Part 4- measures 30 trauma symptoms. Scores of 2.5 or above considered "positive" for PTSD in Indochinese populations.				
Trauma/PTSD	Posttraumatic Diagnostic Scale (PDS) -- Foa et al (1996)	Designed to provide brief self-report measure of PTSD in both clinical and research settings.	15	4 parts. Part 1- checklist of traumatic events that respondent may have experienced or witnessed. Part 2- Respondents indicate which event has disturbed them the most in past month. Part 3-17 PTSD symptoms items experienced in past month. Responses scored on 4-point Likert scale (0-not at all or only one time to 3-five or more times a week or almost always).	20 mins to complete. Language availability: English	Yes	Turkish, Iranian, Sri-Lankan, Bosnian, Afghani[46] Iraqi[23][46] Asian, European, African[91]	Iraq, Lebanese, & Arab[33] Ugandan & Somalian[92] Syrian[28] Asian, European, & African[60] Kosovar[93] Rwandan[94]
Trauma/PTSD	Post Migration Living Difficulties Scale - Silove et al (1998)	Designed to assess current life stressors of asylum-seekers.	10	23 items to assess recent adverse life experiences typical of migration (eg. delays in processing	10-20 mins to complete. Languages: English.	No	No	Tamil[95]

				applications, access to health & welfare, & stressor elated to resettlement). Responses scored on 5-point scale.				
Trauma/PTSD	Posttraumatic Symptom Disorder Checklist - Weathers et al (1993) PCL-90	Designed to measure PTSD among non-clinical sample in USA.	7	17 items assessing DSM-IV PTSD symptoms. Responses on 5 point Likert scale as to how much these have been bothered by each item in past month. Some training is required to administer test.	5-10 mins to complete. Language availability: English,	Yes	No	Somali & Oromo[96] Darfuri[97]
Trauma/PTSD	Impact of Events Scale-Revised - Horowitz et al (1979)	Designed to measure current subjective distress related to a specific event among Western clinic samples.	5	15 items related to a particular event. 7 items measure intrusiveness & 8 items measure avoidance. Responses scored on 4-point Likert scale according to how often each item has occurred in past 7 days.	45-60 mins to complete. Available in multiple languages.	Yes	Chechyan, Afghani & West African[12]. Middle Eastern[98]. Bosnian[99]. Middle East, Central Africa, Sth Asia & Sth E Europe[10]. Somalian[100]	Chechyan, Afghani & West African[12]
Trauma/PTSD	Comprehensive Trauma Inventory-104 - Hollifield et al (2005)	Designed for use within community samples of refugee.	4	104 items; 12 scales assessing range of traumatic events (eg psychological & physical injury, detention,	60 mins to complete. Available in English, Kurdish, Vietnamese.	Yes	Kurdish & Cambodian[101]	Kurdish & Cambodian[70]

				intentional abuse, deprivation, discrimination). Responses scored on 5-point Likert scale whether or not the event was experienced and, if so, how much impact the event had.				
Trauma/PTSD	Cumulative Trauma Disorder Scale - Kira et al (2012)	Designed for use within clinical & non-clinical samples of refugees.	4	15 items measuring trauma symptoms (eg depression, anxiety, somatization) in previous month. Responses on 5 point scale.	10 mins to complete. Languages: English,	No	Iraqi, Lebanese & Yemeni[102] Arabic[34]	Iraqi[71]
Trauma/PTSD	HADStress - Westermeyer et al (2010)	Designed to measure somatic symptoms within community sample of Somali refugees living in USA.	4	4 items measuring somatic symptoms: headaches, appetite change, dizziness and sleep problems. Responses on 0-4 scale with higher scores indicating more somatic symptoms. Cut off score of >3 recommended.	10 mins to complete. Languages: English,	No	No	Somalian[103] Ethiopian[104]
Trauma/PTSD	Post Traumatic Growth Inventory - Tedeschi & Calhoun (1996)	Designed to assess positive outcomes among traumatized non- clinic Western samples.	3	21 item assessing positive outcomes among those who have experienced traumatic events. Responses scored on 6 point scale.	5-10 mins to complete. Available in multiple languages.	Yes	Arabic[67] Yugoslavian(105)	Arabic[67] Bosnian[106]

Trauma/PTSD	Posttraumatic Symptom Scale - Holen et al (1983)	Designed in sample of German Armed Forces following a UN peace keeping mission to Cambodia to determine causes and scale of stress reactions.	3	10 or 16 items measuring PTSD symptoms in past 7 days according to DSM-III criteria. Presence or absence of symptoms is rated in Yes/No format. Sum of positive items used as total score.	10 mins to complete. Languages: English	Yes	Bosnian[107]	No
Trauma/PTSD	Annihilation Anxiety Scale - Kira et al (2012)	Designed for use in clinical settings as well as in research with severely traumatized populations, such as refugees.	2	3 items that assess annihilation anxiety. Responses are scored on 5 point Likert scale.	5 mins to complete. Languages: English,	No	Iraqi, Lebanese & Yemeni[34]	Iraqi, Lebanese & Yemeni[34]
Trauma/PTSD	Health Leaflet - Sondergaard et al (2003)	Designed to measure PTSD within community samples of refugees	2	15 items to screen for PTSD. Yes/No responses to items consisting of psychological symptoms, network and attitude towards the future in the new country and persecution. Suggested cut off=10.	10 mins to complete. Languages: n/a.	No	No	Iraqi[108]
Trauma/PTSD	Minnesota Multiphasic Personality Inventory-2 and Minnesota Multiphasic Personality	Designed to assess personality traits and psychopathology among Western clinic samples.	2	MMPI-2: 567 items measuring personality and psychopathology, consisting of 8 validity scales, 10 clinical scales &	25-90 mins to complete depending on version. Available in multiple languages.	Yes	No	Korean[109] Vietnamese[110]

	Inventory-2-RF - Tellegen & Ben-Porath (2008)			15 content scales. Responses are recorded as True/False. MMPI-2-RF: 338 items from MMPI-2, including 9 validity scales.				
Trauma/PTSD	Traumatic Life Events Questionnaire - Kubany (2000)	Designed in general clinic western population for use in research, primary care or emergency rooms.	2	23-items measuring 22 types of potentially traumatic events. Responses scored on Likert scale range from "never" to "more than 5 times" and whether fear, helplessness or horror was present ("yes/no").	10-15 mins to complete. Available in English & Spanish.	No	No	No
Trauma/PTSD	Cambodian Somatic Symptom & Syndrome Inventory - Hinton et al (2013)	Designed for use in clinical samples of Cambodian refugees. Very specific to Cambodians.	1	23 items; 2 subscales assessing somatic symptoms & cultural syndromes in past week. Somatic subscale (12 items) & syndrome scale (11 items). Responses scored on 5 point Likert scale asking how much he/she was bothered by certain somatic	10 mins to complete. Languages: English & Cambodian.	No	Cambodian[111]	Cambodian[80]

				symptoms & syndromes.				
Trauma/PTSD	Dissociative Experiences Scale - Carlson & Putnam (1986)	Designed to measure dissociation in normal & clinic Western populations	1	28 items that assesses dissociative symptoms. Each item asks about the frequency (from Never to Always) that a particular dissociative symptom is experienced. Scores of >20 indicate probable posttraumatic or dissociative disorders.	10 mins to complete. Available in multiple languages.	Yes	Ethiopian[51] Bosnian[112]	No
Trauma/PTSD	Posttraumatic Stress Disorder Interview for Vietnamese Refugees - Doa et al (2012)	Designed to assess trauma among clinic samples of Vietnamese refugees.	1	Part A: 30 items assessing pre-migration, migration, encampment, post-migration traumas. Yes/No response. 'Yes' response to Part A item(s), respondent proceeds to Part B which assesses PTSD criteria.	Completion time: n/a. Available in English & Vietnamese.	No	Vietnamese[113]	Vietnamese[82]
Trauma/PTSD	Primary Care Post-Traumatic Stress Disorder Screen - Prins et al (2003)	Designed for use in primary care and other medical settings.	1	5 items assessing dimensions of PTSD (re-experiencing, numbing, avoidance, hyper arousal) with	5 mins to complete. Language availability: English,	Yes	No	No

				Yes/No response options.				
Trauma/PTSD	Resettlement Stressor Scale - Clarke et al (1993)	Designed to measure stressors faced within a community sample of Cambodian refugee adolescents.	1	32 items assessing trauma events in migration/present settlement. Responses scored on 5-point scale.	10-20 mins to complete. Avail in English & Cambodian.	Yes	No	Cambodian[114]
Trauma/PTSD	War Trauma Scale -Clarke et al (1993)	Designed for use within clinical samples of Cambodian adolescent refugees that had lived through the Pol Pot regime.	1	42 items measuring traumatic experiences inflicted by Pol Pot regime. Items are all worded in relation to Pol Pot era.	20-30 mins to complete. Available in English & Cambodian.	No	Cambodian[83]	Cambodian[83]

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2.6 Discussion

This scoping review identified 45 different self-rated health measurements in 183 studies. While most were used in the USA, the measurement tools were utilised in a broad range of refugee ethnic groups, countries and settings and mostly for the assessment of mental health status among refugees. A third of the identified tools were designed specifically for refugee research. Some of the tools are frequently used out context for which they were designed. No consensus on the suitability of different measurements was evident. An apparent focus on the development, reliability and validity of self-rated health instruments for use among refugee populations is emerging, although diverse methods were observed across studies.

Apparent from this review is that no consensus exists on the use of different measurement tools amongst researchers and there are no standard criteria against which quality assessment of these tools can be made. This has resulted in a large number of tools of varying rigour being used in refugee health research; a finding that has been reported in previous reviews of refugee health measurement tools (26-29). The resulting variability in structure, reliability and validity increases the potential for inaccurate conclusions to be made concerning the health of refugee populations. Several studies have previously reported large variations in prevalence rates of mental health disorders among refugees (4, 8, 14, 43) and these disparities have been attributed to inconsistencies in methods and instruments used for data collection, analysis, and reporting (44). Tools used in refugee health research should have at a minimum, demonstrated reliability and validity of the construct within refugee populations (26, 45) to ensure that cultural concepts and constructs are able to be accurately measured (45). A number of tools identified in this review have published reliability and validity within refugee groups, but few provided evidence of testing for construct validity and the methods used to confirm reliability and validity were highly variable across studies.

Refugee health measurement tools are also frequently used out of the context for which they were designed and this may influence the quality of data being collected. For example, clinical tools are developed for use among treatment seeking patients and are designed to be administered in safe and trusting environments where care can be provided for any adverse reactions. They are not specifically designed for non-clinical settings where the level of contact between respondents and often non-clinical, administrators is brief. Clinically developed tools also have established cut off points for identifying individuals who are identified as being positive for specific disorders and these may shift as the setting changes from a clinic to a community sample. It is not known whether the application of measurement tool scores across heterogeneous populations leads to reasonable inferences concerning symptom severity and diagnoses (41, 45), but there is a body of work suggesting that using a single cut-off score may not be a valid procedure for cross cultural samples (45-49).

The challenges in developing and adapting health measurement tools for refugee research were evident in the reviewed literature. The methods used were inconsistent and/or limited across studies. For example, testing only reliability was common across the reviewed studies. Reliability only addresses the degree to which measurement tools result in reproducible results across different interviewers and applications (50); it does not measure the degree to which the tool actually measures the construct of interest. Where validity testing was conducted, there was a focus on criterion validity (or ‘caseness’). Criterion validity does not assess whether the measure appropriately captures culture specific constructs, such as depression, anxiety or PTSD. Determining the construct validity of a tool demonstrates how well the tool measures the constructs it was designed to measure (34) and ensures that inferences made using the results of such assessments, such as severity of symptoms and prevalence rates are supported. For example, the PTSD symptom patterns of refugees may deviate from those of Western populations because of both cultural and war-related factors, as well as post-traumatic life circumstances (47, 51). The

failure to appropriately standardize or adapt existing measures for use with refugee populations means that they may lead to incorrect generalizations about the health of refugees and this can have a widespread effect and can lead to the development and implementation of incorrect interventions and policies (52).

The use of translated versions of measurement tools developed for Western English-speaking populations was also frequently reported across the reviewed studies and this review found inconsistencies in the translation of measurement tools across studies. Translation should be undertaken using thorough back-translation of the measurement tool(s) into the first language of those being assessed by using the back-translation method by itself or in combination with a committee or bilingual assessment method (41, 53) The translation of English versions of measurement tools word-for-word into the refugee language is problematic in cross cultural research as the questions or items may not be communicated correctly, especially if any idioms were used in the source language (42, 44). Appropriate translation ensures semantic and conceptual equivalence and is one of the requirements for establishing validity (41, 54).

Health measurement tool items should be examined to illustrate why they are culturally relevant in terms of the rationale behind their inclusion and understanding what it means for a person in that culture to have the symptom or syndrome or how they vary across cultures. For example, the way in which western psychology describes PTSD does not fit the symptoms of people from non-western cultures, yet tools measuring trauma in refugees often use western trauma concepts and constructs. The exploration and establishment of equivalence of measurement tools between local indigenous constructs and symptoms is an important step in ensuring that the measurement tools are tapping into the respondents' understanding of their health (26, 55) and was frequently overlooked in the reviewed refugee research studies.

2.7 Recommendations

Researchers would benefit from the development of guidelines to instruct proper and consistent measurement design and testing; such as achieving cultural equivalency of health concepts, reliability and validity across refugee population groups and settings. For example, researchers would benefit from the use of standardized procedures such as the Translation Monitoring Form (56) which provides a method for the systematic translation and adaptation of instruments. Evaluation of the performance of measurement tools needs to be undertaken in rural and remote settings. Few studies are conducted in non-metropolitan areas. Given that receiving nations, such as Australia and USA, are resettling refugees beyond the major metropolitan regions, it is important that these populations are not overlooked so that we can understand the ongoing health needs of remote refugee populations to inform often limited, and often over- stretched, rural and regional health services.

The development of integrated and comprehensive measurement tools to assess all elements of relevance to the health of refugees would be beneficial to health service providers. The current tools are not comprehensive, but rather assess parts of experiences and/or symptoms and disorders. Measures, such the *Refugee Mental Health Assessment Package*, hold promise as an integrated and comprehensive package of measures to assess all elements of relevance to the mental health of refugees (57). Currently, there is an underrepresentation of tools measuring resettlement stressors, pre-war, pre-conflict and non-conflict trauma within refugees. The resettlement environment is significant to the health of refugees and the lack of instrumentation to capture this information means that the development of health interventions during resettlement is challenging. Given that refugee trauma often precedes the primary war-related event that causes them to flee, this is represents a significant gap in refugee research and research is required into the development of such measures.

There are several limitations to this review. Firstly, electronic searches of the literature are not error free, and citations to some studies and instruments may not be included in the literature. In addition, our review will be limited by the fact that the searches were limited to articles in English published since 2000. However, given the limited volume of research in this area, the search for validation studies of tools utilised in refugee research was not limited by data of publication. It was difficult to ascertain between projects and papers (ie projects are those where multiple papers were published from the one study as opposed to single studies from single projects) and based on this, the decision was made to look at papers, not projects, for the review. The results of the review should be interpreted with the knowledge that because scoping reviews do not screen for quality of studies and, they have large variations in study methodologies and sampling of the studies included in the review.

2.8 Conclusion

This review shows that there are currently a number of reliable and valid measurement tools available for use in refugee health research which can be used across a variety of settings. However, further work is required to achieve consistency in tool quality and in the use of these tools. The paucity of quality assessments prohibits accurate measurement of important health issues needed by health and immigration planners and policy makers. Methodological guidelines are required to assist researchers and clinicians in the development and testing of subjective health measurement tools. In the interim, an achievable and very useful study would be an evaluation of the most current and robust self-rated health measurement tools for use within refugee health research.

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Chapter 3: An investigation into the association between pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia. A protocol for a mixed methods study

Following an exploration of the self-rated health measurement tools used in refugee health research, this chapter outlines the overall design used in this thesis. Using the knowledge obtained from the previous chapter, a mixed methods study design is presented to further understand how self-rated health can be used to broaden the current knowledge around the long-term health of refugees as they settle into a new host society. This chapter includes the adapted text from a manuscript published in the journal BMC International Health and Human Rights, titled: "An investigation into the association of pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia: a protocol for a mixed methods study". The paper is presented in its published format in Appendix 2. The citation for this paper is:

> Dowling A, Enticott J & Russell G. (2019). An investigation into the association of pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia: a protocol for a mixed methods study. BMC Int Health Human Rights. 19(1):15**.** doi: 10.1186/s12914-019-0198-2.

3.1 Abstract

Refugees are one of the most vulnerable groups in our society. They are at risk of poor physical and mental health outcomes, much of this attributed to traumatic events prior to migration and the additional risk factors refugees face in the host nations. However, how migration factors shape the health of resettling refugees is not well understood. This study uses a mixed methods approach to examine how pre- and post-migration factors shape the self-rated health of resettling adult refugees in an effort to address the current knowledge gap. This study will use a sequential explanatory mixed method study design. We begin by analysing resettlement and health data from the 'Building

a New Life in Australia' longitudinal study of humanitarian refugees resettled in Australia to identify significant associations between migration factors and refugee health. Then, a series of semi-structured interviews with resettled refugees will further explore the lived experiences of refugees with respect to the relationship between migration and refugee health. Finally, we will integrate both sets of findings to develop a detailed understanding of how and why migratory factors contribute to refugee health during resettlement. There is a paucity of studies that examine the multidimensional nature of refugee health during resettlement and as a result, little is understood about their resettlement health needs. This information is required to inform existing or new resettlement interventions to help promote or improve refugee health. To overcome these limitations in the research knowledge, this study will use a mixture of study methods to illustrate the complex and multifaceted determinants of refugee health during resettlement in Australia.

3.1.1 Variation to published manuscript

The protocol manuscript accepted for publication describes a procedure for examining the self-rated general and mental health outcomes in the quantitative study phase. However, due to unexpected circumstances, a variation had to be made to the quantitative study design following the acceptance of the protocol manuscript by *BMC International Health and Human Rights*. This involved an amendment to the quantitative study focus after it was discovered that another Monash University student had analysed the same data sets to identify risk factors for PTSD and severe mental illness among resettling adult refugees in Australia. This meant that there was potential (and unintended) duplication between the two studies. To avoid any possible duplication, my PhD supervisors and I decided to re-focus the quantitative study on refugee *general* health status only as this is an under studied and important area in refugee health research. Therefore, removed from my quantitative study were PTSD and severe mental illness as outcome measures. The decision was also made at this stage to include a variable that related to chronic health condition(s) based on a participant's self-reported health condition that has lasted 12 months or more. This variable is referred to as

"chronic health condition(s)" in this thesis. These amendments are reflected in the quantitative study chapter (ie. Chapter 5).

3.2 Background

Violent conflicts and persecution are causing increasing numbers of people to be forcibly displaced (1). Among the 65.6 million people displaced in 2016 are 22.5 million refugees (1). Refugees who are unable to return to their home country for fear of persecution may be offered resettlement in a third country (1). Refugees who are accepted for resettlement are among the most vulnerable groups in our society in terms of risk for poor health due to their past and current experiences (2-10). As one of the current 37 countries worldwide that provide resettlement programs, Australia currently accepts approximately 16,550 refugees each year for permanent resettlement (11).

Many refugees are affected by their pre- and post-migration experiences (12-14). Most will have witnessed or experienced pre-migration trauma including torture; human rights violations and systematic violence (15-18). These events may have a lasting impact on psychological and physical well-being (6,10). For example, pre-migration trauma is among the most consistent factors associated with poor mental health in resettled refugees (19-20). The time following immigration is often experienced as a time of crisis, stress and adjustment and there is evidence suggesting that resettlement issues, such as housing, employment and financial stress, worsens refugees' health (19,21-26). Therefore, past and current experiences can potentially place refugees at an increased risk for health problems.

Refugee host nations need to understand the health needs of this vulnerable and ever-growing population. However, the impact that migration experiences have upon the health of resettling refugees is not well understood. Some of this knowledge gap can be attributed to methodological limitations in the current research. While qualitative studies of the refugee migration experience

provide valuable insights into the meanings of displacement, transition and resettlement (27), it is often difficult to generalise these findings to the broader resettled population (28). When it comes to the measurement of refugee health, most studies are cross-sectional in design and utilize a variety of quantitative instruments (29). This has meant that refugee health data is often conflicting and difficult to interpret and compare and can provide only a 'snapshot' of a single moment in the refugee resettlement experience. Also lacking are approaches combining longitudinal and qualitative designs that can adequately capture the multidimensional, transitional and contextual elements of the refugee resettlement experience.

Longitudinal studies are needed to detect changes in the characteristics of resettling refugees over time and factors associated with these changes (ie. cause and effect relationship). The refugee resettlement experience is a time of change and resilience, and refugee research must be responsive to such change. Longitudinal studies of resettling refugees can gather important data about the health of refugees, including risk and protective factors and long -term health outcomes. The combination of longitudinal inquiry with qualitative research allows for both measurement and meaning (28). That is, the qualitative approach gives voice and context to the refugee experience, while the longitudinal approach can be used to provide population-based evidence (28). This is important because without such information, support services may not be able to effectively deal with the range of challenges that have evolved from the refugee journey and new settlement. Without this knowledge, it is difficult for resettlement nations, such as Australia, to support positive resettlement experiences for refugees and can lead to a significant financial cost to the resettlement nation.

We present a study protocol designed to address these knowledge gaps. The protocol describes a mixed methods approach to identify migration factors that play an important role in the long-term refugee health using a combination of quantitative and qualitative data obtained from resettled

refugees. Firstly, we will examine pre- and post-migration factors that are associated with self-rated general and mental health using data from a large, longitudinal survey of resettled refugees in Australia. Semi-structured interviews will then be conducted to explain the results of the quantitative study that require further follow up or explanation; such as unexpected findings. To our knowledge, this is the first study of its kind to use the described methodological approach to investigate the health of resettled refugees. It is anticipated that the knowledge that emerges from this study will provide a valuable insight into the health of resettling refugees and lead to recommendations for resettlement services that might be more effective than those currently in place.

3.3 Study aim

The overall aim of the study is to identify and explore how pre- and post-migration factors influence self-rated health within adult humanitarian refugees to Australia.

3.4 Methods

The study will adopt an explanatory mixed methods design using sequential quantitative-qualitative methods (30). Sequential procedures elaborate or explain the findings of one method with another method (30). The first phase of the study will involve the secondary analysis of resettlement data collected as part of the Australian Government's 'Building A New Life in Australia' longitudinal survey of resettled refugees living in Australia (31). Statistical analysis of the 'Building A New Life in Australia' survey data will be used to identify migration variables that are significantly associated with the health outcomes of resettled refugees. The second phase of the study, namely the qualitative stage, will be designed and carried out for the purpose of interpreting and explaining the results of the quantitative phase using the perspectives of refugees themselves via semi-structured interviews. In the third phase, the quantitative and qualitative data are merged and interpreted. This type of mixed methods study design is used when qualitative data is valuable for

explaining or expanding the quantitative findings, particularly in the context where further explanation is required, such as statistical differences among groups or individuals with unexpected findings [32]. In this study, the qualitative portion will explain *how* the migration factors, identified in the quantitative study; play a role in the health of resettling refugees; thereby providing both objective and subjective knowledge of the phenomena under investigation. See Figure 1 for the mixed methods study framework.

Figure 1: The mixed methods study framework (Figure adapted from Creswell et al., 2003) (30).

	Procedure	**Product**
Phase 1 **QUANTITATIVE** **Secondary data analysis**	Longitudinal cohort study (n=2399 at baseline) data analysis using STATA software.	Descriptive statistics. Analytical statistics using mixed methods analysis.
Interview protocol development	Development of interview questions using results from data analysis.	Interview topic guide
Phase 2 **QUALITATIVE** **Data collection**	Individual interviews	Text data
QUALITATIVE **Data analysis**	Content analyses	Codes and themes
Phase 3 **Integration of quantitative and qualitative results**	Interpretation and explanation of quantitative and qualitative results	Discussion about resettlement strategies to support positive health outcomes. Implications for further research.

Phase 1: Quantitative study

We will examine data from the first three waves of the BNLA study, collected from October 2013 to March 2016. The BNLA is a five-year national study (2013-2018) conducted by the Australian Government's Institute of Family Studies to examine how humanitarian refugees settle into a new life in Australia (31,33). Details of the 'Building A New Life in Australia' study is outlined in existing documents (31,33) and briefly described below.

Ethics approval and consent to participate

The original 'Building A New Life in Australia' study was approved by the Australian Institute of Family Studies (AIFS) ethics committee, which is registered with the National Health and Medical Research Council (NMHRC). All necessary administrative permission to use the "Building A New Life in Australia" data have been obtained by the study authors. De-identified BNLA data is accessible by authorized researchers who have obtained permission from the Australian Department of Social Services. This permission was obtained by study authors AD, JE and GR. Ethics exemption to use the data was granted by the Monash University Research Ethics Committee.

Consent for publication

Obtaining individual consent from participants to use their de-identified data was not required by the study authors.

Participants

In this part of the study, no participants will be recruited or contacted by the researchers. Instead, we will conduct a secondary analysis of the sample recruited for the 'Building A New Life in Australia' study. To be eligible for the 'Building A New Life in Australia' study, individuals needed to be aged 15 years and over and had been granted a permanent humanitarian visa by the

Australian Government in the 3-6 months preceding the baseline survey (31). The respondents are from 35 different countries and speak 50 different languages. At baseline, the ages of respondents ranged from 15 to 83 years (31).

Sampling

Participants for the 'Building A New Life in Australia' study were drawn from the Australian Department of Immigration and Border Protection settlement database from eleven locations around Australia. Migrating Units (MU) were the primary sampling units for the 'Building A New Life in Australia' study (31,33). Migrating Units consisted of principal applicants (PA) and secondary applicants (SA). Principal Applicants were the lead participant for the study, and were the initial individuals contacted for participation. Secondary Applicants are other members of the Migrating Unit noted on the Principal Applicant's visa application (eg. spouse or child) (31,33).

Recruitment

Invitations to participate in Wave 1 of the study, in English and primary Principal Applicant language, were sent to the Principal Applicants. Bilingual Community Engagement Officers were also employed to assist researchers recruit for Wave 1; liaised with community leaders to locate individuals and provide a bilingual perspective to optimise recruitment of study participants. After Principal Applicant agreement to participate, Secondary Applicants within consenting Migrating Units invited to participate. Invitations to participate in waves 2 and 3 were extended to participants in the previous wave, via mail and telephone (31).

Measurement

This study will utilise data collected via the 'Building A New Life in Australia' survey and covers a range of key domains relevant to refugee resettlement (eg. demographic, housing, pre-migration

experiences, health) (31). The 'Building A New Life in Australia' survey was translated into 14 different languages with the availability of interpreters (31).

Data collection

The BNLA is a longitudinal study based on a representative sample of 2399 humanitarian refugees who arrived in Australia or were granted a permanent protection visa between May and December 2013 (31). A total of eleven locations around Australia were chosen as recruitment sites across Australia to five a mix of metropolitan, rural and regional samples. Locations included major Australian cities plus six confidential locations and the population was therefore a geographically clustered sample (31). Invitations to participant in Wave 1 of the BNLA study, in English and respondents' primary language, were sent in the mail to eligible individuals. Researchers then followed up with a telephone call or home visit if telephone contact failed (136). Once an individual agreed to participate in the study, the BNLA survey was administered to participants using multiple methods to accommodate responses from individuals who may have had poor reading literacy. The first three waves of 'Building A New Life in Australia' data were obtained using alternating waves of home visits (Waves 1 and 3) and telephone interviews (Wave 2) (31). Waves 1 and 3 were mostly administered via computer-assisted self-interview and accredited interpreters were available either via telephone or in person if none of the other interview methods were feasible to the participants. Wave 2 involved computer assisted telephone interview using bilingual interviewers and interpreters as required. (136). The BNLA survey was translated into 19 different languages for the study.

Variable selection

Variable selection for this study was informed by a conceptual framework oriented to Cross-Denny & Robinson's social determinants of health model (SDOH) (34). A review of the literature reporting significant predictors of refugee health outcomes informed the selection of candidate variables from the 'Building A New Life in Australia' dataset to populate the social determinant of health model. The literature was scanned for reported risk factors for poorer health outcomes among adult refugees living in developed host nations. Although this was not considered a formal process for the PhD, the following criteria were implemented with regards to the studies reviewed:

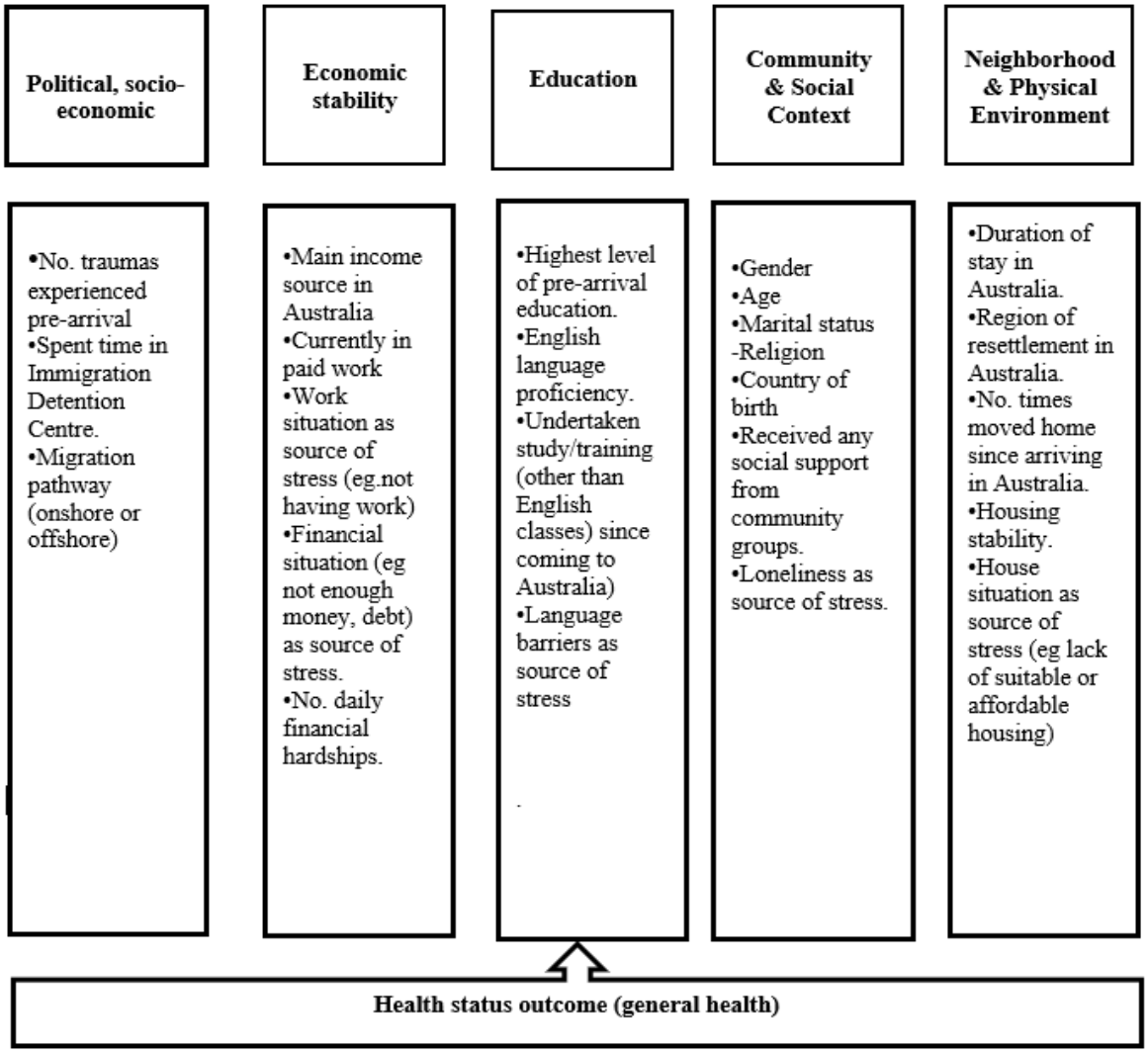
- Published in English language
- Utilized a quantitative study design
- Study outcome variable(s) included mental, physical, general, self-reported health
- Focused on adult refugees or asylum seekers (18+ years) living in developed host nations

The following databases were searched to identify relevant studies: Medline, CINAHL, EMBASE, SCOPUS and PsychINFO. This search was supplemented with a general Internet search using Google and Google Scholar to ensure the results were maximal. The total number of articles retrieved is not known as this was an informal literature review, therefore only the reviewed manuscripts were documented, however, full text review was conducted on 156 articles. Relevant information from the 156 articles reviewed was charted in an Excel spreadsheet, including: Author(s) names, study title, publication year, aim of study, study design, results, risk factors identified.

The domains selected for the Social Determinants of Health model designed for this study were based on the framework provided by Cross-Denny & Robinson's social determinants of health model (34). The authors of this study agreed that the Cross-Denny and Robinson framework was applicable to use in this study as it included several domains that were relevant to the determinants

of health among refugee populations, based on the results of the literature review described above. For example: Economic stability, Education, Social Community Context, Neighbourhood and Environment. It was agreed by the authors of this study that a fifth domain needed to be added to the model designed for this PhD, which was given the title of "Political, socio-economic". Cross-Denny & Robinson also provided a list of health determinants that could be included in each domain (34). For example, factors relating to income and employment could be placed in the "Economic stability" domain. Using this information, we began to populate our model using the available variables from the BNLA dataset. The resultant adapted model included five key determinants of refugee health encompassing 25 candidate variables selected from the BNLA dataset. See Figure 2 for the social determinant of health model used to frame this study. Only variables asked across all three waves will be included in this study.

Figure 2. Conceptual framework for the social determinants of health in resettled refugee populations



Outcome variables

We have four outcome variables: 1) general health; 2) severe mental illness; 3) Post Traumatic Stress Disorder (PTSD); and 4) aggregated mental health, combining 2) and 3).

1) The general health status item used in the BNLA study is "Overall, how would you rate your health during the past 4 weeks?' and is taken from the 36-Item Short Form Health Survey (SF-36) (35). The SF-36 is a generic measure of self-reported mental and physical health status in past month. Shorter versions of the SF-36, in which this single item is contained, have reliability and

validity among refugee populations (29). Responses in the BNLA survey are scored on a 6-point Likert scale ranging from “Excellent” to “Very Poor”. A dichotomous variable will be created and comprise of two response categories of “Excellent-good” health and “Fair-Poor” health.

2) Severe mental illness experienced in the past 4 weeks is measured in the ‘Building A New Life in Australia’ survey using the Kessler Screening Scale for Psychological Distress (K6). The Kessler-6 (K6) is a simple six-item measure of non-specific psychological distress (36). In the ‘Building A New Life in Australia’ survey, the K6 scores range from 9-30 and a score $\geq$19 is used as a cut-off for the positive outcome of ‘severe mental illness’ (31). While the validity of the K6 is not yet formally established in refugee populations, it has good reliability among refugee groups (29) and is well-validated among non-refugee populations (37). Our study will use a dichotomous variable indicating the presence or absence of probable serious mental illness.

3) Post Traumatic Stress Disorder (PTSD) is measured in the ‘Building A New Life in Australia’ survey using the PTSD-8 (38). The PTSD-8 is derived from Part 4 of the Harvard Trauma Questionnaire (39), which is a longer measure of trauma symptoms specifically designed for use in refugee populations. Respondents are asked how much each symptom has bothered them a) since the trauma and, if yes, b) in the past month. Items are answered on a 4-point scale (“not at all” to “extremely”). Respondents who answered “sometimes” or “most of the time” for at least one item in each PTSD domain are classified as having PTSD [31]. The PTSD -8 has both reliability and validity among refugee populations (29).

4) An aggregate ordinal measure combining both serious mental health and PTSD outcome variables will also be examined. This variable will be coded to comprise of three response categories indicating the presence or absence of ‘mental illness’ and/or ‘PTSD’ across a given wave. (That is, “neither serious mental illness or PTSD present”; “serious mental illness present, but

not PTSD"; "PTSD present, but not serious mental illness"; "both mental illness and PTSD present".

Data analysis

Statistical analysis will include descriptive and modelling stages. Descriptive statistics, such as frequencies and percentages, will be used to describe the overall characteristics of the sample population, such as socio-demographics, migration experiences and self-rated health outcomes. Modelling will be used to guide variable selection, examine relationships longitudinally between categorical outcomes and predictor variables. A variable exclusion process will be applied in several steps. Firstly, univariate ordinal regressions will be used to examine associations between baseline predictor variables and outcome variables, with variables retained at $p<0.1$. Secondly, collinearity will be examined using Pearson's correlation coefficient and one candidate variable will be selected from two or more collinear variables when $r>0.5$. This will ensure that variables giving the same information will be excluded from the final model. Third, multivariate panel data models will be used to examine associations between candidate variables and the primary outcome measures longitudinally. Variables at $p<0.1$ will be retained. Finally, candidate variables will be modelled over 100 bootstrap samples at 95% resampling for the data set. Candidate variables will be selected for use in final models if they are identified as significant in 100 bootstraps.

Mixed effects models will be used to examine associations between predictor variables and outcome variables. As the Migrating Unit was the primary sampling unit for the 'Building A New Life in Australia' study, the sampling method was clustered and therefore appropriate for analysis with mixed effects modelling. The mixed effects model account for *inter*-individual random effects *between* different families (Migrating Units) and individual participants (40). Mixed effects modelling also account for *intra*-individual fixed effects; repeated measures *within* individuals (40).

Stata/SE 15.1 will be used for all analysis (41). All analyses will use adjusted weights unless otherwise specified.

Phase II: Qualitative study

The second phase of this study, the qualitative research, will be used to interpret or reflect on the quantitative findings in terms of deeper understanding of what meanings and reasoning refugees attribute to their health during resettlement, in particular with regard to their migration experiences.

Ethics approval

Permission to carry out the qualitative study and its design has been granted by Monash University's Human Research Ethics Committee: Approval Certificate Number 12616. All participants in the qualitative study will be required to provide written informed consent prior to the interviews.

Conceptual framework

A qualitative phenomenological approach will be used in this research to understand the experience of health of resettled refugees in Australia. It will explore the meaning of health for resettling refugees as reflected in their thoughts on health and migration. Understanding their perspectives will help to elucidate further the explanatory models of this population group and develop evidence based strategies to improve health services for this population.

Recruitment

A purposive criterion sampling strategy will be used to recruit participants for this study as this approach will allow us to select respondents based on the shared experience of becoming a refugee

who has migrated to, and resettled in, Australia. The sample size for this study will follow the concept of saturation (42). That is, we will recruit participants until the collection of new data does not provide any further information that will assist in our answering the research question. We anticipate that a minimum of ten interviews will be required before saturation starts to occur.

Participants will be recruited through centres that provide adult migrant English language programs to refugees located in Melbourne. Permission will be obtained from each centre to allow the students to be approached. The primary researcher will visit classes to speak to the students about the study and students will be invited to participate in the study. The primary researcher will then work with potential participants/participants to organize another time to meet with them for interview at a location (eg. a private room at the English learning centre or their home) and time suitable to them, (eg. prior to or after their English class).

Inclusion criteria

Refugees who participate in English language classes in Melbourne will be eligible to participate in the study. The rationale behind our recruitment strategy is that humanitarian refugees who resettle in Australia are offered 510 hours of free English language tuition (11). In addition, those on humanitarian visas must meet the following time frames from the date of visa commencement or arrival in Australia to remain eligible: 1) they must register within 6 months of receiving their protection visa; 2) start studying within 12 months and 3) finish studying within 5 years (11). Therefore, humanitarian refugees living in Australia are required to undertake and complete English language classes. Other inclusion criteria for the study will include individuals who:

(1) are aged over the age of 18 years;

(2) have been permanently resettled in Australia for $\leq$ 4 years;

(3) have sufficient English language competency as assessed by general ability to hold a conversation and read basic English; and

(4) are able to provide informed consent to participating in the study

Data collection

Semi-structured, one-on-one interviews will be used to examine the migration and health experiences of participants. The use of semi-structured interviews is suitable for this study as they are designed to draw out the refugee narratives of the significant domains of the refugees' experience of health and migration. The explication of these narratives will allow us to gain a better understanding of the ways in which these experiences are perceived, encountered and negotiated within refugee populations (43). Such knowledge can be used to ensure that interventions designed for resettled refugee communities are appropriate and are targeting those variables considered most critical by the refugees themselves (43).

Participants will be invited to be interviewed individually to capture the experience of health and migration. Semi-structured interviews will be conducted at a venue of the participant's choosing (e.g. home, English learning centre). The interview data will be recorded through tape recording and note taking.

Measures

The data will be collected using an interview designed using the results of the quantitative study. The interview will further probe significant or anomalous results obtained from the quantitative study regarding the relationship between migration factors and health status.

Data analysis

Data analysis in this study will be informed by the recommendations for phenomenological and qualitative analysis set forth by Creswell (30). All interviews will be transcribed verbatim and then

checked for accuracy. The data analysis will involve the identification of themes that are considered the respondents' expressions of the salient experiences of their health and migration, as well as their concerns (30). This process involves two steps. The first step involves open coding where interview transcripts are read several times and key issues mentioned by respondents are noted (30). The second step will involve selective coding where phrases, statements, and comments are labelled and categorized according to their content. The second stage involves identifying connections between the codes identified in stage one so that emergent themes can be identified (30). The identification of emergent themes occurs by noting similarities and differences in the content of the respondents' statements (30). This is then followed by translating the emergent themes into a narrative account of the experiences of the participants (30).

Phase III: Mixed methods study

Mixed methods research provides strength to offset the weaknesses of both quantitative and qualitative research (44) and is well suited the current study as it can ensure a rigorous examination of the association of migration factors and refugee health. A mixed methods research design will enable us to utilize multiple methods of data collection and analysis. This will enable a comprehensive study of our complex study of migration and refugee health (44). Further, a mixed method framework will help us answer questions that cannot be answered by a singular quantitative or qualitative study (32). While the quantitative phase will allow us to identify *what* migration factors are associated with health outcomes among resettling refugees, it will not explain or elaborate why (or how) this association occurs and relies on qualitative explanations from the community under investigation. Therefore, both methodologies will complement and extend each other, by addressing the research questions from different perspectives. In this way, the study design is sequential and explanatory (or connected) (30).

In this study, the authors will connect the quantitative and qualitative data by selecting the participants for the qualitative interviews using similar criteria to the quantitative study. This will ensure that comparisons are able to be made across the two study phases in terms of the information collected from the study participants. Furthermore, as the findings from the quantitative study will be used to develop a framework for the topic guide for the subsequent interviews, integration will flow from quantitative data analysis into qualitative data collection. For example, any significant, non-significant or surprising quantitative results that require explanation will be used in the development of the qualitative interview guide. In this way, the themes from the qualitative study will explain the quantitative results in a manner that could not be accomplished using either study method alone.

3.5 Discussion

This explanatory mixed methods study design in refugee health research is an approach to examine the association of migration experiences on the self-rated health status of resettled humanitarian refugees in Australia. It is more comprehensive than previous studies due to a quantitative and longitudinal analysis of refugee health determinants using a large and ethnically diverse cohort of resettled refugees living in Australia. This inquiry will reveal significant health factors and health outcomes among refugees within the initial stages of resettlement. For example, post-migration unemployment rates among resettled refugees are typically high (45) and studies have shown a strong positive association between unemployment and mental illness among refugee populations. However, the mechanism of employment in relation to mental illness among refugees is unknown. Evidence as to whether it alleviates economic stress, provides a sense of purpose or is a source of community support is lacking in the literature. Such insights could be gained from explanations derived from the refugees themselves. Further, this information would provide a useful framework for the provision or improvement of refugee resettlement programs, such as job skills and literacy programs.

It is only once we understand the determinants of refugee health that effective interventions can be provided. The combination of quantitative and qualitative methods will give new and rich insights into the health of resettling refugees as they navigate their way into a new life. Such information is important so that we understand the range of adversities refugees face and their relation with mental and physical health symptoms, as well as how health changes from the point of arrival and across years of residence in the host country. This knowledge could build an evidence base for development of improved settlement policies and programs, such as targeted health care and health promotion. It is also intended that this protocol will contribute to the awareness among researchers of the value of mixed methodologies in future refugee health research.

3.6 Ethical considerations

Research involving refugees as study participants poses unique ethical challenges. Refugees can be vulnerable, particularly when engaging as subjects in research (46). Ethical concerns can include how refugees may be harmed or benefited by research; what they might understand or not about the research process, and to what extent they will feel able to make a free choice (28). Some of the key methodological challenges of research with refugee populations are developing appropriate research approaches with populations with a range of literacy skills and languages, who are unfamiliar with research and have diverse migration experiences. In addition, research must not add to the burdens of resettlement, and should ideally contribute to a positive experience of adjustment to a new country. To minimize such challenges, the current study has been designed with a number of ethical considerations in mind. These are discussed below.

The recruitment strategy for the qualitative study will focus on settings, such as English migrant learning centres, because it is anticipated that potential participants may already feel some sense of belonging, security and trust with the centre(s). Potential participants will be chosen by the centre

staff to ensure that only students with sufficient English language competency are approached. To address any difficulties with disclosure and comprehension, all participants will receive a short oral presentation about the study. This talk will be given by the first author at each recruitment site so that a relationship with potential participants can be established. Also, any questions about the study can be addressed at the time. To ensure all potential participants have the capacity to make an informed decision about participating in the study, they will be given detailed written information on the study, which informs them that they will be asked to sign a consent form indicating their willingness to participate and attend an interview. Translated copies of study documentation will be also available to participants. All interpreters will be briefed around issues of confidentiality.

To minimize the likelihood of distress among participants, the interviews have been to ensure that participants are not asked to disclose any details of any past traumatic traumas experienced. The questions are designed so that participants provide as much or as little information as they feel comfortable providing, regarding their migration experiences. The participant Information Sheet provides information regarding appropriate counselling and support services that can be accessed by participants should they feel distress or discomfort at any time during their participation in the study or interview. Participants will also be informed that they can stop the interview until such time that they wish to continue. Participants will be given a $30.00 gift card to acknowledge the time and effort involved in participating in the study and to offset any travel costs.

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Chapter 4: Methodology

In the previous chapter, the protocol for the mixed methods study was outlined and the rationale for choosing this methodology. It highlighted that the utilisation of mixed methods offers a chance to enhance empirical rigour through the conceptualisation of the refugee health experience.

This chapter expands on the preceding chapter and provides additional information regarding the mixed methods design adopted in this thesis and concludes with a description of the ethical considerations encountered in refugee research

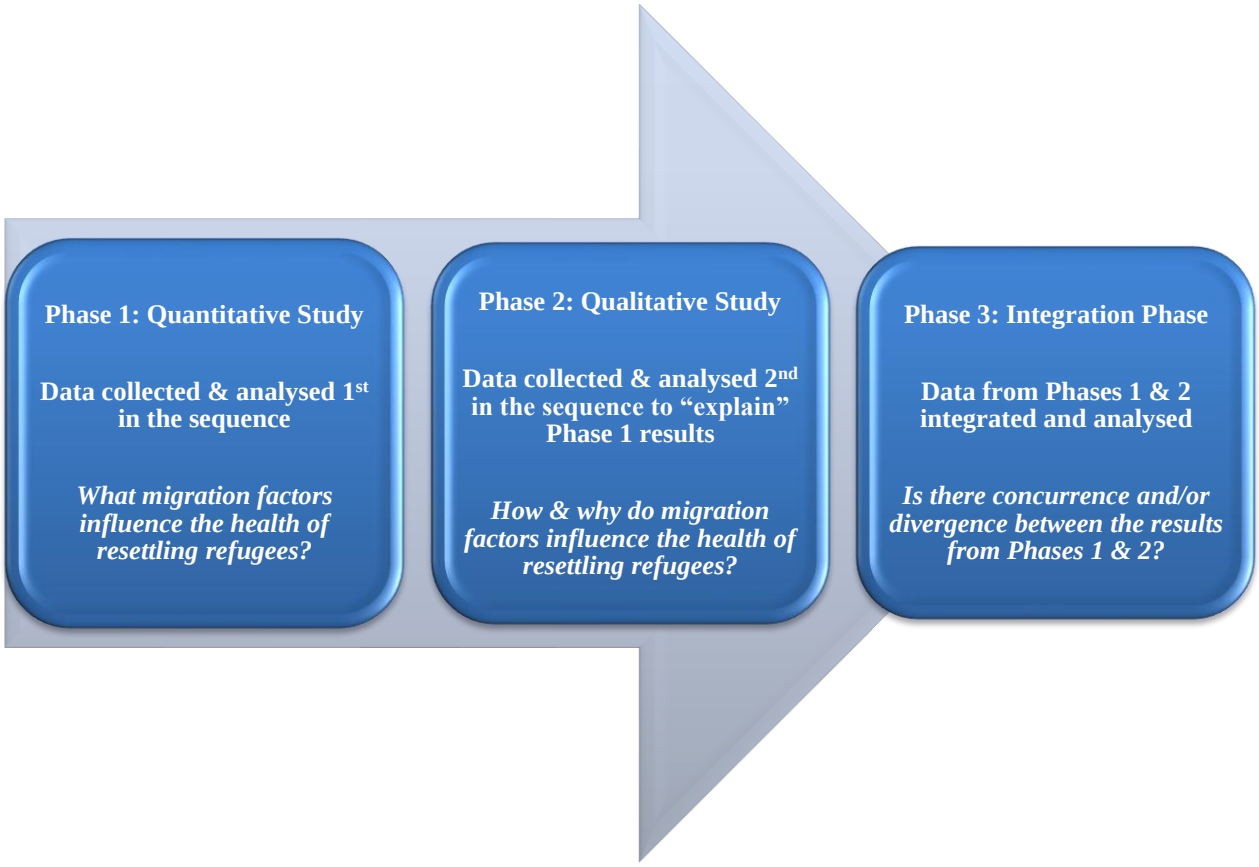
4.1 Thesis study design

A sequential explanatory mixed methods design was used in this study, which is a procedure for collecting, analysing and integrating quantitative and qualitative data within a single study (115). The protocol of the study design is provided in Chapter 3 and see Appendix 2 for a copy of the published protocol manuscript. The explanatory design involves two distinct, sequential stages. Sequential procedures elaborate or explain the findings of one method with another method (115). The first, quantitative stage begins with the collection and analysis of quantitative data. This is the major element of this thesis and specifically addresses the overarching research question. During the second stage of the study, qualitative data is collected and analysed. The purpose of this second stage is to aid the explanation of the quantitative results. Using a sequential explanatory mixed methods design in this thesis aimed to not only explain the quantitative results, but also substantiate the self-rated health measurement tool that was used as the outcome measure and collect data that could not be collected quantitatively.

When used in combination, quantitative and qualitative methods complement each other and offer a more comprehensive analysis (116, 117). The quantitative study data provide precise, measured findings to inform and ground the qualitative findings, whereas the qualitative study data offer context and an explanation to offset the quantitative results. The use of both quantitative and qualitative methodologies extend the breadth and range of inquiry in the study. The sequential explanatory approach can also account for emergent findings over the course of the study. That is, if inconsistent or surprising quantitative results surface during the first stage of the study, the qualitative study can be used to explore and add depth and context to the understanding of these unexpected findings (115).

In this thesis, the first phase of the study involved a secondary analysis of settlement data collected as part of the Australian Government's BNLA longitudinal survey of resettled refugees living in Australia (118). Statistical analysis of the BNLA survey data was used to identify the migration variables that are significantly associated with the long-term health outcomes of resettled refugees. The second phase of the study, namely the qualitative study, was designed and undertaken to interpret and explain the results of the quantitative phase using the perspectives of refugees via interviews. Using the results of the quantitative data study, a semi-structured interview schedule was designed to further explore areas of interest. In this way, the qualitative portion was used to help explain contextual factors related to the pre-, peri- and post-arrival health experiences to help explain the patterns identified in the quantitative results. In addition, the qualitative data collected allowed for the refugees' own perspectives of their health to be considered during the integration and interpretation of the quantitative and qualitative findings (115). See Figure 1 for an overview of the mixed methods model employed in this thesis.

Figure 1: Mixed methods sequential explanatory model



4.1.1 Quantitative study design

This phase of the study was designed as a longitudinal cohort study. The aim of the dissertation was to identify factors that influence the long-term health of resettling adult refugees in Australia; therefore, a longitudinal design was appropriate. Longitudinal studies employ continuous or repeated measures to follow individuals over prolonged periods—often years or decades (119). They are generally observational in nature, with data being collected on any combination of exposures and outcomes, without any external influence being applied (125). This study type is particularly useful for evaluating the relationship between risk factors and health status, for example, over different lengths of time (119). Similarly, because data is collected for given individuals within a predefined group, appropriate statistical testing may be employed to analyse change over time for the group or individuals (119).

The study involved the use of the first three annual waves of the Australian Government's BNLA study, a nationally representative, longitudinal cohort study examining the first 5 years of resettlement in a humanitarian migrant population (118). Data were collected using a self-report survey with alternative face-to-face and telephone interviews. For this thesis, the study outcome was self-rated general health measured by the SF-36. Predictors were migration and socio-demographic resettlement factors and chronic health status. Generalised linear mixed models (GLMMs) were used to investigate the relationship between predictor and outcome variable~~s~~.

4.1.2 Qualitative study design

Phenomenology was chosen as the study design, in particular, a specific type of phenomenology called hermeneutic phenomenology (also known as *interpretative* phenomenology). Phenomenology is a qualitative research approach that explores the experience of those living a particular phenomenon. This leads the researcher to gain a full and deep understanding of the experience of the phenomenon as conveyed by the person living the experience first-hand. That is, phenomenology describes the *lived experiences* of individuals (120, 121). It focuses not on what appears, but rather on how it appears (122). Health is an example of a phenomenon.

The main goal of phenomenological research is to obtain complex and vivid descriptions of human experience as it was lived in the context of time, space and relationships (120). Through careful exploration, the phenomenological researcher attempts to gain an understanding of events through the lens of the participants or as the participant *experienced* the event or events. The research data that result from phenomenological research are detailed, narrative accounts provided by participants regarding their experience (and knowledge) of a subject of study (123). In this way, the researcher must try to understand the world in which the experience occurred as described by the participant.

Similar to phenomenology, hermeneutic (or interpretative) phenomenology is concerned with human experience as it is lived (124). However, hermeneutic phenomenology is not interested in the description of phenomena, but rather in making meaning or interpreting the participants' accounts of a phenomenon (120). Hermeneutic phenomenology posits that people are constantly interpreting, not perceiving, the world around them. Therefore, each individual's concept of the world is made up of their interpretations (125). Further, hermeneutic phenomenology claims that a person's interpretations are both influenced and limited by the social structures and resources in which they live. Therefore, the perception of phenomena is always influenced and guided by the perceiver's own experiential, cultural and historical background, and the preconceived ideas that the perceiver has regarding the phenomena (125). In hermeneutic phenomenology, having preconceived ideas about a phenomenon is referred to as fore-sight or fore-conception (126) and this fore-sight enables one to revise how they know and understand phenomena. Therefore, in hermeneutic phenomenology, interpretative understanding of a phenomenon is achieved by the examination of fore-conceptions and the bringing about of new meaning, a process that occurs through the hermeneutic circle (122, 125, 127).

Within the hermeneutic circle, an interpreter (or researcher) engages in a dialogue with text about the experience of the phenomenon they are interested in, while also examining his/her own fore-conceptions about that phenomenon (128). Through this analysis and interpretation, the interpreter (or researcher) reaches a revised and deep understanding of the meaning of the phenomenon under study (128). Thus, hermeneutic phenomenology aims to give voice to participants in such a way that the phenomena is allowed maximal opportunity to itself as itself, while also understanding that the participants' voices will always be mediated through the interpretation process and the interpreter's understandings (128). As a consequence, hermeneutic phenomenology sees the interpreter as playing an active role in the data analysis.

There were several reasons why a hermeneutic phenomenology approach was chosen for this study. Hermeneutic phenomenology does not aim to confirm or disconfirm hypotheses or to identify true, valid, or reliable knowledge. Instead, it focuses on the deconstruction or unfolding of phenomena to discover meaning and intent. This aim is consistent with my intention to explore meaning and experience inductively and to generate explanatory hypotheses. That is, I wanted to understand whether and how refugees perceived their health to have been influenced by their migration experiences. Thus, hermeneutic phenomenology provided detailed, specific, real-world insights into the effect of migration on the health of resettling refugees in Australia, allowing me to build an evidence base in a relatively unexplored area (129). The dynamic role of the researcher in the processing of the participants' experiences also allowed me to explore and interpret these experiences in light of what I already knew about the topic under consideration (130, 131). That is, I had obtained knowledge about the impact of migration on the health of resettling refugees from the work already conducted as part of this thesis in terms of the scoping review (Chapter 2) and quantitative study (Chapter 5). This real-world experience would provide me with some insight into the migration factors influencing the health of refugees, which I could draw upon to identify areas of convergence, while also acknowledging the divergent experiences of participants and the researcher (132).

To analyse the study data, interpretative phenomenological analysis (IPA) was used (127). IPA is a methodological approach for exploring, in depth, how individuals experience and ascribe meaning to a specific phenomenon. IPA is concerned with understanding an individual's account of a particular experience or phenomenon, rather than trying to find causal explanations for events or produce objective 'facts' (127). Although IPA is influenced by phenomenology in its aim of understanding the individual's experience, it also differs from phenomenology in that it does not seek to bracket the researcher's values and beliefs. Instead, it views these as necessary for understanding and making sense of the person's experiences (133). In addition to the

phenomenological focus, there is also a heavy influence of hermeneutic (or interpretative) phenomenology, as there is an emphasis placed on interpretation and the role of both researcher and participant in a dynamic research process (134). IPA acknowledges that it is not possible to have direct access into someone's 'life world' because this is influenced by the researcher's own experiences, values and pre-understandings, which are considered a necessary process in the interpretation and sense making of an individual's experience (135). This dual process is referred to as a double hermeneutic, whereby the participants are trying to make sense of their world, the researcher is trying to make sense of the participant trying to make sense of their world (136). It is this emphasis on interpretation that moves the IPA researcher away from simply describing the individual's experience of a phenomenon towards an understanding of the phenomenon that is context specific and inclusive of both the individual and researcher (134).

IPA, therefore, has the potential to offer researchers a framework for developing deep insights into the unique experiences of their participants, taking into consideration the context in which the individual is located (134). For example, understanding how the health of refugees is influenced within specific environmental contexts across the migration journey. Thus, IPA can also offer a person-centred approach for understanding the experiences of refugees. As a result, the findings may be used to develop refugee settlement policies, interventions and services that directly meet the health needs of refugees. Such an approach enables researchers to gather knowledge that is not widely available in the refugee health literature, which is why IPA was considered an appropriate methodology for the qualitative study of this thesis.

Other methodologies were considered during the developmental phase of the research, including narrative analysis and grounded theory.

Narrative analysis is concerned with how people construct their own self-accounts (137), making and using stories to interpret the world. While narrative analysis shares some similarities with phenomenology, in that both approaches are interested in an individual's account of a phenomenon or experience, it also differs from phenomenology. The focus of narrative analysis is on how an individual communicates their story of their experience or phenomenon. Phenomenology looks to obtain a better understanding of the phenomenology or experience and in this way the participant's *telling* of the story is a conduit to obtaining a better understanding of the phenomena.

For example, in this PhD, narrative analysis would be appropriate if I wanted to know about the stories of perceived health of refugees because of their migration experiences. That is, participants might tell me that their health in the pre-migration period was poor because the hospitals had closed due to the war and conflict in their country and they could not access appropriate treatment. Conversely, phenomenology would allow me to know if the perceived pre-migration health of a participant was poor because they experienced physical and mental injury because of torture.

Grounded theory was deemed inappropriate because it focuses on people's experience with a process and then creates a theory of how that process works. Therefore, had I wanted to generate a theory about why refugees' health because of their migration experiences, this may have been a suitable approach. However, this was not the aim of this PhD. Rather, understanding the how refugees experience and make sense of their health as a consequence of their migration experiences was the focus of this PhD as it is anticipated that this PhD may be used to inform refugee policy and practice.

Through this comparison it appeared a phenomenological approach would be most appropriate to meet the aims of the research.

4.2 Sampling and recruitment

The recruitment of participants for this thesis occurred via two methods, however, the researcher was only involved in the recruitment of the qualitative study participants. For the quantitative study, no participants were recruited or contacted by the researcher as it involved a secondary analysis of the sample recruited for the Australian Government's BNLA study. All sampling and recruitment methods for the quantitative and qualitative studies are described in the following sections.

4.2.1 Quantitative study

In the quantitative study, the method of recruitment involved a census approach, which was used to sample participants from the Australian Department of Border Protection and Immigration (DIBP) settlement database, which contained demographic and contact details for all individuals granted Australian humanitarian refugee visas from 11 locations around Australia (118). The in-scope population comprised individuals or families who were granted permanent protection visas through Australia's Humanitarian Programs during May and December 2013 (118).

The migrating unit (MU) was the primary sampling unit and consisted of principal applicants (PAs) and secondary applicants (SAs). The adult PA on the application was designated as the lead participant for the study (this was the person upon whom approval for a permanent visa was based). The PA was required to consent to take part in the study before other members of the MU could be invited to participate (118). A SA was any other member of the MU named on the visa application (e.g. spouse, children). SAs had to be aged 15 years and over and residing with the PA to participate in the study (118).

Invitations to participate in Wave 1 of the study, in English and primary PA language, were sent to the PAs. Bilingual community engagement officers were also employed to assist researchers in recruiting for Wave 1, liaised with community leaders to locate individuals and provided a bilingual perspective to optimise the recruitment of study participants. After the PA agreed to participate, SAs within the consenting MUs were invited to participate. Invitations to participate in Waves 2 and 3 were extended to participants in the previous wave, via mail and telephone (118).

4.2.2 Qualitative study

Recruitment for the qualitative study occurred in three centres that provided adult English language programs to refugees and other migrants and was located in Melbourne, Australia. Permission was obtained by the researcher to visit each centre and conduct oral presentations to groups of eligible refugee students. Staff at each centre briefed their students about the research study before each visit by the researcher. The oral presentation outlined the objective and background of the research study and invited eligible individuals to participate. Following the presentation, a convenient time and place were verbally arranged with interested individuals to attend a face-to-face interview with the researcher. Eligible participants were aged 18 years and older, could speak and read basic English, had been granted a permanent resident visa by the Australian Government and had been living in Australia for less than 4 years. A purposive criterion sampling strategy was used to recruit participants for this study as this approach allowed us to select respondents based on the shared experience of becoming a refugee who has migrated to, and resettled in, Australia. The sample size for this study followed the concept of saturation (138). That is, participants were recruited until the collection of new data did not provide any further information that assisted in answering the research question.

4.3 Data collection and analysis

4.3.1 Quantitative study

The data for the quantitative study was collected using a self-report survey commissioned by the Australian Government as part of the BNLA study (139). The BNLA study was designed by the Australian Institute of Family Studies (AIFS) to collect information on the settlement outcomes of recently arrived humanitarian refugees to Australia, including pre-and post-migration factors and health outcomes (139). The BNLA is a longitudinal study based on a representative sample of 2399 humanitarian refugees who arrived in Australia or were granted a permanent protection visa between May and December 2013 (136). A total of eleven locations around Australia were chosen as recruitment sites across Australia to five a mix of metropolitan, rural and regional samples. Locations included major Australian cities plus six confidential locations and the population was therefore a geographically clustered sample (136). Invitations to participant in Wave 1 of the BNLA study, in English and respondents' primary language, were sent in the mail to eligible individuals. Researchers then followed up with a telephone call or home visit if telephone contact failed (136). Once an individual agreed to participate in the study, the BNLA survey was administered to participants using multiple methods to accommodate responses from individuals who may have had poor reading literacy. Waves 1 and 3 were mostly administered via computer-assisted self-interview and accredited interpreters were available either via telephone or in person if none of the other interview methods were feasible to the participants. Wave 2 involved computer assisted telephone interview using bilingual interviewers and interpreters as required. (136).
The BNLA survey was translated into 19 different languages for the study.

Data handling

A missing data analysis was undertaken to evaluate the potential effects of response bias in the quantitative data. To undertake this, the potential associations between missing data and positive outcome measures over three waves using logistic regression were examined. The demographic variables examined were age, gender, region of birth and trauma. There were no significant associations between demographic variables and non-response to the outcome variable over all three waves, including non-response due to attrition. This supported the assumption that the data were missing at random, and thus no imputation for missing values was required.

Data analysis

Statistical analysis of the BNLA data included descriptive and modelling stages. Descriptive and exploratory statistics were used to summarise the baseline characteristics and trends in the variables of interest over time. Modelling was used to guide the selection of variables, examine the relationships longitudinally between the categorical outcomes and predictor variables and any potential effects of missing data. This variable selection process allowed the use of non-overlapping variables that could explain the outcomes for statistical or conceptual reasons. Analyses were performed using Stata/SE 15.1 (140). All analyses used adjusted weights as described above unless otherwise specified.

Exploratory analysis

Modelling was used to guide variable selection, examine relationships longitudinally between categorical outcomes and predictor variables selected from the BNLA dataset.

Variable inclusion process

Variables for inclusion in the present study were selected from the BNLA survey and related to migration experiences, socio-demographic factors and chronic health status. The principal outcome variable used in the quantitative study was self-rated general health, which used the question, 'Overall, how would you rate your health during the past 4 weeks?' selected from the SF-36 (141). The SF-36 is a widely used generic measure of health status comprising of 36 questions organised into eight scales (142). A total of 35 of the 36 items are grouped into eight scales that address health constructs that are important to most health care situations, e.g. physical functioning, role limitations (physical problems), bodily pain, general health, vitality, social functioning, role limitations (emotional problems) and mental health (142). The SF-36 has reported reliability and validity among refugee populations (23). The BNLA survey uses a 6-point Likert response scale ('Excellent' to 'Very Poor') for the single item of general health status. For the quantitative study, a dichotomous variable comprising of two health response categories of 'Excellent-Very Good-Good' and 'Fair-Poor-Very Poor' was created. The decision regarding the creation of the two response categories was based on a review of the literature, which confirmed that the chosen predictor variables were selected from the BNLA survey dataset and related to migration and resettlement, socio-demographics and health.

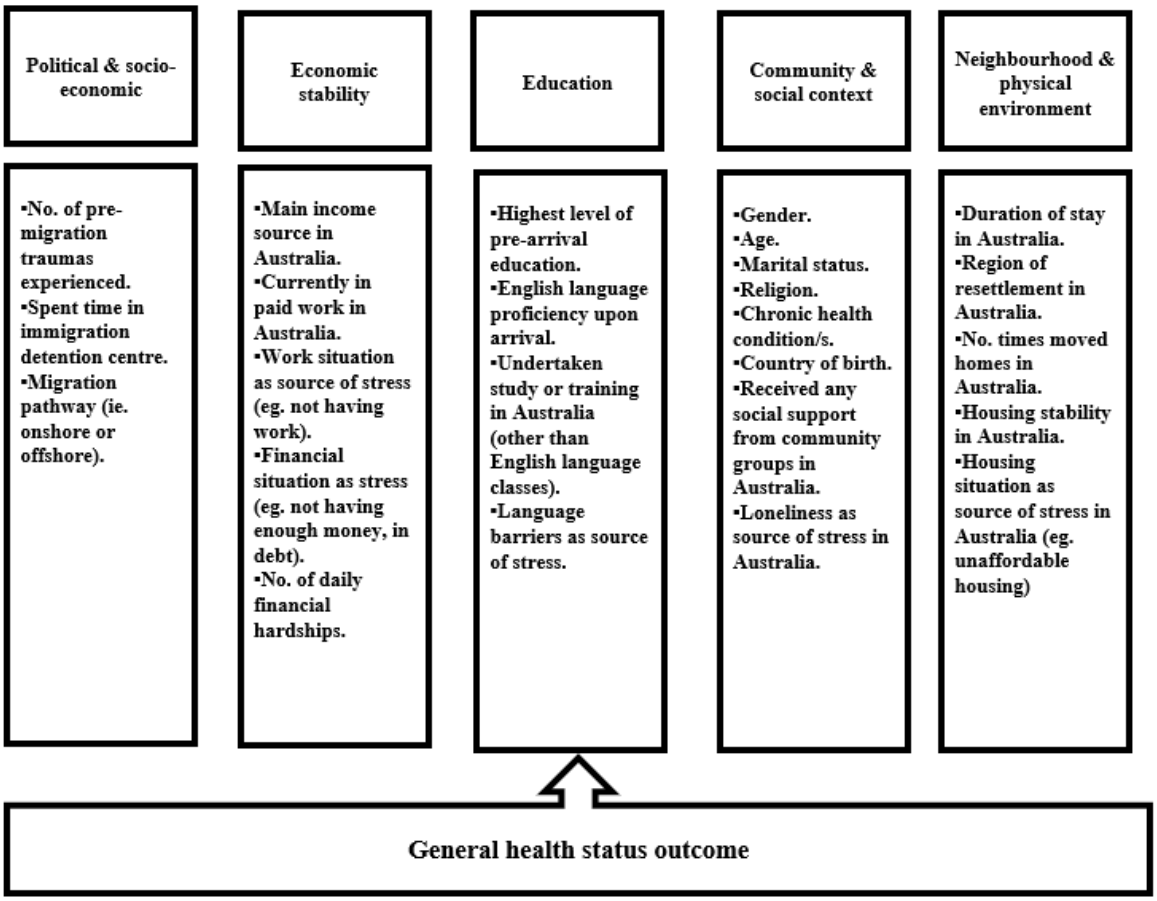
The selection of variables for the quantitative study was informed by a conceptual framework, which was designed for this study guided by a report published by Cross-Denny and Robinson (143). The Cross-Denny and Robinson study used a simplistic and well-organised social determinants of health (SDOH) model to conduct a multiple regression analysis to examine the predictors of depression in older adults (143). Although the study population and outcome of interest in the Cross-Denny and Robinson study was dissimilar to the present study, the framework was applicable to use in this thesis. For example, it allowed for the organisation of the BNLA variables into a number of relevant health determinant domains spanning across the pre-, peri- and

post-migration periods, such as economic stability, education, social and community context. The resultant adapted model included five key determinants of refugee health encompassing 25 candidate variables selected from the BNLA dataset. A review of the literature reporting the predictors of refugee health outcomes informed the selection of the candidate variables from the BNLA dataset to populate the SDOH model. The literature was scanned for reported risk factors for poorer health outcomes among adult refugees living in developed host nations. Although this was not considered a formal process for the PhD, the following criteria were implemented with regards to the studies reviewed:

- Published in English language
- Utilized a quantitative study design
- Study outcome variable(s) included mental, physical, general, self-reported health
- Focused on adult refugees or asylum seekers (18+ years) living in developed host nations

The following databases were searched to identify relevant studies: Medline, CINAHL, EMBASE, SCOPUS and PsychINFO. This search was supplemented with a general Internet search using Google and Google Scholar to ensure the results were maximal. Full text review was conducted on 156 articles. The full count of articles retrieved is not known as this was an informal literature review and therefore only the reviewed manuscripts were documented. Relevant information from the 156 articles reviewed was charted in an Excel spreadsheet, including: Author(s) names, study title, publication year, aim of study, study design, results, risk factors identified. Only variables asked across all three waves were included in the quantitative study as some variables were not asked in all three waves. See Figure 2 below for the SDOH model designed for the quantitative study and a list of the selected candidate variables.

Figure 2: Social determinants of health (SDOH) conceptual model



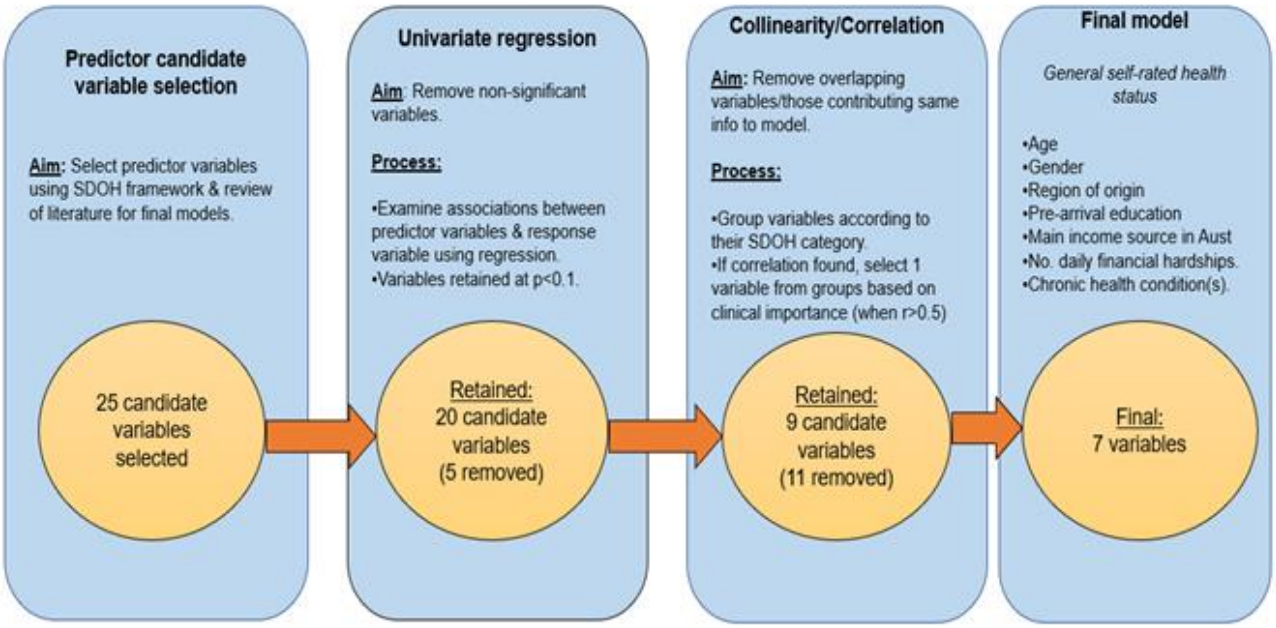
Variable exclusion process

Variable selection for final GLMMs occurred in four steps, according to the parsimony principle whereby simpler models are to be preferred over unnecessarily complicated ones (144).

In the first step, univariate ordinal regressions were used to examine the associations between baseline candidate variables and primary positive outcome variable, with variables retained at $p < 0.1$. Second, collinearity was examined using Pearson's correlation coefficient and one candidate variable was selected from two or more collinear variables when $r > 0.5$. This ensured that the variables giving the same information were excluded from the final model and to decrease the number of variables (i.e. according to the parsimony principle). Selection was based on clinical and

statistical relevance and this step was conducted by the researcher and the supervisory team. Thus, highly correlated variables were removed from the final models. Third, multivariate panel data models were used to examine the associations between candidate variables and the primary outcome measures longitudinally using GLMM via *xtlogit*. Variables at $p < 0.1$ were retained. Finally, candidate variables were modelled using *xtlogit* over 100 bootstrap samples at 95% resampling for the dataset. Candidate variables were selected for use in the final models if they were identified as significant in 100 bootstraps over 50% of the time. Bootstrapping is a resampling technique used to estimate statistics on a population by sampling a dataset with replacement (145). That is, it resamples a single dataset to create many simulated samples and is a way to boost the number of samples in your dataset to ensure that the number is enough for the required statistical power of the analysis. Figure 3 provides a summary of results from the variable selection process.

Figure 3: Summary of results from the variable selection process



The following is a description of the variables that were removed at each stage of the variable selection process.

- Univariate regression: The following 5 variables were removed:-
    1. Stressor – Work situation as source of stress
    2. Currently in paid work in Australia
    3. Financial situation as source of stress
    4. Loneliness as source of stress
    5. Discrimination as source of stress
- Collinearity/Correlation: The following 11 variables were removed:-
    1. Migration pathway
    2. Spent time in Immigration Detention Centre
    3. English proficiency – can understand English
    4. English proficiency – can read English
    5. English proficiency – can write English
    6. Language barrier as source of stress

7. Undertaken study or training in Australia
8. Married or partnered
9. Frequency at place of worship
10. Duration of stay in Australia
11. Region of resettlement in Australia

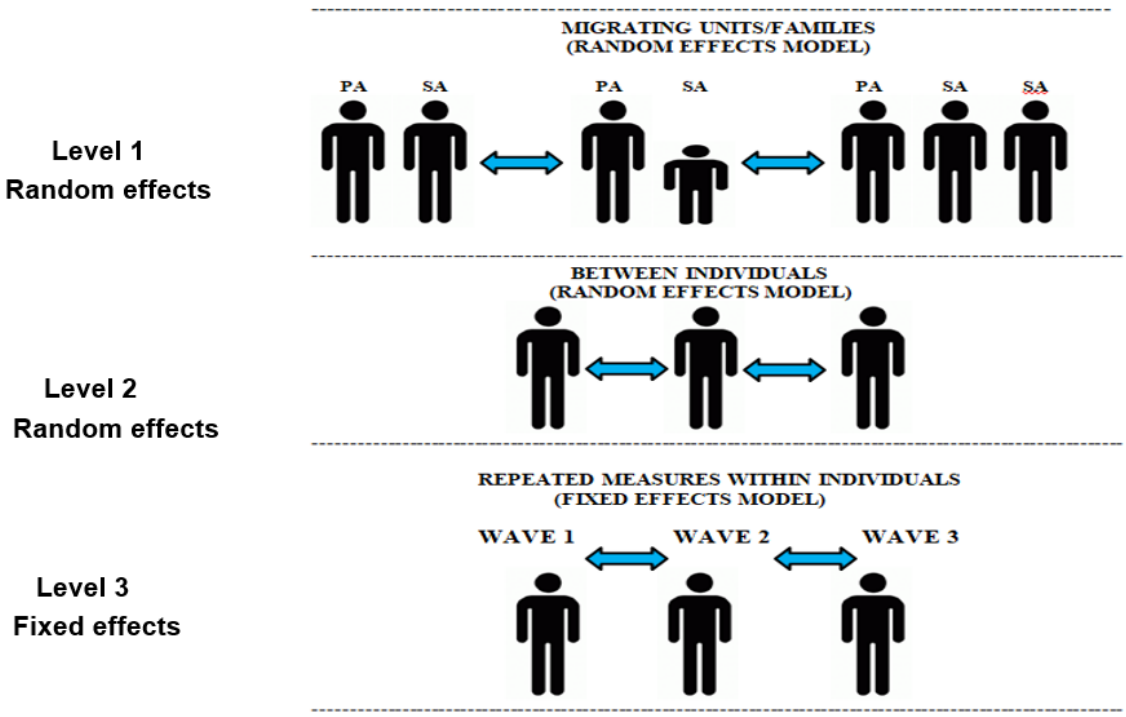
Descriptive statistics

Using baseline (wave 1) data, descriptive statistics were used to describe the overall characteristics of the sample population at the baseline, such as socio-demographics and migration experiences using means and standard deviations (SDs) for continuous variables and frequencies and percentages for categorical variables. Descriptions of waves 2 and 3 demographics were not considered in this study.

Generalised linear mixed models

GLMMs were used to examine the associations between predictor variables and the outcome variable. As the MU was the primary sampling unit of the BNLA study, the sampling method was clustered and, therefore, appropriate for analysis with GLMMs. GLMMs account for *inter-individual* random effects between different families (MU) and individual participants. GLMMs also account for *intra-individual* fixed effects (i.e. repeated measures within individuals). GLMMs allowed the maximum use of the data as they do not exclude all responses by an individual if they have one missing data point at any given wave. To test the robustness of the GLMMs, bootstrapping was used (200 replications). Figure 4 provides an overview of the GLMM applied to the BNLA data.

Figure 4: Overview of GLMM applied to the BNLA data



4.3.2 Qualitative study

Data collection instrument

The most frequent form of data collection for IPA studies is semi-structured interviews. The semi-structured interview allows for a flexible approach to data gathering for IPA and give a central place to understanding the individual's experiences and meanings while maintaining an awareness of the contextual factors surrounding the interview (134). Therefore, a semi-structured interview guide was designed for the qualitative study phase using the quantitative study results. This was in keeping with the overall sequential explanatory mixed methods design for the thesis of using the qualitative data to help explain the quantitative findings.

The interview guide contained one broad question asking the participants to tell their story about their journey to Australia (i.e. *'Can you tell me about how you came to Australia?')*. Several prompt

questions were included to elicit the perceptions of the participants of the impact that their migration experiences had on their perceived health. For example, '*What made you leave your home country?' 'How did leaving your home country make you feel?' 'Do you think this time changed your health?'* Several demographic questions were also included to collect characteristics of the sample (e.g. age, gender, marital status, level of pre-arrival education). The guide was initially piloted with two refugee participants for evaluation and amended accordingly. Below are the steps taken in the development and piloting of the interview schedule.

Step 1 involved development of the interview guide. This involved consultation with the PhD supervisors and a member of staff at the Department of General Practice; all of whom have vast experience in qualitative research methods and refugee health research. The initial interview questions were designed using the results of the quantitative study. For example, interview questions around what sort of things helped or made it hard for participants at each stage of migration were based on the quantitative study findings that pre-migration trauma and post-settlement stressors were significantly associated with poorer general health among participants living in Australia. Discussions between the student, supervisor and staff member involved such considerations as the:

- Length of the questions
- Order of the questions
- 'Appropriateness' in answering the research question
- Probes to be used for eliciting the narratives
- Demographic information required
- Ability of the participants to "understand" the question (eg would participants understand the construct of "mental health"?)

Step 2 involved recruitment of interviewees. Once the final draft was designed, the interview schedule was piloted with two refugee participants at one of the targeted recruitment sites. This involved:

- Liaising with staff at the site to disseminate study information and identify two individuals who met the study inclusion criteria and would be willing to be interviewed for the pilot
- Conducting an audio-taped one-on-one interview with each participant in a private room at the recruitment site. Prior to the interviews, participants were provided with information about their participation in the pilot interview, consent and withdrawal as well as confidentiality. During and after the interview, participants provided were asked to provide feedback on the interview, including what questions they found hard or easy to understand or answer and length of the interview. These discussions were audio-taped and transcribed.

Step 3: This step involved discussing the feedback received from participants with the supervisors and further refinements (where required) were made to the interview schedule. The final version of the interview schedule was signed off when consensus on the content was reached by the student and supervisors. This occurred over two separate meetings.

Pilot interviews were not included in the final study results. See Appendix 7 for the complete interview schedule.

Data handling

All qualitative data were organised and analysed using NVivo 12 (146). All audio recordings were transcribed verbatim by the researcher and uploaded into NVivo.

Data analysis

IPA was used to obtain access to the perceptions of the refugee participants regarding how their health was influenced by the various stages of migration. The IPA approach is inductive in nature, allowing ideas and themes to emerge from the personal accounts rather than imposing a pre-determined theory (134). This opens up the researcher to possibilities that had not been considered. The approach adopts both *emic* (i.e. insider) and *etic* (i.e. interpretative, outsider) positions (147). The emic position allows the researcher to hear and understand the participant's story and then allows the researcher to place his or her experience at the centre of the account. Adopting the etic position involves the researcher trying to make sense of the data by bringing in his or her own interpretations and theoretical ideas, but uses verbatim quotes taken from the accounts of the participants to ground these interpretations in their actual accounts (134). Therefore, reflexivity or self-awareness is an important part of IPA to ensure that the researcher remains aware of how his or her personal experiences and pre-understandings are influencing the data analysis (134, 148).

All audio recordings were transcribed verbatim by the first author and uploaded into NVivo (146). Using the IPA approach recommended by Smith et al. (136), the data analysis followed a number of steps. The first step of IPA is to become immersed in the transcript data to become familiar with the content and complexity of the data and to develop an interpretative relationship with the transcripts (136). I complied with this step by listening to the audio recordings of each interview several times—once before and once after transcribing—and then re-reading each transcript. The second step of IPA involves making initial exploratory comments about the data to produce comprehensive and detailed notes about the research data that will eventually lead to a more interpretative level of analysis. I fulfilled this requirement by reviewing each transcript and underlining text that was interesting or important and making notes in the left-hand margins. These notes reflected my thoughts regarding the content of the text; the language used in the text and my impressions of the meaning coming through the text. The next step involved the identification of emergent or

constituent themes. I completed this step by returning to the beginning of each transcript and grouping the initial notes that I had made in the left-hand margins into themes. Themes are concise phrases that captured the essential quality of what was found in the text (149). These themes were recorded in the right-hand margin. The emerging themes were identified inductively; therefore, they were strongly linked to the data themselves. The emerging themes were also grounded in my experience of the research process and my interactions with the participants.

The fourth step of IPA entails making connections across the emerging themes. I took each transcript and extracted all the emerging themes from the right-hand margin and placed them into a list. I then examined the list and moved themes around to form clusters of superordinate themes (136). These superordinate themes were created by grouping like-with-like. Themes that shared strong similarities were grouped as constituent themes. For each transcript, I created a table that contained the superordinate and constituent themes. The fifth and final step of IPA involves looking for patterns across all transcripts. I achieved this by printing out all the tables I had created in step four and laying them on a large table to identify what themes were most salient and recurred across the majority of the transcripts. I then compiled a master table of themes to represent the superordinate and constituent themes for all the transcripts, as well as the facts making up the themes.

Reflexivity

All qualitative research is contextual (155). It occurs within a specific time and place between two or more people. If a researcher clearly describes the contextual intersecting relationship between themselves and the participants (ie. reflexivity), this increases the credibility of the findings and allows us to better determine the relevance of the work for our particular context, as well as the possible applicability of the research findings (150). In qualitative research, it is assumed that who the researcher is will make a difference to the findings of their study and that objectivity is not

present (150). Therefore, the readers of qualitative research need to understand who is doing the research. This includes knowing about the researcher in ways that go beyond their name and professional position as well as what the researcher's positionality is in relation to what is being studied (150).

The positionality of the researcher refers to the influence of the researcher's personal history (e.g. gender, age, culture, social status, beliefs and values) and power (i.e. the researcher's relationship with research participants) upon the research (150). This also includes the extent to which the researcher projects themselves onto the position of the participants as they interpret the voices of the participant (150). I am an Australian citizen with full access to employment, education and health care. I am in good health. I have never been forced to migrate for involuntary or political reasons. I have never migrated to another country. I have relocated to other areas within Australia, which has given me some insight into what it means to be socially isolated and separated from family and friends.

However, in no way do these experiences enable me to understand the experiences of the refugee participants in this study who were displaced from their home countries because of conflict. Therefore, I considered myself to be an outsider relative to the research topic and research participants. In terms of my position as an insider, I could only draw upon the knowledge attained from the studies that I had already completed as part of this thesis. For example, the processes involved in conducting the literature review and quantitative study allowed me some insight into the health and well-being of refugees resettling in developed host nations, as well as the challenges and coping strategies employed by refugees across their migration journeys. Although these experiences gave me some insight, they did not enable me to understand completely the lived experiences of refugees who are forced to migrate due to conflict in their home countries.

My position as an outsider and position of power may have discouraged some participants from speaking freely and openly about their experiences. To counteract my position, I conducted oral presentations about the research study to interested groups of refugee students so that they could meet me. I also utilised time after the oral presentations to speak with members of the audience, thereby building trust and rapport. I engaged in ongoing reflection of my use of language during my interaction with the audience members and participants, being careful to use speech that reflected my view of them as the authority of their experiences and lives.

I also kept a reflexive journal and entries were made at every stage of the research process, whether it was during the interviews or the data analysis process. Here, I logged changes in my situation, assumptions and decisions made throughout the research process that might be affected by my personal stance. It was important that, as a researcher, I was constantly aware of when I was making decisions because each is a potential source of influence. For example, I noted that on reading through a particular transcript, I felt sorry for the participant because of the misfortunes and injustices they described. I then reflected on how my feeling might influence the way I understand the text and the themes I used to encapsulate this. For example, 'am I over-emphasising the powerlessness of the participant because I have created an image of them as an *object of pity'*? Each entry highlighted considerations for further exploration and documented challenges and extensions to initial thinking; for example, the perceived influence on health as a consequence of economic stressors experienced by participants across the migration journey was unexpected and changed my understanding of how we need to consider the health of resettling refugees. The reflexive journal also included many reflexive accounts both to support my analysis and account for my positioning within the research. The act of writing down thoughts on an issue had the important effect of shaping and transforming these thoughts, so that the writing itself became an important aspect of the analysis. The ability to look back on my reflexive journal on my thoughts and feelings also encouraged a deeper reflection on the analysis to develop over time.

4.3.3 Integration of quantitative and qualitative data

Integration refers to the stage in the mixed methods research process where the mixing or integration of the quantitative and qualitative methods occurs (151). In this mixed method sequential design, the quantitative and qualitative phases are connected in the intermediate phases when the results of the data analysis in the first, quantitative phase of the study were used to inform or guide the data collection in the second, qualitative phase (151). In this PhD, I connected the two phases while selecting the participants for the qualitative follow-up analysis based on the quantitative results from the first phase (151). A further connection point was the development of the qualitative interview guide, grounded in the results of the first, quantitative, phase, to investigate those results in more depth through the collection and analysis of the qualitative data in the second phase of the study (151). I integrated the results of the quantitative and qualitative phases during the discussion of the outcomes of the entire PhD study.

As indicated in Chapters 3 and 4, both quantitative and qualitative research questions were asked to better understand the factors that influence the long-term general health of resettled adult humanitarian refugees in Australia. In the Discussion section of this PhD thesis (Chapter 7), I combined the results from both the quantitative and qualitative phases to more fully answer those questions and develop a more robust and meaningful picture of the research problem. First, I interpreted the results that helped answer the PhD study's major quantitative question: What migration factors influence the general health of resettling adult refugees in Australia? Then, I discussed the qualitative study findings that were aimed at answering the guiding research question in the qualitative phase of the PhD study: How and why do migration factors influence the general health of resettling adult refugees in Australia? In this way, the process allowed for the findings from the second, qualitative phase to further clarify and explain the statistical results from the first, quantitative phase (151).

I then discussed the study results in detail by grouping the findings to the corresponding quantitative and qualitative research sub-questions as they related to each of the explored migration factors affecting the long-term general health of refugees in Australia. I augmented the discussion by citing the related literature, reflecting both quantitative and qualitative published studies on the topic (151). Therefore, combining the quantitative and qualitative findings helped explain the results of the statistical tests, which underscored the elaborating purpose for a mixed-methods sequential explanatory design (151).

4.4 Ethical considerations in refugee research

The design and conduct of this study were informed by the values, principles and themes set out in the Australian National Statement on Ethical Conduct in Human Research (152). The National Statement guides ethical issues in human research, including the identification of issues of ethics that arise in the design, review and conduct of human research, to deliberate about those ethical issues and to justify decisions about them (156).

Trust, rapport and engagement

Given their exposure to trauma, loss and other associated risk factors, refugees are particularly vulnerable (153). Therefore, conducting research with such populations poses several ethical challenges (154, 155). It is the responsibility of researchers to protect their refugee participants from potentially intrusive or insensitive research, but also balance the possible benefits of participation against potential harms (156-158). Implicit in these actions is the establishment of trust and rapport between the researcher and the participant. To ensure that trust and rapport were established, I (the researcher) met with the relevant staff at each potential recruitment site (i.e. English Migrant Learning Centres) prior to embarking on the recruitment to talk about the aims and particular aspects of the research.

These meetings provided an opportunity to discuss the broader reasons for my presence as well as to serve as a vehicle in which to gauge issues confronting the refugee students. The staff then disseminated information about the research study to the target population (i.e. students of English learning classes), informing them of the voluntary nature and confidentiality of the project and also to gauge interest from potential participants. I was invited back to the site only if the target population expressed a willingness to hear further information about the study, by way of an oral presentation. During the delivery of the oral presentation, I covered aspects of the study, including its aim, inclusion criteria, participation and confidentiality. The talk was kept deliberately brief and presented in simple English to ensure that potential participants understood the information. This process of engagement was also seen as a way to directly interact with the target audience so that they could meet me in person and ask any questions about the study prior to committing to taking part. In this way, I engaged, built trust and rapport with each participant prior to the interview.

Consent and coercion

The principles of informed consent are among the most essential ethical considerations in human research (152). There are a several impediments to the attainment of voluntary, informed consent, particularly among refugees. These include disparities in language, cultural and social norms, power, education and familiarity with research processes (152), such as the right to refuse or revoke consent. For many refugees, this can be a more sensitive issue given their experiences of persecution and authoritarianism (159). For example, some refugees may perceive researchers as representations of authority, which may include governments or the police. It is therefore important that researchers are careful to ensure that coercion does not occur because of these power imbalances and that appropriate measures are taken to ensure that refugees understand their rights around participation. To ensure that coercion did not occur, measures were taken to ensure that a full understanding of rights around participation was obtained by the participants of the qualitative study. I delivered an oral presentation about the research study at each recruitment site to potential

participants to ensure that enough information was shared to allow informed consent to be made. This ensured that a comprehensive understanding of the research by potential participants was gained and that questions could be adequately addressed. Following the presentation, I provided explanatory statements (i.e. information sheets) to interested individuals and spent time reading through the information with potential participants. This process was repeated at the beginning of the interviews to ensure that individuals were fully conversant with the research process.

Cultural and language issues

The collection of accurate data from diverse language groups can be challenging because of language and cultural barriers (152). Translation and interpretation of information are therefore essential to gain a shared understanding of the phenomena being studied. Regarding the quantitative study in this thesis, rigorous translation of measures and back-translation, alongside expert consensus among cultural experts were undertaken (118). However, for the qualitative study, applying the same amount of rigour was not possible due to resource limitations. To address this limitation, participants were recruited that had a moderate to high level of English-speaking proficiency. This was considered as a way to overcome the need for interpreters to be present at the oral presentation and/or individual interviews as well as reducing the need for translated copies of the study documentation. Several versions of the explanatory statement and consent form were made available to participants based on their level of English proficiency. For example, participants had the option of receiving research information written in basic English with images or versions written in more standard English. See Appendices 8 and 9 for copies of the explanatory statements and consent forms.

Confidentiality and safety

Although participating in research can be a positive experience for participants (160), researchers must protect participants from harm (157), such as upset, distress and the possibility of re-traumatisation. Therefore, the researcher must apply caution when weighing up whether the risks can be balanced or outweighed by the benefits of participating in the research. Additionally, threats to the participant's physical and psychological safety must be considered by the researcher and the appropriate supports provided. Regarding this thesis, participants in the qualitative study, in addition to receiving a verbal explanation, were given an information sheet that provided contact numbers for organisations for follow-up if support was required (e.g. Lifeline, Refugee Nurse Liaison service). Although it was not possible to know what might have been going on internally, outwardly it was observed that participants reported the experience to be a positive one and not overly distressing. In terms of individual confidentiality, individuals were assured that their responses remained private and any data collected was unidentifiable. Participants were interviewed in private rooms to ensure confidentiality. Prior to the interview, participants were informed that they could stop the interview at any time if they started to feel distressed or became upset. They were also reminded of the contact numbers provided on the information sheet, which listed the available counselling and medical services.

Benefits of participation

In research, researchers must consider and clarify what benefits might extend to individuals and communities participating in the research. Not only should researchers clarify potential adverse effects and possible risks for refugees (160), they also need to overtly state the potential upset and further emotional sufferance arising from revisiting traumatic (161). Some authors suggest caution should be applied when making assumptions about the benefits of refugee participants verbalising their migration experiences (157, 162). It has been stated that communities with a history of being

‘over-researched’, necessitate a clear explanation of how the information would be used and interpreted, and who would have ownership of the research results (161). Therefore, researchers must consider how they will interpret and disseminate information, as well as what benefits participants can receive for their participation and what can be provided in terms of tangible benefits to individuals and their communities. Regarding this thesis, the participants of the qualitative study were provided with verbal and written information as to how their information would be used and interpreted and who would have ownership of the results. Participants were also informed of what benefits might be brought to refugee groups more broadly, as a result of taking part in this study. Although participants were also provided with a $30.00 gift voucher to compensate their time and travel, the potential benefits were framed around providing an opportunity for refugee participants to talk about their experiences, needs and aspirations and the chance to help increase the knowledge of the long-term health impacts of such factors.

4.5 Conclusion

This chapter provided an expanded description of the mixed methods approach employed in the present thesis. Important ethical considerations in this research were discussed. Having described the method and data analytical techniques employed, the next chapter marks the first of two results-based chapters that focus on the negative and positive factors in refugee general health. The next chapter will present the results from the quantitative study, which investigated the association of migration experiences upon the self-rated general health status of humanitarian refugees in Australia.

Chapter 5: The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study

In the previous chapter, the individual methodologies for the mixed methods study were outlined. This chapter presents the first of the studies in the mixed methods sequence; the quantitative study. Presented in this chapter are the study aim, research question, and methodology, and then proceeds to an examination of the prevalence of poorer general health and the factors which predicts this outcome. The paper is presented in its published format in Appendix 3. The citation for this paper is:

> Dowling A, Enticott J, Kunin M & Russell G (2019). The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study. International J Equity Health. 18(130):2-10. doi.org/10.1186/s12939-019-1033-z

5.1 Abstract

Refugees are potentially at an increased risk for health problems due to their past and current migration experiences. How migration factors shape refugee health is not well understood. The association between migration factors and the self-rated general health of adult humanitarian refugees living in Australia was examined using the first three waves of data from the 'Building A New Life in Australia' survey of 2399 humanitarian refugees resettled in Australia. The study outcome was self-rated health measured by a single item taken from the 36-Item Short Form Health Survey. Predictors were migration process and resettlement factors. Generalized linear mixed models were used to investigate the relationship between predictor and outcome variable. Poor general health persisted among this refugee population at high levels throughout the three-year follow-up. At baseline, 35.7% (95% CI: 33.8%-37.7%) of the study population reported poorer general health. Female gender, increasing age and post-migration financial stressors were positively

associated with poorer general health. Having a university degree and absence of chronic health conditions were seemingly protective against declining general health (OR: 0.50; 95% CI: 0.65-1.81 and OR: 0.15, 95% CI: 0.09-1.04, respectively). The results show that there is persisting high prevalence of poorer general health among adult refugees across the initial years of resettlement in Australia. This finding suggests unmet health needs which may be compounded by the challenges of resettlement in a new society, highlighting the need for increased clinical awareness of this sustained health burden to help inform and prepare refugee health care and settlement service providers.

5.2 Background

In 2017, almost 68.5 million people have been forcibly displaced from their homes, the largest number ever recorded. Of these, 25.4 million were recognised as refugees, while 3.1 million were asylum seekers (1). Because of this displacement, Europe recorded an unprecedented 1.35 million asylum applications in 2015; a record since data collection began in 2008 and more than twice the number of applications in 2014 (2). Refugees are often unable to return to their home country for fear of death or persecution and may be offered resettlement in a third country (1). In response to the current global refugee crisis, Australia recently increased its annual allocation from 13,750 to 18,750 places each year for refugees and others with humanitarian needs (3). With this comes a greater need to understand and support the health and well-being of refugees admitted to Australia; a pre-requisite for positive settlement outcomes (4). The long-term health and settlement prospects of refugees are a matter of continuing relevance for receiving nations as they are recognized as one of the most vulnerable groups in our society in terms of risk for poor health (5,6).

Resettling refugees often have unique health needs reflecting the epidemiology of diseases in their country of origin; inadequate and disrupted health care; and stressors experienced during the migration and resettlement periods; including trauma, torture and poverty (7). Exposure to pre-

migration trauma may have a lasting impact on psychological and physical well-being, a problem compounded by the stress of assimilation into a new society (8). These experiences are reflected through higher prevalence of mental illness and an increased prevalence of communicable and non-communicable disease among resettling refugees (9,10). A large comparative analysis of mental health among resettled refugees reported that the prevalence rates for Post-Traumatic Stress Disorder (PTSD) and depression were 30.6 and 30.8%, respectively (10). Therefore, many refugees are potentially at an increased risk for poorer health due to their past and current migration experiences.

Information is not available on the full spectrum of the refugee health burden or if, and why, health outcomes change over time among resettling refugees. Without such knowledge, host nations cannot know if their resettlement services are adequately meeting refugee population health needs. One of the challenges of collecting longitudinal health data from 'hard-to-reach' populations, such as refugees; is accessing, engaging and retaining participants (11). The selection of comprehensive and simple health indicators for use among refugee populations is also a challenge faced by many researchers. This has led to the collection of refugee health data using measures and approaches that may not be entirely appropriate for use among refugee populations (12). The use of self-rated general health assessments in refugee health research may be one way to overcome this issue.

Self-rated general health (SRGH) is the subjective measurement of an individual's general health and is based upon a simple question in which respondents are asked to rate their general health during the past 4 weeks on a scale ranging from "excellent" to "very poor" (13). Despite its simplicity, SRGH has been found to be an unusually strong predictor of mortality, morbidity and health service utilization (13). For example, a recent meta-analysis found that those who report "poor" health have a twofold higher risk of all-cause mortality relative to those who report "excellent" health (13). In ways that are still unclear, SRGH integrates biological, mental, social

and functional aspects of a person, including individual and cultural beliefs and health behaviours (14,15). Therefore, SRGH can capture information about an individual's health and well-being that more objective measures cannot. Given that refugees have been shown to rate their health as fair-to-poor more frequently than other immigrants after arrival in a developed country (16), we propose that SRGH may be a valuable health index for use among refugee populations; especially given that SRGH has proven reliability and validity among refugee populations (12).

To understand the value of SRGH as a refugee health index, we examined the association of self-rated general health, migration factors and individual-level characteristics using data from the Australian Government's 'Building A New Life in Australia' (BNLA) longitudinal survey. Other analyses of the BNLA survey have been published (17-21), but none have investigated the impact of migration on the self-rated health of the BNLA respondents.

5.3 Study aim

The aim of our study is to gain insight into the impact of migration on the general health of refugees during the initial years of resettlement in Australia.

5.4 Methods

Data sources

We examined data from the first three waves of the BNLA study, collected from October 2013 to March 2016. The BNLA is a five-year national study (2013-2018) conducted by the Australian Government's Institute of Family Studies to examine how humanitarian refugees settle into a new life in Australia (22). The Australian Federal Government's Department of Social Services (DSS) funded the BNLA study. Further information about the BNLA study design can be found in publicly available documents (22).

Ethics approval

The BNLA study received ethics approval by the Australian Institute of Family Studies Human Research Ethics Committee. De-identified BNLA data is accessible by authorized researchers who have obtained permission from the Australian Department of Social Services. This permission was obtained by study authors Alison Dowling, Joanne Enticott and Grant Russell. Ethics exemption to use the data was granted by the Monash University Research Ethics Committee (see Appendix 4).

Study population and sampling

The BNLA cohort comprised of individuals aged 15 years and over who had been granted a permanent humanitarian visa by the Australian Government in the 3-6 months preceding the baseline BNLA study (22). Eligible participants were identified via the Australian Department of Immigration and Border Protection settlement database from eleven locations around Australia to ensure adequate sample size. Migrating Units (MU) were the primary sampling units for the study and consisted of principal applicants (PA) and secondary applicants (SA). Principal Applicants were the lead participant for the study, and were the initial individuals contacted for participation. Secondary Applicants comprised other members of the Migrating Unit listed on the Principal Applicant's visa application. The Principal Applicant had to consent to participating before SAs could be invited to do so (22). A total of 2031 out of 4035 eligible Principal Applicants were contacted and 1509 Principal Applicants and 890 Secondary Applicants completed baseline interviews. The respondents are from 35 different countries and speak 50 different languages and at baseline, aged between 15 and 83 years (22).

Eligible Principle Applicants (PAs) were drawn from the Australian Department of Immigration and Border Protection settlement database, which contains demographic and contact details for all

individuals granted Australian humanitarian refugee visas (22). Eleven locations around Australia were chosen to give a mix of metropolitan, rural and regional sample locations (22). Locations included the major cities of Melbourne, Sydney, Brisbane, Adelaide and Perth as well as six confidential location. Therefore, the population was a geographically clustered sample and a census approach was used to sample eligible PAs to best reflect the wider Australian humanitarian refugee population.

Contact details of eligible Pas were supplied to Colmar Brunton Social Research; an independent research body (22). Invitations to participate in Wave 2 of the study were sent to the PAs of migrating units (22). Researchers then followed up with a telephone call. If telephone contact failed, home visits were undertaken to engage with potential study participants (22). After PA agreement to participate, Secondary Applicants (SAs) within consenting migrating units were invited to participate (22). Invitations to participate in Waves 2 and 3 were extended to participants in the previous wave, via mail and telephone. (22)

In total, 4035 Principal Applicants were eligible to participate in Wave 1, of which 2031 were successfully contacted (22). At baseline, 1509 Principal Applicants and 890 Secondary Applicants completed the BNLA survey. There was a total of 2300 completed interviews at baseline; 2009 at Wave 2 and 1894 at Wave 3. The overall response rate between baseline to Wave 3 was 79.0% (22)

Data collection

The first three waves of 'Building A New Life in Australia' data were obtained using either home visits (Waves 1 and 3) or telephone interviews (Wave 2). The BNLA written survey was translated into 14 different languages for Wave 1. A total of 19 languages were covered for the survey with the aid of interpreters (22).

Variable selection

A number of predictor variables were selected from the BNLA survey and related to migration and resettlement, socio-demographics and the presence/absence of chronic conditions. Variable selection for this study was informed by a conceptual framework oriented to Cross-Denny & Robinson's social determinants of health model (SDOH) (23). A review of the literature reporting significant predictors of refugee health outcomes informed the selection of candidate variables from the 'Building A New Life in Australia' dataset to populate the social determinant of health model. The literature was scanned for reported risk factors for poorer health outcomes among adult refugees living in developed host nations. Although this was not considered a formal process for the PhD, the following criteria were implemented with regards to the studies reviewed:

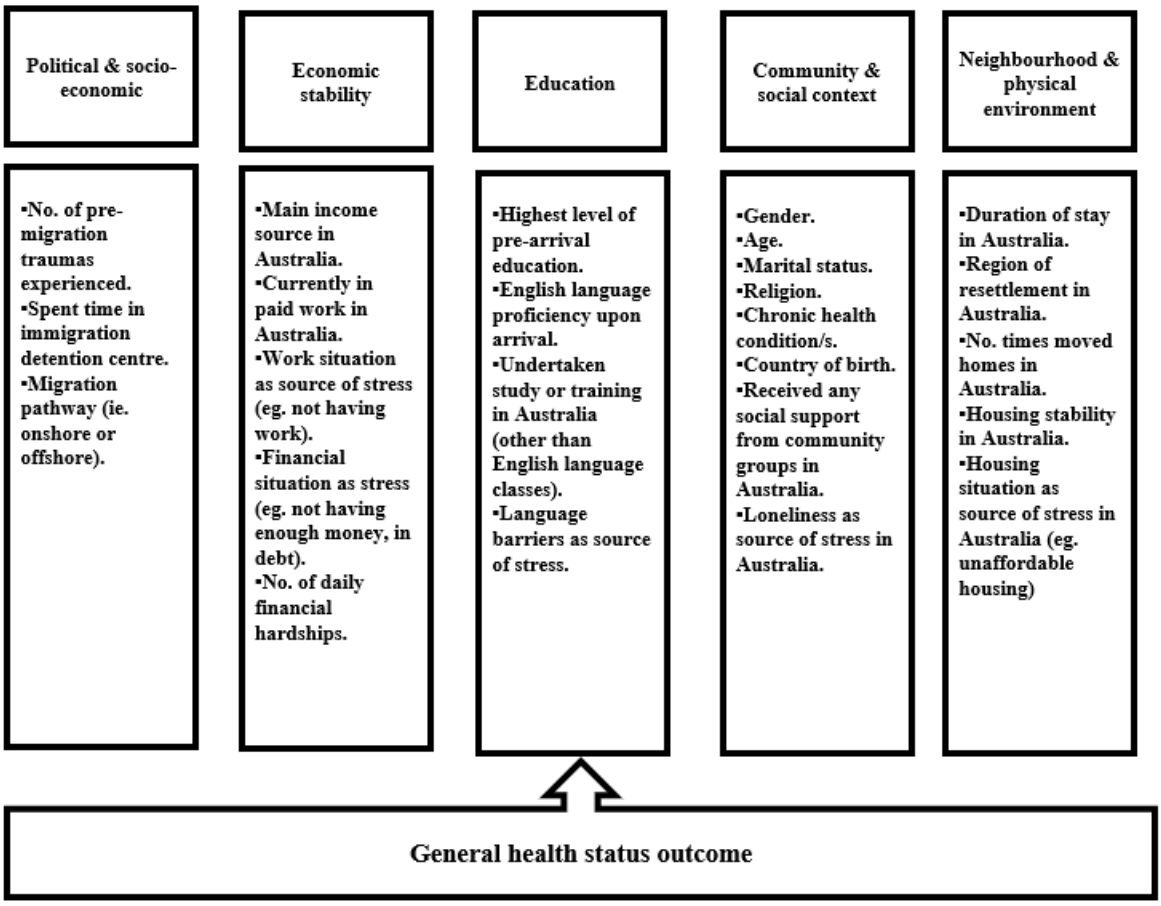
- Published in English language
- Utilized a quantitative study design
- Study outcome variable(s) included mental, physical, general, self-reported health
- Focused on adult refugees or asylum seekers (18+ years) living in developed host nations

The following databases were searched to identify relevant studies: Medline, CINAHL, EMBASE, SCOPUS and PsychINFO. This search was supplemented with a general Internet search using Google and Google Scholar to ensure the results were maximal. Full text review was conducted on 156 articles. The full count of articles retrieved is not known as this was an informal literature review and therefore only the reviewed manuscripts were documented. Relevant information from the 156 articles reviewed was charted in an Excel spreadsheet, including: Author(s) names, study title, publication year, aim of study, study design, results, risk factors identified.

The domains selected for the Social Determinants of Health model designed for this study were based on the framework provided by Cross-Denny & Robinson's social determinants of health

model. The authors of this study agreed that the Cross-Denny and Robinson framework was applicable to use in this study as it included several domains that were relevant to the determinants of health among refugee populations, based on the results of the literature review described above. For example: Economic stability, Education, Social Community Context, Neighbourhood and Environment. It was agreed by the student and PhD supervisors that a fifth domain needed to be added to the model designed for this PhD, which was given the title of "Political, socio-economic". Cross-Denny & Robinson also provided a list of health determinants that could be included in each domain (23). For example, factors relating to income and employment could be placed in the "Economic stability" domain. Using this information, we began to populate our model using the available variables from the BNLA dataset. The resultant adapted model included five key determinants of refugee health encompassing 25 candidate variables selected from the BNLA dataset. (See Figure 1).

Figure 1. Conceptual framework for the social determinants of health in resettled refugee populations.



Outcome measure

Factors relating to migration and resettlement in host country and health were measured by the 'Building A New Life in Australia' self-report survey (22). Our principal outcome variable was self-rated general health and used the question "Overall, how would you rate your health during the past 4 weeks?" selected from the SF-36 (24). The SF-36 is a generic measure of health status with reliability and validity among refugee populations (12). The BNLA survey uses a 6-point Likert response scale (*"Excellent"* to *"Very Poor").* For our study, we use a dichotomous variable comprising of two health response categories of *"Excellent-Good"* and *"Fair-Very Poor".* The

decision regarding the creation of the two response categories was based on a review of the literature, which confirmed that our dichotomous response groupings were appropriate (25).

5.5 Data analysis

Analysis included descriptive and generalized linear mixed modelling (GLMM). Descriptive statistics describe the overall characteristics of the sample population at baseline, such as socio-demographics, migration experiences using means and standard deviations (SDs) for continuous variables and frequencies and percentages for categorical variables. All analyses used adjusted weights, provided by the BNLA project. Variables with over 10% missing data at baseline were excluded if we were unable to account for the missing data. Only variables asked across all three waves were included in the analysis. Continuous variables, such as age, were transformed into categorical variables. Analyses were done with Stata/SE 15.1 (26).

To examine the relationships longitudinally between outcome~~s~~ and predictor variables, GLMM were used. As the BNLA data involved multi-level, clustered sampling, GLMMs accounted for inter-individual random effects between different 'migrating unit' clusters (ie. the families) and individual participants, as well as intra-individual fixed effects or the repeated measures within individual participants. GLMMs were appropriate for our analysis as ordinary linear models are unable to handle clustered data.

Variable selection for the final models occurred in several steps. Firstly, univariate regressions were used to examine associations between baseline candidate variables and outcome variable~~s~~, with variables retained at $p<0.1$. In the second step, collinearity was then examined using Pearson's correlation coefficient to remove highly correlated variables from the final model. In this study, one candidate variable was selected from two or more correlated variables when $r>0.5$. The third step

involved examining associations between candidate variables and outcome variables using multivariate GLMM. A variable denoting study time: 'wave' was included in these models. Variable at $p<0.1$ were retained. In the last step, candidate variables were modelled over 1000 bootstrap samples at 95% resampling for the data set. Candidate variables were retained in final models if they were identified as significant ($p<0.05$) in 1000 bootstraps over 50% of the time.

Role of the funding source

The BNLA is funded by the Australian Government's Department of Social Services and were not involved in the preparation of this manuscript or the analyses reported.

5.6 Results

Demographics

At baseline, 2399 individuals took part in the BNLA study. The mean age was 35.5 years (SD=13.9) and 54.0% were male. Over half of the participants (61.0%) were married or partnered and nearly half (45%) were born in the Middle East. Almost a third (32.5%) had little to no schooling upon arrival to Australia and 12.1% held university qualifications. Before coming to Australia, 33.6% could speak English *'very well-well'.* A vast majority (88.9%) of participants had exposure to one or more traumatic experiences. Mostly, participants had been in Australia less than six months (82.1%) and were living in metropolitan cities (90.7%). There was little financial stability with high unemployment (90.7%); high dependency on government income support (88.0%) and at least one financial daily hardship (42.3%). Only 9.3% were in paid employment at baseline. Stress caused by not having work, stable housing and language barriers was reported by 33.0%, 28.1% and 56.0% of participants, respectively. Having a 'chronic' health condition was reported by 23.0% of participants at baseline. See Table 1 below.

Table 1: Baseline characteristics of humanitarian refugees in the Building A New Life in Australia project, 2013-14 *(weighted data)*

Characteristic	Response	Total (n=2399)*
Age, mean (years)	–	35.5 (13.9)
Age category (years)	18-25	546 (24.2%)
	26-35	655 (29.0%)
	36-45	508 (22.5%)
	46-55	310 (13.7%)
	56-65	165 (7.3%)
	65+	76 (3.4%)
Gender	Male	1295 (54.0%)
	Female	1103 (46.0%)
Married or partnered	Yes	1375 (61.0%)
	No	879 (39.0%)
Region of birth	Middle East	1073 (45.0%)
	Central Asia	482 (20.2%)
	Southern Asia	332 (14.0%)
	South-East Asia	226 (9.5%)
	Africa	273 (11.4%)
Education level, pre-arrival	Never attended school	350 (14.8%)
	≤6 years of school	419 (17.7%)
	6-12 years of school	1171 (49.4%)
	Trade/tech qualification	142 (6.0%)
	University degree	87 (12.1%)
English speaking proficiency	Very well/well	793 (33.6%)
	Not well/not at all	1571 (66.4%)
No. pre-migration trauma experienced	None	248 (11.2%)
	1-2	1286 (57.9%)
	≥3	689 (31.0%)
Migration pathway	Onshore†	458 (19.1%)
	Offshore††	1940 (80.9%)
Spent time in offshore Immigration Detention	Yes	202 (8.6%)
	No	2146 (91.4%)
Duration of stay in Australia	<1 year	1968 (82.1%)
	1-2 years	271 (11.3%)
	2-3 years	76 (3.2%)
	>3 years	84 (3.5%)
Region of settlement in Australia	Metropolitan cities	2174 (90.7%)
	Inner regional	184 (7.7%)
	Outer regional	39 (1.7%)
Currently in paid employment	Yes	143 (9.3%)
	No	1403 (90.7%)
Main income source in Australia	Own salary/income	180 (7.7%)
	Government support	2059 (88.0%)

	Other	101 (4.3%)
No. daily financial hardships	None 1-2 3-4 5-6	1307 (57.8%) 654 (29.0%) 240 (10.7%) 59 (2.6%)
Further study/training in Australia	Yes No	410 (17.4%) 1956 (82.6%)
Stress-language barriers	Yes No	1279 (56.0%) 1009 (44.0%)
Stress-work situation	Yes No	754 (33.0%) 1534 (67.0%)
Stress-housing situation	Yes No	659 (28.1%) 1629 (71.2%)
Stress-loneliness	Yes No	363 (15.9%) 1926 (84.1%)
Received any social support	Yes No	859 (35.8%) 1539 (64.2%)
Has long term disability, injury or health condition	Yes No	509 (23.0%) 1714 (77.0%)

*Data are provided as n (%) or mean (SD)

† Onshore pathway is available to those who wish to apply for asylum after arrival in Australia as an unauthorised maritime arrival or holder of valid visa (eg. tourist).

† †Offshore pathway is available to those who may be eligible for resettlement to Australia, such as those identified by the UNHCR or those eligible for sponsorship to Australia.

GLMM results

Table 2 provides the results of generalised linear mixed effect models, with general health as the outcome variable and pre- and post-migration factors as the predictor variables across the three years of follow-up. Individual characteristics, such as being female, older in age, originating from the Middle East and having a university qualification were significant positive predictors of poorer general health. For example, our results show that over the three years of follow up, females have 2.02 the odds of reporting 'Fair-Very Poor' health compared with males. In terms of post-migration stressors, several economic factors were associated with the reporting of 'Fair-Very Poor' health among this refugee population. An increasing number of daily financial stressors was significantly associated with higher odds of reporting poorer health. For example, those with 3-6 daily financial hardships were at increased risk for reporting poorer general health than those without any daily financial stressors. "Other" main income source (ie. spouse/partner/parent's income) was also positively associated with poorer health (OR: 3.25, 95% CI: 0.013).

Not having a chronic disability/injury or condition was associated with reporting 'better' general health (OR: 0.15; 95% CI 0.09-1.04) among this refugee population. That is, those without a chronic health condition have 0.15 the odds of reporting 'Fair-Very Poor' health compared with those with a chronic health condition. Another way to interpret the results is that the odds of reporting 'Fair-Very Poor' health is 95% less among those without a chronic health condition than the odds of reporting poorer health among those with a chronic health condition. We found no significant association between the health outcomes and duration of stay in Australia, education, accommodation and social support

Table 2: Results from generalised linear mixed models using self-rated general health in past 4 weeks with *"Excellent-Good"* and *"Fair-Very Poor"* the outcome. OR-odds ratio; p=p-value; CI=confidence interval.

Variable	Response	General Health		
		OR	*p*	*95% CI*
Gender	Male	–	–	–
	Female	2.02	0.000	(1.51-2.71)
Age Group (years)	18-25	–	–	–
	26-35	1.71	0.032	(1.05-2.78)
	36-45	3.45	0.000	(2.13-5.60)
	46-55	6.91	0.000	(3.83-5.50)
	56-65	9.86	0.000	(5.00-9.41)
	65+	8.32	0.000	(3.31-10.9)
Region of Birth	Middle East	–	–	–
	Africa	0.39	0.000	(0.17-0.56)
	Central Asia	0.39	0.000	(0.26-0.58)
	South-East Asia	0.92	0.802	(0.50-1.70)
	Southern Asia	1.08	0.755	(0.65-1.81)
Pre-arrival education	No schooling	–	–	–
	≤6 years of schooling	1.15	0.545	(0.73-1.82)
	6-12 years of schooling	0.70	0.118	(0.45-1.09)
	Trade or technical qualification	0.70	0.308	(0.36-1.38)
	University degree	0.50	0.021	(0.28-0.90)
Main income source in Australia	Own salary or wage	–	–	–
	Government support	1.50	0.156	(0.86-2.65)
	Other	3.25	0.013	(1.27-8.30)
No. daily financial hardships	0	–	–	–
	1-2	1.75	0.002	(1.23-2.51)
	3-6	3.01	0.001	(1.60-5.70)
Has long term disability, injury or health condition	Yes	–	–	–
	No	0.15	0.000	(0.09-1.04)

Self-rated general health

The mean general health prevalence among humanitarian refugees was calculated in two ways: (1) using BNLA sample data, and (2) using the final model adjusting for model independent variables. Both methods used the provided sample weights. Both methods showed no significant changes in general health over time. See Table 3 below.

Using BNLA sample data, 35.7% (33.8%-37.7%) of participants reported *"Fair-Very Poor"* self-rated health at baseline (see Table 2). At Wave 2, 691 (36.8%) participants' self-reported *'Fair-Very Poor'* general health (95% CI 34.6%-39.0%) and 685 (39.7%) had *'Fair-Very Poor'* general health (95% CI 37.4%-42.0%) at Wave 3.

Table 3 shows the prevalence estimates of "Fair-Very Poor" self-rated health calculated using the final GLMM model. In Wave 1, the prevalence for *'Fair-Very Poor'* general health was 34.6%. In Waves 2 and 3 the prevalence was 34.0% and 33.4%, respectively. This shows that the prevalence of *'Fair-Very Poor'* general health remained high across the 3 years but did not decrease or increase substantially over time. The significance of change in *'Fair-Very Poor'* general health over time was also examined using the final GLMM model.

Between Waves 1 and 2, there was no significant decrease in the prevalence of "Fair-Very Poor" self-rated health (p=0.779). See Table 3. Waves 1 and 2 saw no significant differences in "Fair-Very Poor" self-rated health (p=0.802). There was also no significant overall decrease between Wave 1 and 3 for "Fair-Very Poor" self-rated health (p=0.512). Therefore, the results indicate that there was no significant change in "Fair-Very Poor" self-rated health over the three years of follow-up. In summary, on a population level, the point prevalence of "Fair-Very Poor" self-rated health remained high, but no overall significant increase (or decrease) in "Fair-Very Poor" self-rated health was seen over time.

Table 3: Mean general health prevalence among humanitarian refugees in the BNLA project calculated two ways using: (1) sample data; and (2) final model adjusting for model independent variables. Both methods used the provided sample weights. (n)^{n}=Number provided in the sample calculation only.

General health		Wave 1 (n=2399)		Wave 2 (n=2009)		Wave 3 (n=1894)	
Fair-Very Poor	**Weights applied**	**%(n)^{n}**	**95% CI**	**%(n)^{n}**	**95% CI**	**%(n)^{n}**	**95% CI**
Mean calculated from sample	Yes	35.7% (805)	33.8%-37.7%	36.8% (691)	34.6%-39.0%	39.7% (685)	37.4%-42.0%
Mean calculated for model variables	Yes	34.6	–	34.0	–	33.4	–

NOTE: No significant differences between waves as suggested by 95% confidence intervals and this was confirmed using z-tests: Waves 1-2 difference z-statistic=0.28, p=0.779; Waves 2-3 difference z-statistic=0.25, p=0.802; and Waves 1-3 difference z-statistic=0.66, p=0.51.

5.7 Discussion

In our study, we used data from the largest and most diverse global longitudinal study of refugees to date to provide new insights into the refugee experience of health as a humanitarian refugee population adjusts to conditions in a new society. Our study revealed a high prevalence of poorer general health among the BNLA population over time and several factors were found to be associated with this health pattern; including resettlement economic stressors, having a chronic health condition and individual-level characteristics.

This study is the first to report the sustained prevalence of poorer general health throughout the first three years of resettlement among Australian humanitarian refugees. Our results reveal that our refugee population bears a substantial health burden compared with the wider Australian population. By comparison, 4% of the Australian population self-report poor general health and 10% of Australians rate their general health as fair (27). Factors associated with refugee status are plausible explanations for this observed health disparity. For example, there is evidence to suggest that refugees in Australia experience multilevel barriers to the healthcare and this may be affecting

their overall health outcomes (28,29). Although Australia provides generous support to humanitarian entrants, our results suggest that existing policies on refugee resettlement have been less effective than desired on improving the health of Australian refugees.

Within our refugee population, we found that only post-settlement economic stressors were associated with poorer general health; a finding that is supported by previous refugee research (16,30-31). Unemployment was not found to be significant predictor of poorer general health, which suggests that it is the financial consequences of unemployment which may be more important for the long-term general health among our refugee population. We confirmed a strong dose-response like relationship with daily financial hardships and poorer general health, which has only been shown previously in cross-sectional studies of refugee populations (30). Nowhere in the literature has an association between main income and poorer general health been reported. Our finding that 'other' main income source (ie. spouse/partner/parent's income) is interesting because humanitarian refugees in Australia can access welfare payments and employment (32). The finding suggests that some individuals are having to rely on their own savings or other financial aid as their main income source. As most of the respondents in our study were unemployed across the three years of follow-up, it is plausible that some respondents are supplementing welfare payments with other sources of income to 'make ends meet', given the high cost of living in Australia.

The association found between the presence of chronic health conditions and poorer health among our refugee population is not unexpected. This linkage been shown by studies of refugee and non-refugee populations (31,34), but we are the first to report this association in a longitudinal study of resettling refugees. Not only do we provide evidence of chronic disease prevalence among newly arrived refugees, but we also demonstrate its impact on long-term health. Our finding confirms the reports of the rising prevalence of chronic health conditions in refugees' regions of origin, particularly the Middle East (34). Resettling refugees are potentially susceptible to the development

of chronic disease due to host nation stressors as well as the adoption of a less health western diet and a more sedentary lifestyle and resettlement stressors (36). Left unmanaged, the chronic health burden among refugee populations is also likely to impact their resettlement success.

Female gender, older in age, Middle Eastern origin and education level were all found to be risk factor for poorer general health, confirming previous cross-sectional studies of refugee populations (36-38). Previous research has shown that older refugees are particularly vulnerable to physical deterioration post-settlement (36) and there is solid support that poorer health has a higher prevalence among women (9). Having a university degree (pre-migration) was significantly and negatively associated with long-term self-rated general health among refugees (36, 38). It may be that those with a university qualification possess the skills to achieve a higher level of self-sufficiency with regards to their long-term health. That is, they may know their health needs better and are able to access health services better. Given that many refugee sub-groups, such as female Afghanis, have little to no schooling, our result highlights the importance of understanding the education needs of resetting refugees as a way of offsetting adverse health outcomes.

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Afghanis, have little to no schooling, our result highlights the importance of understanding the education needs of resetting refugees as a way of offsetting adverse health outcomes.

5.8 Implications of the findings

Our results show that there is persisting high prevalence of poorer general health among adult refugees across the first three years of their resettlement in Australia. This finding suggests unmet health needs which may be compounded by the challenges of resettlement in a new society. This result highlights the need for increased clinical awareness of this sustained health burden to help inform and prepare refugee health care and settlement service providers, but also (and very importantly) a greater awareness of the social determinants of refugee health. It also underscores the importance for health professionals to consider broad health issues among refugee populations and highlights the potential value of the Australian Medical Benefit Schedule subsidy of refugee health assessments for recent refugee arrivals (40). The association between poorer general health and resettlement economic stressors highlight the importance of understanding and eliminating the barriers, which lead to the high rates of unemployment among refugees, as a way of preventing negative health consequences. Qualitative research into the barriers to employment, using the perspectives of refugees themselves; would be a valuable addition to the current knowledge gap. This study also highlighted that attention should be given to assessing the specific needs of groups of refugees based on their demographic characteristics; for example, older, Middle Eastern females. Given the vulnerabilities of these groups, sustained targeted interventions upon entry to Australia would be beneficial to offset any further decline in health.

5.9 Limitations

There are several methodological limitations in this study. Retrospective reporting and reliance on self-reporting may run a risk of not remembering or misrepresenting the events and non-accurate

measurement of symptoms (39), presenting a risk of recall bias, personal interpretations across languages and cultures. Further, the BNLA study collected information that is more comprehensive from principal visa applicants than from secondary applicants, which constrains the depth and breadth of findings of the study. Alternating face-to-face with telephone interviews may have introduced some inconsistencies across waves in that some respondents may have answered some questions differently depending on the interview style. Despite these limitations, this study has contributed to the literature by providing information about the migration experiences of a large and ethnically diverse cohort of refugees during their first three years of resettlement in Australia and the impact of such experiences on general health.

5.10 Conclusion

Our study provides an insight into the long-term general health of resettling refugees in Australia and its associated risk factors. Our results highlight a pattern of additional health needs existing within this refugee population. The risk-factors for poorer self-rated health give shape to future interventions or policy responses to help in the health and well-being of this highly vulnerable group.

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Chapter 6: The impact of migration upon the perceived health of adult refugees resettling in Australia: a phenomenological study

In the preceding chapter, it was found that among a large and diverse group of adult humanitarian refugees resettling in Australia experienced long-term poorer general health and that a number of risk factors were associated with this health disparity. This information was then used to inform the qualitative study interview guide. In this way, the qualitative study was able to further explore the health experiences of resettling refugees through individual interviews from the perspectives of refugees themselves. This chapter presents the second of the studies in the mixed methods sequence; the qualitative study. Chapter 6 includes the adapted text from a manuscript under review with the *Journal of Ethnic and Migration Studies*, titled "The impact of migration upon the perceived health of adult refugees resettling in Australia: a phenomenological study".
The paper is presented in its published format in Appendix 5. The citation for this paper is:

> Dowling A, Kunin M & Russell G (2020). The impact of migration upon the perceived health of adult refugees resettling in Australia: a phenomenological study. *Journal of Ethnic and Migration Studies*, CJMS-2019-0678

6.1 Abstract

Resettled refugees are an important and growing population in Australia with special health needs. Many are at an increased risk for health problems due to their past and current migration experiences, but how migration shapes refugee health is not well understood. Such information is important to help resettlement nations design services that best meet the needs of refugees. Drawing on a qualitative phenomenological perspective, semi-structured interviews were conducted with 19 adult refugees living in Australia to examine the relationship between their health and migration experiences. Data were analysed using Interpretative Phenomenological Analysis. Findings from

this study indicate that the health of participants is influenced by pre-migration violence and loss, and stressors associated with living in transit and resettlement countries. Social support, religiosity and future aspirations were commonly reported enablers of health and wellbeing. Gender appears to play a significant role in the health outcomes of our refugee population.

6.2 Background

Australia accepts an allocated number of refugees annually through its Humanitarian Program and recently increased its intake to 18,750 places per year (163). With this comes a greater need to understand and support the health and well-being of refugees admitted to Australia; a pre-requisite for positive resettlement outcomes (164). The long-term health and resettlement prospects of refugees are a matter of continuing relevance for receiving nations as they are recognized as one of the most vulnerable groups in our society in terms of risk for poor health due to their past and current experiences (4, 23, 165, 166).

In the course of migration, many refugees have been adversely affected by experiences in their country of origin, refugee camps, transit countries and the journeys between these destinations (13). Many will have been exposed to direct pre-migration trauma, which may have a lasting impact on their psychological and physical well-being (6). For example, pre-migration trauma is among the most consistent factors associated with poor mental health in resettled refugees (18, 167). The time following immigration is also often experienced as a time of crisis, stress and adjustment and the evidence suggests that resettlement issues, such as restricted economic opportunities or inappropriate accommodation worsens refugees' health (18, 168-170). Therefore, refugees are potentially at an increased risk for health problems due to their past and current experiences. However, little is known about the extent to which migration factors shape the long-term health of resettling refugees.

Much of this knowledge gap can be attributed to methodological limitations in the current research. To date, much of the research into refugee health has been quantitative in nature and has examined associations between pre-migration trauma and mental health or post-migration stressors and mental health using pre-determined variables (171, 172). Such deductive examinations are unable to help us understand what the refugees themselves perceive to be the critical migration experiences impacting upon their health (173). The qualitative studies that exist in the literature have generally been cross sectional examinations of migration experiences and their impact upon refugee health and wellbeing (46, 172, 174). Few qualitative studies exist that explore refugee health over an extended period (173); so little is known about the evolution of refugee health and the factors that influence health over time using the perspectives of refugees themselves.

To address some of these gaps in our knowledge, we conducted a qualitative, phenomenological study to explore the lived experience of health among adult refugees living in Australia. We examined both the challenges they faced during migration and the mechanisms they used to help overcome these challenges. It is anticipated that the knowledge that emerges from this study will provide a greater insight into what the health needs of refugees are and what are the salient influences upon this health by directly eliciting refugee perspectives on their health and what determines their health. It is anticipated that the knowledge that emerges from this study may lead to recommendations for resettlement services that might be more effective than those currently in place.

6.3 Study aim

To obtain a deeper understanding of what meanings and reasoning refugees attribute to their health during resettlement, in particular with regard to their migration experiences.

6.4 Methods

Study design

This study used a qualitative, phenomenological approach to explore refugees' constructed meanings of their health experiences across the migration journey to bring attention to how unique individual meaning and context can be useful in understanding the health needs of this population. Phenomenology aims to develop insights from the perspectives of those involved by detailing their lived experience of a particular time in their lives (115). It obtains descriptions of experiences through first-person accounts during informal one-to-one interviews. These are then transcribed and analysed for themes and meanings allowing the experience to be understood (175). Given that the primary intent of this research study was to understand the health experiences of refugees across the migration journey, phenomenology was chosen as the study design as it would capture the active, meaning orientated of the phenomena (ie. perceived health) across various contexts. It would also bring the voices of refugees themselves into discussions of refugee health and wellbeing.

Study setting and approach

Recruitment for this study took place in three centres that provide adult English language programs to refugees and other migrants, located in Melbourne, Australia. Permission was obtained by the first author to visit each centre to visit and conduct oral presentations to groups of eligible refugee students. Staff at each centre briefed their students about the research study to gauge the level of interest prior to the visit by the first author. The oral presentation outlined the study objective, participation and consent. Following each presentation, the first author invited audience members to ask questions and to consider participation. In this way, the researcher engaged, built trust and rapport with participants. Interviews were then arranged at a convenient time and place was verbally arranged with interested individuals who were also provided with study information sheets and consent forms.

Participant selection

Inclusion criteria

Eligible participants were aged 18 years and older; could speak and read basic English; had been granted a permanent resident visa by the Australian Government and had been living in Australia for less than 4 years.

Sampling

A purposive criterion sampling strategy was used to recruit participants for this study as this approach allowed us to select respondents based on the shared experience of becoming a refugee who has migrated to, and resettled in, Australia. The sample size for this study followed the concept of saturation (138). That is, we recruited participants until the collection of new data did not provide any further information that assisted in our answering the research question.

Data collection

Interview guide

A semi-structured interview guide was designed for this study based upon the aim of the study, through analysis of relevant literature, and discussions with people knowledgeable of refugee health research. The quantitative study results were also used in the development of the qualitative interview guide. That is, any significant or surprising quantitative results from the quantitative study that required explanation were used to design the interview questions. For example, questions around what sort of things helped or made it hard for participants at each stage of migration were based on the quantitative study findings that pre-migration trauma and post-settlement stressors were significantly associated with poorer general health among participants

living in Australia. The literature was then reviewed to confirm if such information was already reported in the literature and if not, then the questions were included in the study interview guide.

The interview asked participants to tell their story about their journey to Australia; and their perceptions of the impact that their migration experiences had upon their perceived health. Prompt questions were included to provide structure for the participants about their experiences as well as to probe about specific issues or experiences of interest. Demographic data were also collected to describe the characteristics of the sample. The guide was initially piloted with two refugee participants for evaluation and amended accordingly. Pilot interviews were not included in the final study results.

Participant interviews

Nineteen participants were recruited into the study. Although saturation was achieved after twelve interviews, we continued to interview all participants as a sign of respect and good will, given their desire to participate and tell their stories. Interviews were conducted by the first author in private rooms at the English learning centres or public libraries between July 2018 and December 2018. Interviews lasted on average 35 minutes (range 25-60 minutes). Audio recordings of the interviews were transcribed verbatim and checked for accuracy by the first author. All data files were anonymized and given a unique identifier number. All nineteen interview transcripts were included in the study after discussion among the study authors.

Data analysis

To analyse the study data, we use Interpretative Phenomenological Analysis (IPA) (176) to obtain access to the participants' health experiences across the various stages of their migration journey. IPA is an approach that emphasizes the importance of understanding the lived experiences of

participants in terms of how they make sense of a particular situation or phenomenon and how they make reflective interpretations and meanings of their experiences (176). IPA is a particularly useful methodology for examining topics which are complex, ambiguous and emotionally laden topics, through its in-depth descriptions of human experience, especially in the field of health and illness. Refugee health is a prime exemplar of such a phenomenon: elusive, contextual and often involving complex physical and psychological interactions.

All audio recordings were transcribed verbatim by the first author and uploaded into NVivo (146). The multi-stage process of IPA was initially carried out on a case-by-case basis and was subsequently followed by a case comparison across transcripts. The analysis began with a detailed reading and re-reading of each transcript to obtain a holistic perspective of the participant's account. Interesting passages were highlighted and notes made in the margins, which were then reviewed to identify emergent themes. Emergent themes were then condensed and examined for connections, and then tabulated. These steps were completed for each transcript before moving onto the next. Once all the transcripts were analysed, they were examined to identify patterns, draw connections and to find shared master themes, which were then grouped into a final master table. These themes served as the basis for development of a narrative account of the interplay between the interpretive activity of the researcher and the participant's account of their experience.

Ethical considerations

Ethical approval was obtained from the Monash University Human Research Ethics Committee (Reference No. 11/EE/0108). All participants signed written consent forms and agreed to be audio recorded during the interview. Participants received a $30.00 gift card for completing the interview to thank them for their time.

Quality control and reflexivity

Preliminary findings were presented and discussed by the first author with the co-authors. Two coded transcripts and integration were reviewed by an independent researcher, who has experience in qualitative data analysis. Additionally, the first author kept a reflexive diary during the analysis. Reflecting on personal reactions to the narratives often involved revisiting the data and diary entries at several points during the process. Final themes were reviewed by all the authors.

6.5 Results

A total of 19 refugees participated in this qualitative study, including 15 females and four males who ranged in age from 22 to 55 years. Participants originated from Afghanistan, Pakistan, Iraq and Syria and had spent between six months and ten years living in the community of transit countries, including Pakistan, Lebanon, Jordan and Malaysia/Indonesia. All were married with children living with them in Australia. Participants had lived in Australia an average of 2.7 years at the time of interview. At the time of the interview, only the four male respondents were employed. Please see Table 1 for the complete list of socio-demographic characteristics of the study participants.

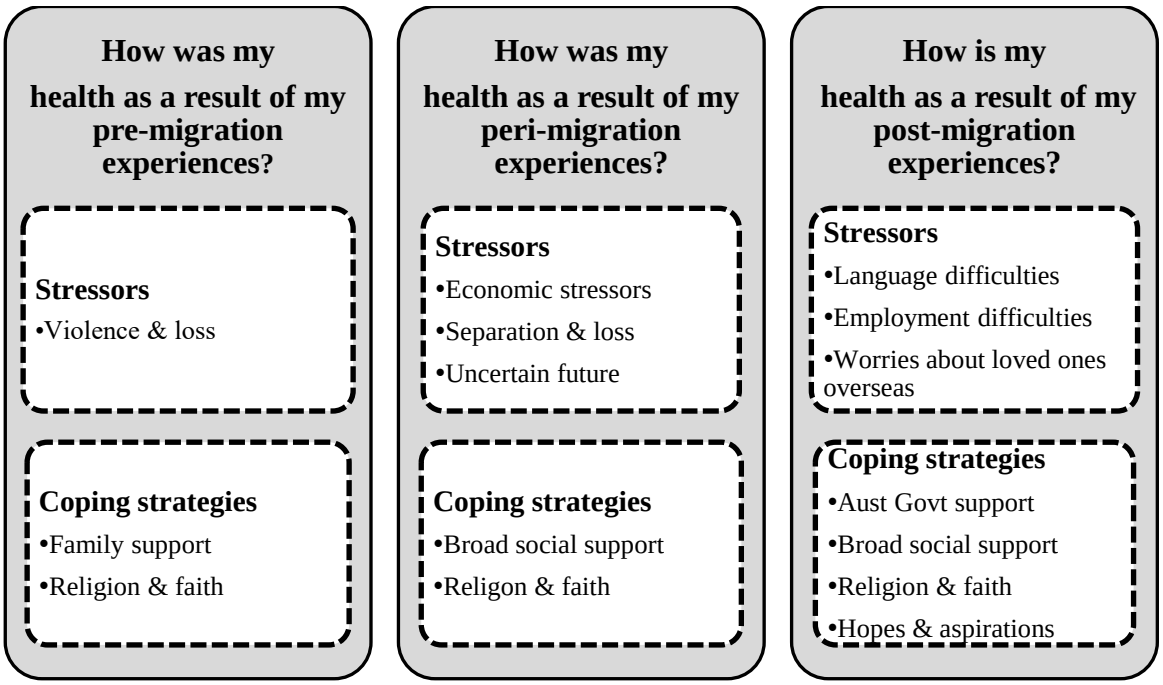
Table 1: Participants characteristics

Characteristic	Total (%)
Age category (years)	
20-29	7 (37%)
30-39	6 (32%)
40-49	4 (21%)
50-59	2 (10%)
Gender	
Male	4 (21%)
Female	15 (79%)
Country of origin	
Afghanistan	7 (37%)
Pakistan	1 (5%)
Iraq	10 (53%)
Syria	1 (5%)
Marital status	
Married	17 (90%)
Widowed	2 (10%)
Pre-arrival education	
Never attended school	0 (0%)

Less than 6 years of school	4 (21%)
6-12 years of school	15 (79%)
Trade or technical qual	0 (0%)
University degree	6 (32%)
Religion	
Christian	9 (47%)
Muslim	10 (53%)
Length of stay in Australia	
Less than 1 year	0 (0%)
1-2 years	11 (59%)
3-4 years	8 (41%)
Employed in Australia	
Yes	4 (21%)
No	15 (79%)

Eighteen themes emerged from the data which were organised in the following domains according to chronological order: How was my health as a result of my pre-migration experiences? How was my health as a result of my peri-migration experiences? How is my health as a result of my post-migration experiences? Please see Figure 1 for a list of the domains and themes. These domains and themes are also presented below using data extracts to illustrate each theme.

Figure 1: Domains and themes



How was my health as a result of my pre-migration experiences?

This superordinate theme represents how participants linked their pre-migration experiences with the development and maintenance of their health. Negative health experiences were attributed to exposure to violence and loss. Participants also identified using social support and religion and faith as ways to manage their health concerns.

Exposure to violence and loss

All participants described how their health was negatively impacted as a result of home country conflicts, which exposed them to violence and loss. All participants linked their declining health to the violence and loss that resulted from terrorist activity and/or war in their home countries. Participants described experiencing shock, disbelief, distress, grief and anger, reflecting their view of their emotional trauma from the loss of loved ones and resources. Most spoke about their fears of being hurt, killed or kidnapped. For example, a participant describes her constant fear of being attacked by Isis and the affect this had upon her overall health:

> *Living with all the fear was not nice. Isis everywhere with guns shooting, killing people. The body always full of nerves. Isis bring all the problems. I scared every day. Thinking all the day and night if they come to kill us. The eating stop, the sleeping was broken. The problem in my neck, it come. I always tired from the worries and anger at Isis. (010; Female, 45 years)*

Family support

All participants described using family support as a way of coping or keeping emotionally well during times of duress. Participants spoke how they began spending more time with family

members during times of heightened danger. As a result, family became the main source of emotional and social support. Participants described experiencing relief from their stress and anxiety when in the company of family members and that this allowed them to feel more positive about themselves and their situation. For example, Participant 012 talks about how her family became an important source of therapy for her depression during the Iraq war:

> *During the war, family were my everything. They help me. Many times, I had the depression and had no hope. I would cry and be by myself. My family, they come to my home to give me strength. Made me forget about the problems. It was medicine for my head. They keep me going. (012; Female, 44 years).*

Religion and faith

Most of the interviewees discussed the importance of religion and faith as a source of comfort and support during the pre-migration phase. Praying and reading religious texts were used to help reduce stress and anxiety, and to provide the strength to continue. Faith was also important to help participants' acceptance of adversity. Most spoke of entrusting their lives into the hands of God and that this helped alleviate their worries and misery, as described by one female participant:

> *The war very hard. My head was full of fear and worries. Praying to God helped. It took worries from my head. I knew God answer my prayers and that make me relax, calm. (011; Female, 41 years)*

How was my health as a result of my peri-migration experiences?

In this section, this superordinate theme describes the health of participants while living in transit and the factors that were perceived to hinder their health: economic difficulties, loss and separation

and uncertainty about the future. Again, participants described using social support networks and religion and faith as way of coping or keeping emotionally well.

Economic stressors

Most participants described living in poverty while in transit and that this had a significant impact upon their health. While in transit, participants did not receive government support and did not have work rights, which led to an inability to pay for basic needs, such as food, appropriate housing and healthcare. In addition, many had fled their home countries without possessions or money, meaning that most lived in poverty, which led to health problems. For most, particularly the males, not being able to work led to depression and anxiety and low self-esteem because of the inability to provide for their families. Participants spoke about experiencing deteriorating health as a result of their involvement in illegal employment. Common were descriptions of jobs that was unskilled, unsafe and under paid, which negatively impacted upon their psychological and physical health. For example, one participant describes the strain she experienced as a result of working as a cleaner in Pakistan:

> *I had to do worst jobs that no one else wanted. I work every day, very long hours. I got very bad pain from the job, like fire in my body. I worry I lose job. I had no husband and my sons to take care of. I had no money for doctor. It made me angry, ashamed. I still have this pain. (008; Female, 38 years)*

Separation and loss

Separation and loss of loved ones was viewed as a major influence upon the emotional health and happiness of refugees while living in transit. Many described feeling traumatised, lonely or guilty as a result of leaving their home countries and loved ones, including those who had disappeared or died during the conflict. This was illustrated by Participant 018 who speaks of experiencing

negative changes in his personality as a result of losing family members in a bombing attack on his home:

> *Same day, my wife and my daughters killed by bomb. I had to get my sons to safe place, so we go, go with nothing. No clothes, no money, we just go. I had many problems in Jordan with the feelings. Leaving my wife, daughters, very hard. I felt ashamed. It made me different person, sadder, very angry. It was hard to be present for my sons. (018; Male, 32 years)*

Uncertain future

All participants spoke of how they applied to the United Nations High Commissioner for Refugees (UNHCR) for resettlement in countries such as Australia and the United States, a process which took between one and ten years for the participants. Participants spoke about how living with the uncertainty left them feeling helpless and magnified their mental health problems, such as depression and anxiety. Participant 009, a male describes how this uncertainty made him feel highly distressed, particularly because he had no control over the situation:

> *We did not know the future and the anxiety was there continually. We wait and wait for settlement visa. Without job or money, it was hard and the worries got bad. My job was my family, to keep them safe and I could not do. The worry for everything gave me the psychological upset (009; Male, 53 years)*

Broad social support

In contrast to the pre-migration period, participants spoke of the importance of broad social support networks as ways of coping or keeping well, during the transit phase. Social support networks included family, friends and community groups, which provided emotional and material support.

Having support from community groups, such as charities and religious groups, also provided emotional benefits, such as increasing feelings of self-worth and alleviating distress:

> *We had nothing when we came to Lebanon. The church peoples, they help me and my family. They give help for the furniture, the rent, foods. It gave me happy tears, having people care for us after everything we go through, we treated like animals before. (016, Female, 39 years).*

Religion and faith

As in the pre-migration period, most participants described positive effects of using religion and faith to help manage their health concerns. Participants again described how they placed their fate in God and how prayer assisted them by providing hope and emotional comfort, which in turn, help to alleviate distress. Several participants spoke of how their relationship with God became more important during transit and that this was experienced both mentally and physically:

> *When I was in Jordan, I talk with God more than before. I had many more worries and praying made me feel peaceful and take the stress from my body. My body always full of nerves so I pray to relax. (014; Female, 25 years)*

How is my health as a result of my post-migration experiences?

During the post-migration period, the perceived health of participant was affected as a result of exposure to language difficulties, finding employment and worries about loved ones still overseas. Support from the Australian government emerged as a positive experience for health among most participants as was the use of social support, religion and faith and future hopes and aspirations.

Language difficulties

All participants spoke of experiencing exacerbated stress, nervousness and anxiety due to difficulties learning and communicating in English once in Australia. Many, particularly the females, spoke about how they felt inadequate as a result of difficulties in acquiring English language proficiency in the initial years of resettlement. Communication problems also meant that many participants had difficulties forming new social networks in Australia. Many described becoming socially isolated and dependent upon others, which they associated with declines in their mental health status. The following quote from a female participant illustrates the intense difficulties that refugees face in learning English even though they are trying their best:

> *Learning English was very hard. Also, there was no one to care for my kids so I couldn't go as I want. I had problems understanding and I felt lost and ashamed. Everyone speak quickly and had more words than me. When the teacher ask me anything, I couldn't answer. So, I stop going and I just take care of the kids. I got depression and was angry about it. I felt like outsider, like I not belong in Australia; there was no use for me here. (003; Female, 33 years)*

Despite the difficulties, participants noted that once they had spent more time in Australia and became more proficient in English, living in Australia became easier. This helped them form wider social networks, achieve independence and feel more accepted in the community.

Employment difficulties

Another major stressor for participants was finding suitable employment in Australia. Barriers to the labour market included limited English language fluency, non-recognition of skills and qualifications, and appearance. At the time of interview, only the male participants were employed,

and all described experiencing despair and low self-esteem they experienced as a result of employment barriers, as highlighted by the following statement:

> *Getting the job was very, very hard. No one help me. No one want me. This brought the upset for me. I got tired all the time from the worries and not feeling good in myself. I had broken sleeping, broken from of all the thinking about what can I do? (009; Male, 53 years).*

The male participants also spoke of experiencing deteriorating mental and physical health as a result of their current employment. Participant 015 explains:

> *I am engineer. Here, I do job to move chairs, tables, TVs from the home. Very hard work and I not used to. It affect my body. I am 55 years in age. The job bring the pain. Pain now very bad, but what can I do? I need job to pay bill. If I cannot do job, they give job to younger men. I have many worries from this. (015; Male, 55 years)*

The above statement also revealed a common concern among the male participants; in that they were insecure about their health problems for fear of losing their jobs. This led to their health problems not being adequately managed as they did not feel able to take time off work to seek health care.

Job market discrimination was a salient stressor among female participants. For example, one female characterised the depression and frustration she felt as a result of multiple barriers to employment, despite becoming a qualified dental assistant in Australia:

> *I go to school to become dental assistant. I go every day to study. I left my kids with other people for one year. I get the paper to say I can do job. I look for job but didn't get. Most*

said: 'Your English is no good' or 'You wear a scarf. I was so sad cos I trying very hard and I went to many interviews. Then I give up. Too many things pushing me down. I am still very sad, angry about it. It make me feel I am nothing. (005; Female, 29 years)

Worries about loved ones overseas

Separation from loved ones was viewed as a major influence upon the mental health and happiness of all participants. Participants also spoke of feeling constantly worried about the wellbeing and safety of significant others back home and around the globe. The health and wellbeing of participants was considered to be bound up in the wellbeing of loved ones elsewhere, as the following reflection indicates:

Always I am thinking about my family in Syria. It is very hard for them. The war, it destroyed everything. When we talk on the social media I can see it, hear it, they are suffering. That makes for the upset for everyone. When my family suffer, I suffer. Sometimes after talking to my family, I feel sad and pain starts in my head and stomach and then I don't want to talk to anyone and the sleep does not come easily (018; Male, 32 years)

Australian Government support

Many of the supports provided by the Australian government were viewed positively by participants and were linked to the alleviation of health issues. For example, all described access to Australia's public health system as being instrumental in helping to improve their health. For example, one female describes how her health has improved as a result of her access to primary health care in Australia:

I never have so much help before. I can see the doctor when I need. Because of this, the broken things inside my body are fixed. It is good to have this help. Before in Pakistan,

when you get sick, you worry because there was no help to fix the problem. (004; Female, 24 years)

Participants also described how their health benefited from the support received in Australia compared with their experiences during transit:

When we come here we didn't have the problems of finding house, money, like before in Jordan. We get help from government for the house, the language, some money. I feel Australia care for us. It make me strong in myself again. (014; Female, 25 years)

Although many participants described barriers to health care services beyond the primary care sector, such as mental and allied health services and specialist care, they perceived this as *"a little thing for the blessing to come to Australia".* These barriers included long wait lists and out of pocket expenses. While most acknowledged that they required these services for their chronic and acute health concerns, it did not emerge as a major stressor. For example, Participant 003 talks about her satisfaction with the level of treatment she is currently receiving for her depression because it is helping her manage the symptoms:

I go to doctor for my depression. He gives me pills and give me paper to see other doctor for my problem. He tell me this doctor cost money. I say I cannot pay for other doctor and he give me more pills. I don't like to take them, but they help clear my mind from the depression. One day when I have the money I go to other doctor, but for now this doctor is ok. (003; Female, 30 years)

Broad social support

As in the peri-migration period, participants described links between support from broad social networks and positive health and wellbeing. Many spoke of how coping with difficulties such as illness or resettlement stressors was easier when they had a network of support, including family, friends and community groups. This was particularly important to the female participants, who described feeling isolated as a result of their unemployment and child caring duties, which often confined them to the home. All female participants were involved in multiple community activities, which were described as important for enhancing resilience to stress and depression, as described by Participant 001:

> *I have places I go for sewing, cooking, painting, with other women. It helps me forget the thoughts of the past and I feel very happy after I go. All the cares are away after I go. If I don't go, I just sit in the home by myself and then the depression come. (001; Female, 22 years)*

Religion and faith

As in the previous migration phases, religion and faith were used by most participants as a coping mechanism. A number of participants described how they coped with their health concerns by reframing their situation as "*God's will".* Respondents again spoke of how they relied on God to help them manage their stress levels and to help them *"get through"* the difficult times. In the following statement, Participant 012 talks about how she believes that her experiences are the will of God to make her stronger and that having this knowledge has helped her cope during times of despair:

Sometime, I get very low in myself because of all the worries. I tell myself "all of the problems, coming to Australia is God's will" and it helps me to cope because I know it is God making me stronger person. (012; Female, 44 years)

Hopes and aspirations for the future

Thinking about aspirations of a brighter and successful future, despite current difficulties, was cited by all participants as helping them stay hopeful and positive. One of the female participants talks about she uses thinking about her future in Australia as a way to manage her emotional health:

I only think of the future here, not back. What good does that do? It just bring the sadness, the darkness. I try to have only the thoughts of what is ahead. I can do many things in Australia. This makes me excited and happy. It keeps the sadness away (007; Female, 25 years).

Several participants also mentioned that the safety and freedom of living in Australia was helping them to begin the healing process from their premigration trauma. For example, 014 explained:

For the first time in many years, I have peace, safety in my life, my children's life. We begin healing here. My children are happy. They will have good future. That makes me happy. This is what Australia has given us, a safe life and hope for our future. (014; Female, 25 years)

6.6 Discussion

This study is the first of its kind to qualitatively examine the effect of migration on the perceived health of a diverse group of adult refugees living in Australia. As a result, we provide new insights

into the multidimensional, transitional and contextual elements that influence refugee health. For example, we found that participants experienced poor health as a result of pre-migration violence and loss; and stressors associated with living in transit and resettlement countries. Social support, religion and faith were commonly reported enablers of health and wellbeing, followed by cognitive strategies. Notably, socio-demographic factors, such as gender and employment, emerged as important interrelated determinants of health among our refugee population. We also discuss the protective role of religion and faith and support from the Australian government as these are areas that have received little attention in the refugee health literature previously.

The results of this study highlight the important relationship between refugee socio-demographics and health. For example, we found that 'employment precarity' emerged as being problematic for refugee health in the peri- and post-migration periods; however, the effect appeared more pronounced among males during resettlement. 'Precarious employment' describes non-standard employment (eg. casual or part-time) that is poorly paid, insecure, unprotected, and cannot support a household (177). Whereas previous studies have reported the relationship between job insecurity and mental health problems among resettling refugees (174, 178-181); our study shows that precarious employment may affect the mental *and* physical health of resettled refugees in Australia. Our study shows that many refugees find themselves in a 'catch-22' situation, in they are compelled to work "*in any job"* to generate income, but this work can be an underlying cause of many of their health concerns. For example, participants spoke of experiencing increased depression, anxiety and physical pain as a result of working in unskilled and physically demanding jobs with uncertain tenure. Participants also felt compelled to conceal their health problems at their place of work for fear of being sacked and replaced by younger, fitter employees; which appeared to exacerbate their emotional and physical problems. Overall, our findings highlight the importance of considering employment precarity within the transit and resettlement eras as an important social determinant of health among resettling refugees.

A further concern that emerged within our study population was the postmigration challenge of entering the labour market in Australia. Exclusion from the job market among refugee populations has been reported previously in the literature (44, 182-184) and it is widely reported that unemployment is linked with higher levels of psychological distress (44, 185, 186). However, reports showing a relationship between refugee health, employment and gender are scant (44, 187), particularly studies using a qualitative approach. Important among the males in our study, was the nonrecognition of credentials in Australia and the impact that this had upon their health and well-being. While there is evidence showing that overqualification is associated with lower mental health among refugees (188), our study shows that this association appears to have a gender basis among refugee groups living in Australia. One reason for our finding is that the males in our study had been professionals in their home country compared with most of the females; therefore, professional re-entry in Australia is more important among male participants as their occupation forms much of their identity, self-worth and ability to be the main provider for their families.

Our findings also appear to indicate that among female participants, perceived discrimination in the marketplace is an important source of emotional distress. There is evidence suggesting an association between discrimination and refugee mental health and well-being (184, 189), but as far as we are aware, this is the first qualitative study to show an association between employment discrimination and health among female refugees in Australia. Our study identified that much of this disadvantage appeared to stem from the wearing of head scarfs and/or lack of English language proficiency. Given the additional stress that employment seeking placed upon our participants of both sexes, further subgroup examination is an area of future refugee health research, especially given the known links to employment and positive health among resettling refugees (190-192).

Also noteworthy is the positive connection that participants made between their post-migration health and support from the Australian Government. Participants highlighted that this assistance gave them a sense of security and of feeling welcome in Australia, which is important finding given that the personal security of refugees is an essential element of resettlement (193) and is fundamental for positive health and wellbeing among resettling refugees (154, 194, 195). Access to public healthcare was one of the supports highly regarded by all participants and appear to contradict suggestions that refugees (and female refugees in particular) face problems accessing health care in host nations (196, 197). Our study participants spoke of having satisfactory access to primary health care in Australia and commented positively on its quality. One possible explanation is that our participants had settled in areas with already established refugee populations. As a result, they may have access to culturally appropriate health services, including bilingual health practitioners or interpreter services; which are factors which can promote healthcare seeking among refugees (198). However, we did identify that healthcare access became problematic for refugees when attempts were made to move beyond the primary care/general practitioner level in search of allied health or specialist services. In Australia, this level of healthcare frequently involves long wait lists or out of pocket payments (199), which makes access difficult for many refugees (200).

Attention should be given to the role that religion and faith plays in the health of our refugee population as it is an area that has largely being overlooked in the refugee literature (201, 202); despite the reported associations with positive health outcomes (203, 204). Our results show the possible moderating role that religiosity and faith plays in the relationship between migration stressors and emotional health among refugees, confirming the suggestion that refugees find religious commitment to be a helpful coping mechanism during times of hardship (205, 206). In our study sample at least, religious coping strategies appear efficient in enabling refugees to cope with the hardships of their forced displacement and migration, which they may otherwise not find possible and give up (207). Of note is that our participants belong to two of the world's major

religions; Islam and Christianity and therefore provide policy and health service providers with avenues for integrating faith into health-related interventions, given that these are not unfamiliar religions in our current society and there is an awareness of the religious views of people of both faiths (201). Given the pervasive influence of religion and faith among our refugee participants, further research that looks into the nature of religious and cultural influences upon help-seeking within specific refugee populations, may be beneficial.

Finally, a number of our findings are consistent with the literature regarding migration experiences and health of resettling refugees. For example, our results support other studies reporting associations between traumatic experiences (12, 16, 208, 209), loss (210, 211), financial stressors (212), employment (44, 213); language acquisition difficulties (214); worries about loved ones overseas (211); an uncertain future (174) and refugee mental health. Our study supports this knowledge by reporting the influence of the above aforementioned migration experiences and health among refugees in Australia.

The findings related to the physical health of refugees are worth noting particularly given the evidence of the rising prevalence of non-communicable health conditions, particularly among refugees from the Middle East (215). Our findings also confirm the previous literature showing that, despite various migration challenges, refugees showed a great deal of agency through the use of social support and focusing on future hopes and aspirations as coping strategies (174, 216). Studies have shown that refugees have described enduring migration challenges by retaining aspirations for a better future (184) and that social support can be protective against mental illness among resettling refugees in Australia (216). In accordance with the Indicators of Integration model (164), this study found that extent to which resettling refugees can experience successful integration appears to rely on the availability of diverse social supports (217).

6.7 Limitations

Several limitations need to be noted. First, it was not financially possible to have translators present at the interviews and this may have introduced some mis-communication between the interviewer and interviewees. However, this was not considered problematic as participants did not appear to struggle to understand the questions and few requests for clarification were made by participants. Second, participants provided retrospective accounts of their experiences. The use of retrospective accounts as part of the qualitative methodology may be open to the potential reconstruction of events resulting from recall deficiencies and retrospective interpretation. This process may in turn impact upon the reliability of the findings. However, we tried to guard against the possibility of recall bias as much as possible by recruiting refugees who were fairly recent arrivals in Australia (ie. less than 4 years), although we did not specify a time limit for years spent in transit. Third, participants' discussion of their migration health symptoms is based on self-report, which means that we cannot know whether participants met full diagnostic criteria for mental or physical disorders. However, data on diagnostic criteria of study participants was not available.

Fourth, the timing of the contact with participants may have also led to the female gender imbalance within the study sample. The initial contact and interviews were limited to mostly business hours. This may have created barriers for working male refugees, who could not attend interviews as a result of their employment commitments. Such differences may reflect recruitment bias, hence limiting the transferability of these findings to the broader refugee population and to other refugee groups in other countries. Finally, asking participants directly about their health may have biased some responses toward over-emphasising the impact of migration experiences upon their health. However, direct questions about the health of participants were included as prompts only. Given that the focus of this study was refugee health, it was imperative that the participants spoke about their health as a consequence of their migration experiences in order for the researchers to answer the research question.

6.8 Conclusion

This study provides a valuable insight into how refugees from multiple source countries regard their health as a result of their migration experiences. Using a qualitative, phenomenological study, we have been able to uncover a number of areas that have previously received little attention in the literature, such as the relationship between gender and employment; support from the Australian government and the use of religion and faith as a coping strategy. We also have contributed to the current literature by confirming that mental and physical health is influenced by pre-migration trauma and loss and migration stressors among resettling refugees in Australia. Using refugees as experts in their own health and health experiences is important if we are to understand the complexities which underpin the health of refugees. While strategies aimed at addressing the mental health needs of this population are warranted, our study suggests that resettlement policies and program should aim at physical health and at the broader social determinants of health, such as gender, employment and religion, in order to alleviate much of the health issues experienced by this population.

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Chapter 7: Discussion and conclusions

The following chapter synthesises and discusses the findings from the four papers in the preceding chapters in the context of the wider literature. The purpose of this chapter was to present findings, interpret the data collected during the study and analyse the data in terms of the research questions posed. A discussion of the SDOH model (see Chapter 4) that was designed for this thesis is re-visited in terms of its potential for identifying factors that are influential in the long-term health of resettling adult refugees in Australia. Following this, a discussion of the implications of the findings for policy and practice interventions with adult refugee populations is provided, as are the study limitations. The chapter concludes with suggested directions for future research and concluding remarks.

7.1 Revisiting the thesis aims

Applying a sequential, explanatory mixed methodology (i.e. comprising quantitative and qualitative techniques), the present study had the overarching aim of exploring self-rated general health among adult humanitarian refugees during their initial years of resettlement in Australia. Chapter 2 explored the use of self-rated health measurement tools in the refugee health literature to better understand their use among refugee populations and if they were, in fact, appropriate for use among such populations. Chapter 3 presented the overarching methodology used to conduct this thesis. A mixture of quantitative and qualitative approaches to study the self-rated health of adult refugees were presented as an effective approach to achieve the aims of this thesis. Within the broad aim, several specific aims were identified in the subsequent chapters. Chapter 4 builds upon Chapter 3 and provides greater detail of the thesis study methodology including the rationale for the thesis study design. Chapter 5 explored the prevalence of negative general health status among a large and diverse group of refugees during their first three years of resettlement in Australia and the predictors that increased the vulnerability of this population to such health problems. Chapter 6

moved beyond a focus on negative health and explored the coping strategies used by refugees to help manage their poor health experiences. It was a contextualised qualitative study of negative and positive general health through several stages of the refugee migration journey.

7.2 Integration of study findings

The purpose of the longitudinal sequential explanatory mixed methods study was to explore how migration factors contribute to the poorer self-rated general health of refugees as they resettle in Australia. The first, quantitative phase identified *what* migration factors were significantly associated with the long-term poorer health outcomes among resettling refugees, while the subsequent qualitative study data helped to explain *why* such association may occur. Identified by the quantitative study, which examined the first three years of the BNLA survey data, was that adult refugees in Australia experienced high and persistent levels of poor general health. Several other factors also predicted this health disparity, including post-settlement economic difficulties and demographic characteristics. The qualitative study revealed that under- and unemployment experienced during the peri- and post-migration periods were pivotal to this health disparity because they created barriers to financial stability, adequate living standards and appropriate healthcare. Many of these barriers were directly related to the refugee status of the participants. Collectively, these factors were perceived as contributing to the emergence or exacerbation of health concerns. Gender emerged as an important underlying determinant of general health during the post-migration era because it was be related to employability and healthcare-seeking behaviour.

The quantitative data explored the prevalence of self-rated health among refugees during their first three years of resettlement in Australia and found a high and sustained prevalence of poorer general health. This burden of health was confirmed by the qualitative data with all participants endorsing current health concerns that were perceived as being the consequence of their migration experiences. High levels of poor self-rated health among resettling refugees have been reported

previously in the literature (5, 218) and it has been shown extensively that the poor health of refugees is a consequence of unmet needs during both exile (173, 181, 219-223) and resettlement (197, 200, 223-225). Participants in the present study described limited access to employment and health care across the migration journey as the main contributors to their current poor health status. These factors combined were perceived as leading to financial stress, low living standards and an inability to treat or prevent health conditions in the countries of transit and resettlement.

Both the quantitative and qualitative studies revealed the significance of post-migration economic stressors upon the general health of refugees in Australia. The qualitative data also revealed that there was a perceived relationship among unemployment, financial adversity and health during the peri-migration period. A major consequence of unemployment is the loss of income and this lack of money is a major social determinant of health (226). There is substantial evidence of the adverse effects of unemployment on individual health status (227-229), including the adoption of unhealthy behaviours (eg. poor diet) (230, 231), lower self-esteem, increased emotional distress (231) and chronic disease (232). These relationships were reflected in the refugee narratives when discussing their health experiences. For example, while living in the communities of transit countries, participants described living in extreme poverty, which was a consequence of the lack of rights of refugees in those countries, including access to the legal job market. Studies have shown that refugees living in countries of transit often do not have rights, which can affect everything from residency and mobility to accessing employment, education and health care (219). According to participants, not having a means to an income led to financial stress, such as being unable to pay for food, accommodation and health care, which was perceived as exacerbating current health conditions as well as the emergence of new ones, such as depression, anxiety and physical pain. The inability to afford health care meant that treatment for health concerns was sought only in emergencies, which is supportive of the research showing that health-seeking behaviour of refugees is often restricted while living in transit nations due to cost (221, 233).

In accordance with the literature, the quantitative study found that female refugees were more vulnerable to poorer general health than male refugees (5, 12, 196, 234); however, the qualitative study revealed that the gender–health relationship was influenced by context. While the health of all participants suffered as a perceived consequence of under- or unemployment, the females spoke of feeling pressurised to find work as a way of supplementing the family income. Having to move beyond their traditional role as family caretaker was a stressful experience for most females, few of whom had work skills or qualifications. In addition to these barriers were post-migration challenges in the acquisition of English language skills and/or navigating the pathways into the Australian employment market, particularly among the female participants. Dealing with competing priorities often meant expectations were not met, which had a great influence on self-confidence, levels of anxiety and depression and feelings of disempowerment and feeling unwelcome in Australia. Such experiences confirmed the findings of past studies that have shown that refugees experience widespread exclusion from the job market in host nations due to discrimination based on appearance and language skills (184, 189). For example, a study examining the effects of unemployment and language acquisition among refugees resettling in Canada found that by the end of the first decade, English language fluency was a significant predictor of depression and employment, particularly among refugee women and those who did not become engaged in the labour market during the earliest years of resettlement (44).

A paradoxical relationship between health and employment was identified among the male participants by the qualitative study. Similar to the females, male participants spoke of experiencing heightened distress and low self-esteem, as well as chronic pain; however, this was due to their involvement in illegal and precarious employment for which they were overqualified. All males in the qualitative sample were older, university educated and held professional careers in their home countries. The non-recognition of their skills and qualifications in Australia meant that males felt compelled to work '*in any job*' to generate income. It has been shown that refugees are likely to be

overqualified for their current employment in host nations (188, 235) and that overqualification is associated with lower self-reported health among refugees because of low job satisfaction and often unsafe working conditions (188, 236). There is also some evidence that having a university degree from the home country is associated with declining self-reported health among refugees (212), although this is in direct contrast with the findings of the quantitative study, which found that university qualifications were protective against poorer health. The discrepancy may be the result of the sample sizes across the two studies and the fact that the males in the qualitative study had very similar demographic characteristics. Several studies have also reported that refugees living in host nations are at a heightened risk of psychological and physical distress arising from financial strain and the indirect effects of downgraded social roles, persistent job insecurity and unemployment (203, 250, 251).

In almost contradictory statements, the male respondents also spoke of how *being* employed had a positive influence upon their emotional health as it allowed them to regain their position in the family unit as the main 'breadwinner'. Previous studies have found that in populations where, prior to resettlement, the male refugees occupied traditional roles within hierarchical family structures such as being the sole providers for their family, a perceived loss of this status and change in family roles had negative effects on their sense of identity after resettlement (237). Being in a workplace on a regular basis was also regarded positively by the male refugee participants as it allowed an opportunity to interact with other people and practice their English language skills, which helped their feelings of integrating into the Australian society. Previous research has found that social integration stressors (e.g. language barriers and being unable to get used to life in the host nation) were associated with psychological and physical disorders among refugees (238, 239). The qualitative data suggested that overcoming such stressors may also play a role in improved health among refugees (238).

The qualitative study found that economic adversity resulting from under- and unemployment during the peri- and post-migration periods also had an important influence on the level of health care access. As discussed previously, appropriate and timely health care was largely unavailable to participants while living in countries of transit due to the expense of treatments and services. Therefore, participants of the qualitative study described having unmet health needs when they arrived in Australia. A fundamental problem described by the refugees was that, despite good access to general practitioners in Australia, access to services beyond this level was often problematic because of structural and economic barriers, particularly for services related to their chronic health conditions. This is a finding consistent with past research that has shown that access to secondary and tertiary health care is problematic for refugees in host nations (197, 240), particularly for non-communicable disease treatments (199, 200, 241). Studies have also shown that due to challenges accessing affordable and appropriate health care, refugees make lower use of preventative healthcare services (242) and display higher rates of emergency department utilisation and hospitalisation rates than that of native-born populations (243, 244). Apparent among all participants were references to dealing with health issues on their own because of the perceived barriers to timely and appropriate healthcare services.

Again, gender played a role in health-seeking behaviour among the respondents. At the time of the interviews, only the males were employed and there was an apparent reluctance among the men to seek medical care for their health concerns for fear of being sacked and replaced by younger, fitter employees. This was described as exacerbating their health concern problems as it meant that their emotional and physical distress levels were largely unmanaged. The research literature showed that migrants in risky, low-status/low-wage jobs have had severe repercussions in their access to healthcare services and self-evaluate their health status as very low (245, 246). In contrast, the female respondents all described having had regular contact with general practitioners in Australia, which was perceived as being beneficial to the management of their physical health conditions.

However, access became problematic when treatment was sought for emotional health concerns because this often involved movement beyond the general practitioner level, which was described by many as complex and confusing. Among the identified barriers were long waitlists, out-of-pocket expenses and confusion with the Australian health system; particularly with referral pathways, which confirms the findings of previous studies reporting challenges faced by refugees in accessing host nation healthcare services (199, 200).

Apparent among all participants were references to dealing with health issues on their own because of the perceived barriers to timely and appropriate healthcare services. Coping mechanisms such as religion and faith and social supports were commonly described enablers of health among the participants, which have been shown in cross-sectional and qualitative studies to have positive associations with mental health outcomes among refugees (203, 204). Although coping mechanisms were identified as significant risk factors for poorer general health in the quantitative study, strategies to help manage health concerns were utilised by qualitative study participants across the pre-, peri- and post-migration periods. Such factors are protective against worsening health among refugees in cross-sectional quantitative (11, 203-206, 216) and qualitative (181, 247-249) studies. A longitudinal study which also utilised the first three waves of BNLA data to measure mental health outcomes among refugees in Australia (250), found that community and religious support were unrelated to mental illness; therefore, the contrasting results of these two longitudinal studies with the bulk of the literature might reflect issues with the directionality of causation, which is a common limitation of epidemiological studies (251). For example, refugees in better general health may not actively seek social support as much as those who are in poorer health, as the support may not be required. In addition, various communities, such as like-ethnic communities, may provide extra support to those who are in poorer overall health; therefore, those individuals are receiving adequate levels of emotional or social comfort for their health concerns. Revealed across the refugee narratives in this thesis was that all participants used social support and religion as ways of

coping with their past and current health concerns. The discrepancy across the quantitative and qualitative studies showed that different data collection methods may capture different aspects of the relationship under investigation. That is, the quantitative data is truly 'subjective', whereas the qualitative data is reliant upon human judgement based on interpretation and sense making.

Highlighted by the findings of this PhD is that there is a need for increased attention to the determinants of general health among humanitarian refugees in Australia. The results of this PhD have revealed that determinants of health in the pre-, peri- and post-migration periods appear not to be discrete factors and what occurs in one migration stage, may occur in subsequent stages. Given that many resettling refugees in Australia experience ongoing poor general health, it is evident that there is a need for an increased awareness of the factors that can be considered as 'upstream' (eg. refugee policy and resettlement services) and 'midstream' determinants (eg. employment and income) of health, especially as many of these factors are potentially modifiable. For example, revealed in this study was that un- or under-employment was a major influence upon the poor general health of humanitarian refugees in Australia. Factors that appeared to contribute to this relationship were found to span across several of the migratory phases, including the substantial impact that living in the communities of transit countries appeared to have had upon the mental and physical health of participants. During this stage of migration, many participants spoke of experiencing deteriorating health as a result of either not working or working in unskilled and physically demanding jobs with uncertain tenure. This combined with the lack of access to expensive healthcare in these countries meant that the health concerns of participants was largely unmanaged until they arrived in Australia many years later.

What this indicates is that refugees who have spent prolonged periods living in the communities of transit countries may be particularly prone to mental and physical health conditions due to their experiences in those countries. Therefore, it may be that these people will be unable to navigate

their way in the new host society as quickly or effectively as some others. For example, their health conditions, such as poor mental health or chronic pain, may prevent them from acquiring moderate levels of the host nation language and/or finding employment. However, these factors are rarely taken into consideration following their arrival in the host country and instead refugees are expected to quickly adjust to living in the new society, where they can experience further challenges, such as navigating the Australian job market and non-recognition of their skills and qualifications. And, shown in this study is the impact of such post-migration stressors upon the health of resettling refugees. What this study has shown is that no one migration period can be examined in isolation when considering the health of resettling refugees and that social determinants of health models, like the one designed for this PhD, can be useful resources for policy makers and refugee healthcare providers in achieving a better understanding of the complex and multi-dimensional elements of refugee health. Based on this observation, a number of policy and practice recommendations are also provided in Section 7.6.

Finally, several issues relating to the use of a mixed methods design for this PhD needs to be highlighted. One of the challenges of mixed methods research is how to integrate the divergent or ‘contradictory’ data that is often obtained from using two different data sets (252). Mixed methods research is particularly prone to divergence or 'contradictions' in data because social reality is complex, the issues under investigation are multidimensional, and methods are based on diverse paradigms (252). Therefore, it is unsurprising that when using a combination of quantitative and qualitative methods with complementary perspectives on a research topic, the results may diverge or even contradict each other. This issue can arise when the two research methods use samples that are not the same across both studies, for example. Also, participants respond differently to questions that are asked quantitatively (eg. self-report survey) compared with questions that are asked qualitatively (eg. one on one interviews). Overcoming this issue depends on the researcher’s logic behind the use of the chosen mixed methods design, For example, consideration

needs to be given to the purpose behind doing the mixed methods research study as well as how social phenomena is viewed. In this PhD, an explanatory sequential design was used in which the results of the qualitative study was used to explain the quantitative findings and given the different methodologies and study samples used, it was recognized that different aspects of the research topic would be covered and that only complementary results would be achieved. Therefore, it was not expected that only 'non-contradictory' findings would emerge from the mixing of methods.

Another issue relating to mixed methods research is that of generalizability and representativeness. Generalizability can be defined as the extent to which information that is collected about a small group can be applied to larger groups who share the same general characteristics of the smaller group (253). Representativeness refers to the extent to which a sample is representative of (or applicable to) a wider population (253). A criticism of mixed methods research is that the mixing of different paradigms or methods means that the results are not generalizable or representative to other populations or contexts (254).

Quantitative and qualitative approaches are often compared in order to differentiate between the concept of generalizability and representativeness as applicable to each approach. In quantitative work, generalizability (also referred to as 'external validity') is statistical (253). It determines whether the researcher can draw more general conclusions on the basis of the method used and data collected, and whether results can be generalized to other samples, time periods and settings (253). For example, in a quantitative sample survey random sampling allows generalizability through the principle that the study sample is likely to be statistically representative of the larger population of interest, so findings can be extrapolated to that population. If the sample size is inadequate and/or the sample is not random, the statistical estimates may be meaningless, because the sample may not faithfully reflect the entire population (255). Therefore, quantitative research may achieve a high level of representativeness of the wider population under study. However, in qualitative work,

study participants are rarely randomly sampled in this way, and the logic of generalizability is rather different. In qualitative research, generalizability is concerned with whether the research results are *transferable* (256). In qualitative research, participants are selected by means of theoretical sampling (ie for their ability to provide information and consequent theory development) about the phenomenon or area under investigation (253). Situational, rather than demographic representativeness is what is sought in qualitative research (253). Therefore, it is not the prevalence of particular views or experiences about which inferences can be drawn. However, this is not the objective of qualitative research. Rather, the value of qualitative research is in the revealing.

While it is often suggested that qualitative studies are not generalizable in the traditional sense of the word (nor do they claim to be), they have other redeeming features which makes them highly valuable. For example, partial generalizations may be possible to similar populations. It is also argued that knowledge generated by qualitative research is significant in its own right (253). The generalizability of qualitative studies is usually based not on explicit sampling of some defined population to which the results can be extended, but on the development of a theory that can be extended to other cases or populations (257). This has been referred to as "analytic" generalization, as opposed to statistical generalization (258). For this reason, many qualitative researchers prefer to talk of "transferability" rather than "generalizability" in qualitative research. There are a number of features that lend credibility to generalizations from qualitative research and non-random sampling, including the similarity of dynamics and constraints to other situations and contexts, the presumed depth or universality of the phenomenon studies, and corroboration from other studies (259, 260).

In terms of generalising the results of this mixed methods PhD to other refugee populations living in developed host nations, partial generalizations may be possible. The common findings across the quantitative and qualitative studies, such as the influence of pre-migration trauma and post-economic challenges upon the general health of refugee participants may be extended to adult

refugee populations residing in other regions of Australia as well as those living outside of Australia. These findings have been consistently reported in the refugee health literature as risk factors for both mental and physical health (5, 6, 212, 261-263), so it is plausible that these findings could also apply to similar resettlement contexts worldwide.

In the qualitative study, the findings may be transferable to other adult refugee populations living in Australia. A purposive criterion sampling strategy was used to recruit participants for this study as this approach allowed the selection of respondents based on the shared experience of becoming a refugee who has migrated to, and resettled in, Australia. Given that this is an experience shared by all refugees who have resettled in Australia, it is plausible that the findings are comparable with other refugee groups in the Australian context. However, this may not be a finding that is transferable to refugee groups living outside of Australia as the migration pathways may vary substantially depending on the destination country. In terms of the quantitative study, it could also be argued that given the heterogeneity of the BNLA population, it is possible that the results apply to similar resettlement contexts domestically, as the refugee population is nationally representative of Australia's current refugee intake and the populations currently displaced globally. However, it is not clear how the long-term general health status of humanitarian refugees in Australia compares with refugees living in other developed host nations, given that this is the first longitudinal study to examine this health construct among refugees living in Australia. Also, given that humanitarian refugees living in Australia are recipients to programs and services that may not be available to refugees in other host nations, this may have a substantial impact upon the health and wellbeing of refugees in the Australian context. For example, refugees who are granted a permanent humanitarian visa in Australia have permanent access to free public health care, the right to employment and welfare. This may not be the case in other high income host nations. Therefore, it may be possible that humanitarian refugees living in Australia may have different health profiles to

those living in other host countries because they may have greater access to support services in Australia.

Social determinants of health model

This section provides a discussion on the SDOH model drafted for the quantitative study (see Chapter 4) in terms of the model's potential for identifying the factors that are influential in the long-term health of resettling adult refugees in Australia. The original model included the following five key determinants of refugee health: Political and Socio-economic, Economic stability, Education, Community and Social Context and Neighbourhood and Physical Environment and encompassed 25 candidate variables selected from the BNLA dataset. A revised model is provided based on the results of this thesis, which may serve as a useful starting point for future research looking to examine the long-term health of refugees resettling in developed host nations. As the terms *factor* and *variable* are considered to be synonymous, throughout this section the terms *factor* and *variable* are used interchangeably.

Utilising the SDOH model, this thesis found that the key factors influencing the health among adult refugees living in Australia were the Political and Socio-economic, Economic stability, Education and Community and Social Context domains. The Neighbourhood and Physical Environment domain had the least effect on the long-term health of refugees in Australia. Several differences were found across the quantitative and qualitative study findings in terms of the influence that various factors had on the long-term health outcomes of refugee participants. However, this was not entirely unexpected given that the social determinant framework was populated using pre-determined variables selected from the BNLA dataset and was therefore somewhat limited in the range of variables that could be analysed in this thesis.

Several variables grouped into the domains of Political and Socio-economic, Economic stability, Education and Community and Social Context were identified as having a significant influence on the long-term health of refugees living in Australia, including exposure to pre-migration trauma, financial hardships, pre-arrival education level, gender and country of origin (refer to Section 7.2: Integration of findings for further discussion). Collectively, these factors have been consistently reported in the literature as affecting refugee health (235) and the findings of this thesis highlight that these factors should be considered when examining the long-term health of refugees living in developed host nations. In addition, given the emphasis placed on the impact of peri-migration experiences on the health of participants in the qualitative study, factors relating to the transit environment may be valuable additions to the model. For example, length of time spent living in the communities of the countries of transit and peri-migration economic challenges may be factors worth considering in future studies to ascertain their relative influence on refugee health outcomes. Previous studies have highlighted that attention must be given to the peri-migration period as a health determinant as many refugees can spend extended periods living in transit countries without adequate access to basic needs, such as health care, shelter and employment (264, 265). Variables relating to the peri-migration period were not able to be included as part of the quantitative study analysis in this thesis because the BNLA survey did not ask participants questions about their experiences of time spent living in the communities of transit countries.

Several discrepancies also emerged across the quantitative and qualitative study findings in terms of factors contained in the SDOH model. Several factors examined in the quantitative study, including language barriers, social support and religion, were found to be non-significant but emerged as major themes in the qualitative study. Previous cross-sectional quantitative (11, 88, 181, 203-206, 216, 247, 249) and longitudinal qualitative (11, 88, 181, 203-206, 216, 247, 249) studies have shown social support and religion to be protective against worsening health among refugees, whereas language barriers are associated with poorer health outcomes in cross-sectional quantitative

studies of resettling refugees (266, 267). However, the longitudinal quantitative study conducted as part of this thesis was unable to confirm these factors as determinants of general health among refugees living in Australia. Further, a longitudinal quantitative study which also used self-reported data, also failed to determine any associations among language barriers, social support, religion and mental illness in adult refugees resettling in Australia (250). Therefore, findings appear to vary depending on the study design utilised. For example, the discrepancies found in the results of the quantitative and qualitative studies of this thesis may reflect the different sampling and data collection methods used across the two studies contained in this thesis. That is, the quantitative study sample was a large and ethnically diverse population who completed a structured self-report survey, whereas the qualitative study involved semi-structured, face-to-face interviews with a smaller and less ethnically diverse sample.

It has been reported in the literature that the mode of data collection (e.g. self-report versus one-on-one interviews) can influence the responses of participants (268) and they are more likely to acquiesce (i.e. give agreeable answers) in face-to-face interviews than in structured self-report surveys (269). Further, there is evidence that misreporting on sensitive topics is common in one-on-one interviews as respondents want to avoid embarrassment or possible repercussions from disclosing sensitive information (270). On average, sensitive behaviours or topics are reported more accurately in self-report surveys (268, 271). In addition, highlighted by the differences across the two study findings of this thesis is one of the issues of using mixed methods studies to examine complex phenomenon, such as subjective health. For example, qualitative enquiry cannot measure the impact of a variable upon health, it can only explore the perceptions of the participants and the interpretation by the researcher/s of those perceptions (272), which introduces interpersonal ambiguity and multiple interpretations to the data. Therefore, there may be ‘background’ information embedded within the qualitative data that may not be reflective of the health impacts of all refugees over time.

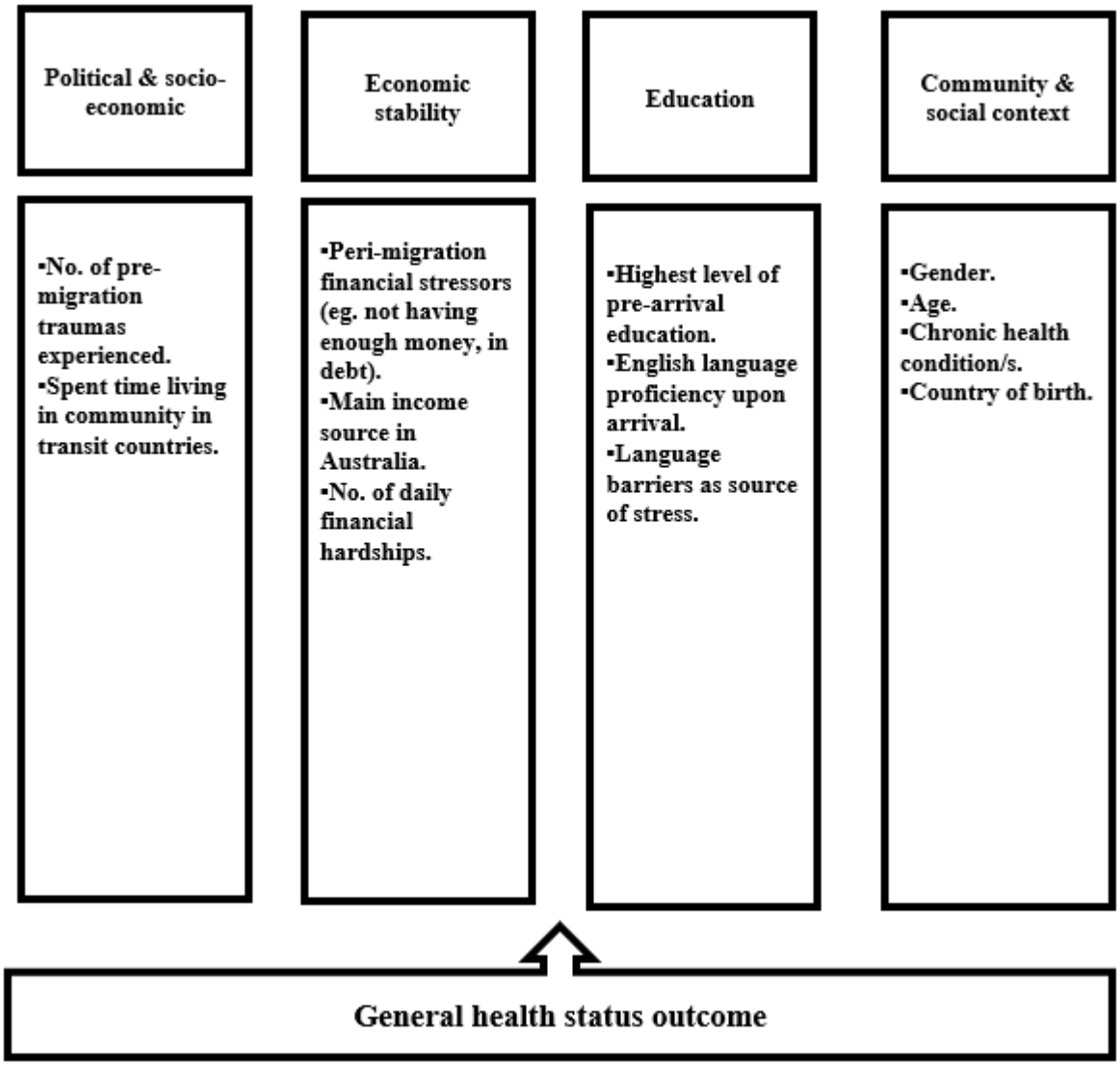
Also noteworthy are the variables or factors in the model that were not endorsed by either the quantitative or qualitative data collected during this thesis. This warrants attention because of its implications for the SDOH model designed as part of this thesis. Revealed in this thesis was that the variables or factors grouped in the Neighbourhood and Physical Environment domain, including resettlement housing tenure and length of stay in Australia, had little, if any, influence on the long-term health of refugees in Australia, despite their reported negative association with refugee mental health outcomes (183, 217, 273). For example, a recent quantitative longitudinal study of refugees living in Australia detected an association between unstable housing contracts and poorer mental health (274). However, the quantitative study in this thesis failed to detect an association between housing and neighbourhood and *general* health among refugees. A possible explanation may be that the general health construct is not sensitive enough to capture the complex relationship between mental health and the physical environment. Further, while the qualitative study data of this thesis revealed that participants perceived the nature of their accommodation while living in countries of transit as having a negative impact on their health, such concerns were not reflected in the

participants' narratives when discussing their health and well-being in Australia. It may be that among the qualitative study participants, the current priority was the achievement of economic stability, not housing stability, given that all respondents indicated that they were presently living in stable rental accommodation. Given that neither study in this thesis endorsed the social determinants model domain of Neighbourhood and Physical Environment, its removal from the model was appropriate.

Based on the overall results of this thesis, the original SDOH model has been amended and the revised version is shown in Figure 5. The variables contained in this revised model are not

exhaustive; rather, they are intended to be used as a guideline for future longitudinal studies of general health among refugee populations living in developed host nations.

Figure 5: Revised conceptual framework for the social determinants of health in resettled refugee populations



7.3 Limitations of the thesis

Despite identified methodological strengths of this thesis, some limitations must be acknowledged. The discussions by the participants of their migration health symptoms were based on self-reporting; therefore, it cannot be known whether the participants met the full diagnostic criteria for

mental or physical disorders. However, this was less relevant for a study whose goal was to explore the subjective health experiences in individuals who had migrated to Australia, especially given that subjective health is an unusually strong predictor of mortality, morbidity and health service utilisation (275). Additionally, the retrospective reporting of the data used in this study may have influenced the reliability of the results. Retrospective reporting and reliance on self-reporting might run the risk of participants not remembering or misrepresenting the events and non-accurate measurements of symptoms (276) and may introduce recall bias (277).

The use of secondary data for the quantitative study had some disadvantages. The first is the lack of control over what data was collected as the available data was not collected to address my particular research question. This did limit the extent of the analysis as some variables that would have been very valuable for inclusion in the quantitative study were not available for use. For example, information about time spent living in the communities of peri-transit period were absent from the BNLA data set. While the BNLA survey covered a wide range of resettlement outcomes, it did not consistently ask health questions across all three waves to reduce participant burden, such as current medications and health service utilisation. Therefore, some health-related variables were not included in the quantitative study analysis of this thesis. This limited the accuracy and reliability of the physical health indicators. Further, the BNLA study collected information that was more comprehensive from principal visa applicants than from secondary applicants, which constrained the depth and breadth of findings of the study. Alternating face-to-face with telephone interviews might have also introduced some inconsistencies across waves in that some respondents may have answered some questions differently depending on the interview style. Also, identifiers connected to the participants, such as birth region or geographic region in Australia were removed from the dataset, in order to ensure all participants remained anonymous in accordance with the original consent agreement. Therefore, subjects could not be contacted for follow-up questions and additional data could not be collected.

The representativeness and generalizability of the qualitative results may have been influenced by the self-selection sampling method used to recruit participants. That is, individual refugees selected themselves to take part in a study based on the study eligibility and ineligibility criteria. This approach may have meant that those who participated might have been more open to reporting their distress and other health concerns than those who did not participate in the study. While attempts were made to make the sample as diverse as possible with versatile recruitment options (e.g. approaching potential recruitment sites in areas of Melbourne that were known to have very diverse populations of resettling refugees), the study might have attracted refugees who were more confident about their English-speaking skills. All of the participants expressed dissatisfaction with their English-speaking skills despite the researcher regarding them as being moderate to high. Thus, individuals who could have participated in the study might have declined to do so because of a fear of not being able to communicate effectively in English with the researcher.

Further, the timing of the contact with participants may have also led to the female gender imbalance within the study participants. Given that the initial contact and interviews were conducted at recruitment sites and libraries, it meant that interview times and days were limited to mostly business hours. This may have created barriers for working male refugees, who could not attend interviews because of their employment commitments. This may be one of the reasons for the under-representation of males in the study sample. Such differences may reflect recruitment bias, hence limiting the representativeness and generalizability of these findings to the broader refugee population and other refugee groups in other countries. While it is acknowledged that the sample may be atypical of other refugee community groups because of the gender imbalance, it has to be highlighted that the main aim of the qualitative research study was not to achieve results that are representative and generalizable to the broader adult refugee population living in Australia or other host nation contexts. Rather, the study aim was to describe the perceptions of the refugee participants regarding the impact that their migration experiences had upon their health. In this

way, transferability of the findings was considered to be more attainable. That is, the results may be capable of being transferred (or is applicable) to a similar group of refugees in a similar locality or context.

Not using a comparison group, such as a non-refugee group is another limitation. This would have allowed an evaluation or estimate of the impact of the migration experience upon refugees living in Australia. It was not financially possible to have translators present at the qualitative interviews, which might have introduced miscommunication between the interviewer and interviewees. However, this was not considered problematic as participants did not struggle to understand the questions and few requests for clarification were made by participants. The decision not to use participants requiring interpreters might have also limited the quality of the data collected. However, IPA is 'intellectually connected to hermeneutics' (136), with research using interviews involving a 'double hermeneutic', whereby the researcher tries to make sense of how the participant makes sense of their lived experience. It was thought that bringing an interpreter into an interview may add a further hermeneutic layer, which could be regarded as a 'triple hermeneutic'. That is, the researcher trying to make sense of how the interpreter makes sense of the participant making sense of their lived experiences.

7.4 Contribution of the thesis to refugee health

This thesis deviates from the traditional approaches to examine refugee health and, in doing so, offers a novel way of investigating adult refugee general health. The strengths and contributions of this thesis are discussed below.

This is one of the first studies to investigate self-rated general health among adult refugees using quantitative and qualitative methods. The quantitative study provided a novel insight into the sustained health burden of resettling adult humanitarian refugees in Australia and identified those

factors contributing to this health burden. Using the perspectives of the refugees themselves, the qualitative data provided a unique understanding of how pre-, peri- and post-migration experiences contributed to the health experiences encountered by this vulnerable group. Such information is useful for identifying high-risk groups based on their characteristics and migration experiences and contributes new knowledge to the refugee field. In particular, the qualitative study highlighted that refugee health is contextual and relational. As participants recounted their stories of migration, it became evident that refugee general health was a complex, changing and multifaceted phenomenon.

This is one of the first studies to explore the influence of pre-, peri- and post-migration experiences upon the long-term general health of adult refugees resettling in Australia. To date, longitudinal studies of refugee mental, physical or general health are lacking, especially in the Australian context. Few quantitative or qualitative studies have examined the influence of migration experiences on the long-term health of refugees. An original contribution of this research was the exploration of general health amongst people from refugee backgrounds as it evolved over the first 3–4 years of resettlement in Australia. This represents a shift from the majority of refugee studies, which have tended to be cross-sectional and focused on mental health outcomes. The present study presents the first long-term exploration of general health in the context of resettlement focusing on refugees living in Australia. Although not novel to the field, the qualitative exploration of positive health factors (i.e. coping strategies) on the general health removes the focus on the poorer health of refugees. In doing so, this thesis illuminates the importance of considering the enablers of positive refugee health.

This thesis represents an attempt to merge traditionally competing health paradigms (quantitative and qualitative) to develop a holistic and contextualised representation of general health among adult humanitarian refugees in a developed host nation. The thesis contributes an application and

enhanced understanding of how mixed methodologies can be used in the field of refugee health, which has been lacking given the dominance of psychiatric examinations of refugees.

The thesis was also useful in providing a model or lens through which refugee health could be viewed and understood. It revealed that risk and protective factors can be organised into various stages of the migration journey. For example, highlighted in this thesis was the influence of trauma and loss during the pre- and peri-migration stages, which had a significant influence on the overall health of participants. In addition, the peri- and post-migration stages were particularly risky for both poorer physical and mental health outcomes among refugees due to having to essentially 're-start' their lives with little or no financial means. Also found was the ability of refugees to respond to adversity. Although not identified in the quantitative study, the qualitative data found that refugees drew upon personal coping strategies to help them manage their health and well-being. This is an emerging area of enquiry in the refugee health literature and the results of this thesis indicate the value of mixing methodologies to draw out the underlying mechanisms of refugee health. That is, even though the quantitative study did not find coping strategies to be significant for the long-term health of refugee participants, the qualitative study highlighted the importance of personal resilience across each of the migration periods as a way of dealing with adversity.

7.5 Recommendations for future research

Future research using subsequent waves of the BNLA data as they become available can assess whether the associations observed in the quantitative study persist beyond the first three years of resettlement among refugees in Australia. For example, there are now at least five waves of BNLA data available for use by Australian researchers. The present study could be replicated using more than the first three years of BNLA data to examine the trajectory of general health beyond those initial years. This would highlight whether the prevalence of poorer health continues to plateau or if there is improvement or decline among resettling refugees. Such information would be very useful,

as it would indicate where and when interventions should be targeted. For example, if there is no improvement in general health across the five years of resettlement, then this may suggest that the early services and supports are not as effective as intended. Additionally, several variables not included in the quantitative study of this thesis would be of interest for future analyses. For example, quantitative examination of transit experiences (e.g. time spent living in the community of transit countries and peri-migration stressors) would be worthwhile to confirm the reported significance of this period by the qualitative participants. Such information, particularly if examined in quantitative longitudinal studies, would substantiate the influence of the peri-migration period upon the long-term health of resettling refugees.

Despite the results of this thesis suggesting that self-rated health is a good outcome measure to apply, at least to begin to describe the effects of inequities on health among refugees resettling in Australia, there is need for further research to better understand the strengths and limitations of this subjective health measure. An observation of the literature review of self-rated measurement tools used in refugee health research was that the response option labels for self-rated health varied across studies, which might have implications for making comparisons across studies. Many studies use some version of a scale ranging from 'excellent' to 'poor', while the World Health Organization and many other studies use response options that range from 'very good' to 'very bad'. Other researchers use different response options altogether, such as a rating thermometer (278, 279). It is unclear which of these versions is preferable or how to make comparisons across surveys that use different versions of the scale (38, 278). For both the response option labels, more research is required to produce recommendations for best practices in surveys. In terms of examining perceived health as the phenomenon under study in qualitative research, participants defaulted to discussing their physical health when asked to discuss their health. It was only when I prompted participants to talk about their mental health experiences that they provided information regarding their emotional well-being and mental health experiences. This was not because of any mental health stigma among

some refugee cultures, which has been reported in previous studies (280, 281), but was more of an awareness around the concept of *general* health pertaining to both the physical and mental health of an individual. Given that participants were willing to discuss their emotional health concerns when asked, it may be that some refugee cultures regard 'health' as pertaining to their physical and not their mental well-being. Therefore, when asking refugees about their health, it may be necessary to explain the concept and/or include specific questions about mental and physical health status to ensure information about their global health is adequately captured.

A number of longitudinal studies that have examined the association between self-rated health (SRH) and future health outcomes have reported that self-rated health predicts changes in functional ability (282) and subsequent mortality (283). In these studies, subsequent morbidity and mortality were used as criteria to examine the predictive ability of SRH among a range of respondents to identify for whom SRH is predictive of future morbidity or mortality (266). This suggests that individuals with knowledge of their health are better able to rate their health in a way that predicts subsequent mortality (283). This suggestion requires confirmation among refugee populations, especially given that the self-rated health measurement is one of the most widely used measures in refugee health research. Despite the reported reliability and validity of the self-rated health measure used in this thesis (ie. SF-36), little is understood about what respondents (i.e. non-refugees and refugees alike) consider when rating their health. It would be helpful to understand what factors influence how refugees respond to SRH questions and whether this varies across ethnic and cultural groups.

7.6 Implications of this thesis to practice and policy

The findings from this mixed methods thesis have implications for understanding the influence of migration on the health of refugees. First, it revealed that no single study method can adequately explain health among refugees. Characteristics in the pre-, peri- and post-migration periods appear

not to be discrete factors and what occurs in one migration stage, may occur in subsequent stages. For example, refugees in this study experienced negative mental and physical health due to economic stressors in the transit and resettlement eras. The effects of pre-migration trauma and loss were also highly significant to the current health of refugees in Australia. This was illustrated by both the quantitative and qualitative studies.

The overall results of this thesis suggest that the provision of free or subsidised health care beyond the primary healthcare sector level during the initial years of resettlement may be one way of addressing the health issues among refugees in Australia. Also highlighted by the mixed methods study results presented above is that there is a need for an increased clinical awareness of this sustained health burden to help inform and prepare refugee. The findings underscore the importance for health professionals to consider broad health issues and demographic characteristics among refugee populations and highlight the potential value of the Australian Medicare Benefits Schedule (MBS) subsidy of refugee health assessments for recent refugee arrivals (284).

One of the determinants of poorer refugee health identified in this study was chronic health. Currently, there is little published data on the prevalence of chronic health or non-communicable diseases (NCDs) among refugees living in Australia. Some studies report a higher rate of NCDs ins some refugee populations, such as those originating from undeveloped countries and regions such as the Middle East (285). Given that Australia has been accepting higher numbers of refugees in the past decade, public health policy that offers screening for non-communicable diseases would be beneficial. NCD screening is not undertaken as part of the (offshore) health assessment for refugees travelling under the humanitarian programme prior to their arrival in Australia. Similarly, the post-arrival health checks provided to refugees in Australia also do not include screening for NCDs. A policy recommendation is that NCD screening be included in the either the offshore health assessment or post-arrival assessment for both refugee adults and children and then

annually, or as opportunities arise. Although Australian refugee health guidelines recommend that all refugee and asylum seeker arrivals should have a comprehensive health assessment within 1 month of arrival (286), these health assessments are usually completed in primary care and their completion is reliant on individual refugee presenting to a GP or health service. This is problematic given the reported challenges that many refugees face when trying to access host nation health services (287) and currently in Australia, there is no data on the proportion of refugee communities receiving the recommended health assessments (288). To overcome this, a possible solution may be that the post-arrival health assessment is offered as part of the settlement services provided to refugee entrants or, at the very least, the provision of support to help new arrivals in accessing and undergoing the health assessment. The latter would also provide refugees with an introduction to the Australia health system soon after their arrival and this could help facilitate future access to such services.

Also identified in the qualitative study was the challenges that refugees faced in understanding and navigating the complex health system in Australia. More education is required to help refugees understand the pathways that connect the various health services in Australia, as this was the cause of much confusion for many who did not understand why general practitioners referred to other health care professionals, for example. Refugee health nurses or bilingual support staff could be tasked with assisting refugees to navigate the health system and providing 'refresher' information beyond that following their immediate arrival. Studies evaluating the role of refugee health nurses have shown success in providing clinical support, advocacy and education (289). However, more often than not, their roles are challenged by the workload, communication and tension between services (290). The roles of refugee health nurses can range from assisting refugees to navigate the health system and carrying out culturally sensitive assessments to improving the clinical capacity of health services (291). Upscaling their availability in the community to ensure greater access should be given serious consideration by government and policymakers. Additionally, incentives that allow

general practitioners adequate time to provide health information to refugee patients may be another viable avenue to overcome information sharing barriers. Previous studies have identified remuneration as a barrier in terms of providing care by general practitioners (292).

The findings of this mixed methods study also indicate how unemployment or under-employment across the migration journey creates chronic economic instability for resettling refugees, which can have a significant impact on their already vulnerable health. Efforts to improve engagement and readiness for employment among refugees is important to their health and well-being. Although supports are provided to new arrivals in terms of how to search for work in the Australian job market, this is falling short of meeting its intended aims, as evidenced by the high rates of unemployment among the participants in this thesis. Those with overseas qualifications and skills need to be fully supported to make the transition to the Australian labour market. The current job network in Australia is not well equipped to meet the employment needs of refugees with overseas qualifications, skills and experiences.

One recommendation is the establishment of a process that screens and registers refugees arriving in Australia to assess their qualifications and skills. This could be complemented by a program that refugees are put into work placement or job mentoring programs based on their skills and experiences. Not only would refugees in these programs gain valuable work experience in the Australian job market, making them more employable, but they and Australian society would benefit from making a positive contribution. Programs such as the Refugee Employment Support Program currently being piloted by the New South Wales State Government may be worth considering more broadly, should such initiatives be found to be effective (293). Currently, the New South Wales Government in Australia is undertaking a four-year program to help refugees find long-term skilled employment opportunities by providing relevant language, education and training courses, guidance in navigating employment pathways and assistance relating to basic

employability skills, such as interview preparation and understanding Australian workplace culture and norms (293). Although the evaluation of the effectiveness of this program is not yet available, programs such as the Refugee Employment Support Program may be worth considering by other state and national governments in Australia.

Regarding English classes, more support is required for refugees while they are studying to encourage students to remain in courses rather than leave in pursuit of employment or child-minding duties. The qualitative study identified that many refugees, particularly females, felt pressure to leave study to take care of young children and find employment to improve their incomes. However, by leaving their study, they were limiting their employment options to low-skilled and low-paid positions or no employment at all. Thus, improving assistance to refugees is required to increase their income support while they are studying, which might help them achieve reasonable credentials in English proficiency and improve their employability in a shorter time frame. In terms of childcare, a solution may be to offer childcare assistance to studying refugees. For example, childcare providers for refugee students that operated during class hours would provide an opportunity for parents to attend classes with some regularity.

This thesis has shown that consideration of the individual should not be without consideration of the system in which the individual lives. The role of policy makers in organising systems and structures for refugees is important in helping them overcome difficulties in beginning life in a new society as well as helping with the healing process. Orientation periods and processes could be improved with extended sessions both before and after arrival to Australia. "Follow up" or "booster" orientation sessions could be worthwhile in the later re-settlement period to allow for refugees to come into contact with the various systems as well as follow up any issues they need clarification with. The challenges identified by both the quantitative and qualitative studies in post-settlement period suggest that more support could be provided through extended orientation as

a way of managing expectations and anxieties. The establishment of 'mentors' or community 'champions' could be helpful in enabling new entrants to gain such knowledge of the system as well as from one another. This would also help increase their social inclusion. Mentors or champions could come from more established refugee communities, refugees from the same ethnic background, other migrant communities and from the wider Australian community. In particular, having people from the non-refugee Australian community could be particularly useful in helping refugees obtain a sense of belonging and acceptance from the Australian community. It would also facilitate the exchange of cultures and ideas which may help curtail the sense of isolation and exclusion in the new host society.

7.7 Conclusion

In the introduction to this thesis, it was suggested that little is known about the impact that migration has on the long-term self-rated general health of refugees once they resettle in a host nation. Because of this knowledge gap, existing resettlement services may not be meeting the health needs of resettling refugees. This thesis is a presentation of the research processes that aimed to reveal what is the self-rated health status of refugees after several years of living in Australia and what influences health amongst a group of resettling refugees during their first years of resettlement. Using a simple measure of health across two studies, the cumulative findings of this research revealed that during the first three years of resettlement in Australia, adult refugees experience high and persistent levels of poor self-rated general health and that several key factors were important in this health disparity, including economic difficulties experienced across the migratory journey and gender. The mixed methods model used in this thesis highlighted how a simple measure of health (i.e. self-rated health) can be used to unpack the complexity of health experiences associated with the migratory journey. Hence, the novelty of this study is the approach to examining different influences on the general health of refugees across migration. Thus, the findings of this dissertation not only expand the current knowledge of the long-term health of

refugees, but it also suggests that the measurement of self-rated health may have value as a health indicator among refugee populations.

7.8 References

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APPENDICES

Appendix 1: Measuring self-rated health among resettled refugee populations to inform practice and policy – a scoping review

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Measuring self-rated health status among resettled adult refugee populations to inform practice and policy – a scoping review

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Abstract

Background: The health status of refugees is a significant factor in determining their success in resettlement and relies heavily on self-rated measures of refugee health. The selection of robust and appropriate self-rated health measurement tools is challenging due to the number and methodological variation in the use of assessment tools across refugee health studies. This study describes the existing self-report health measures which have been used in studies of adult refugees living in the community to allow us to address the challenges of selecting appropriate assessments to measure health within refugee groups.

Methods: Electronic databases of Ovid Medline, CINAHL, SCOPUS, Embase and Scopus.

Results: This review identified 45 different self-rated health measurements in 183 studies. Most of the studies were cross sectional explorations of the mental health status of refugees living in community settings within Western nations. A third of the tools were designed specifically for use within refugee populations. More than half of the identified measurement tools have been evaluated for reliability and/or validity within refugee populations. Much variation was found in the selection, development and testing of measurement tools across the reviewed studies.

Conclusion: This review shows that there are currently a number of reliable and valid tools available for use in refugee health research; however, further work is required to achieve consistency in the quality and in the use of these tools. Methodological guidelines are required to assist researchers and clinicians in the development and testing of self-rated health measurement tools for use in refugee research.

Keywords: Refugees, Asylum seekers, Settlement, Humanitarian, Self-perceived health, Subjective health, Surveys and questionnaires, Measures, Tools and instruments

Background

Globally, the number of people forcibly displaced by conflict is at the highest levels ever recorded. At the end of 2015, it was reported that the number of refugees had reached 21.3 million [1]; an increase of 1.7 million from 2014 [2]. A further 3.2 million were asylum seekers [1]. Conflicts, violence and human rights violations, particularly in the Middle East and North Africa, are forcing millions of people to leave their homes and to flee from destruction and persecution. A refugee has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion or membership in a particular social group [1].

Resettlement to a third country may be offered to those refugees who cannot return to their home country for fear of persecution or when they cannot be offered a permanent residence in the country they are currently living [3]. Resettling refugees are taking on added importance internationally with massive movements of people across continents due to global political and economic instability. The long term health and settlement prospects of refugees are a matter of continuing relevance for receiving nations as they are recognized as one

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of the most vulnerable groups in our society in terms of risk for poor health [4–10]. They often have unique health needs reflecting the epidemiology of diseases in their country of origin [11]; inadequate and disrupted health care; and stressors experienced during the migration and resettlement periods; including trauma, torture and poverty. Exposure to pre-migration trauma may have a lasting impact on their psychological and physical well-being and high levels of stress due to assimilation into a new society may also contribute to the health of resettled refugees [12–18].

The collection of refugee health data relies heavily on subjective measures of refugee health because they are less resource intensive than clinical assessments, less burdensome on participants and can capture individual perceptions of health, such as psychosocial factors geographic location and individual characteristics [19]. A large number of empirical studies have demonstrated that a person's own appraisal of his/her general health is a powerful predictor of future morbidity and mortality, even after controlling for a variety of physical, socio-demographic and psycho-social health status indices [20–25]. Therefore, measurement of self-rated health within resettling refugees may well serve as a surrogate for more traditional clinical assessments of health. Despite this, the selection of robust and appropriate subjective measurement tools for use among this population group is challenging due to methodological variation in the use of assessment tools across refugee health studies. This has meant that refugee health data is often conflicting and difficult to interpret and compare. Several studies have reviewed health measurement tools used in refugee populations [26–29] and all have suggested that the measurement tools being used in refugee health research often lack the validity and rigour required to assess constructs of psychological wellbeing, health and other factors that are associated with resettlement outcomes.

This review will build on these earlier reviews by providing an update on the health measurement tools being used in adult refugee research. However, in contrast with these earlier systematic studies, this review will not be limited by specific health concepts; such as trauma [26, 28]; refugee gender [27], and we will include refugees living within western and non-western nations; allowing a broader investigation of the literature reporting the use of these measurement tools. The development of such a comprehensive knowledge base is required in the literature; particularly at this time when refugee movement across the globe is unpresented and receiving nations are faced with increased pressure to provide immediate and long term health care that is appropriate, effective and comparative.

Study aim

The aim of this scoping review is to describe the self-report health measures which have been used in studies of adult refugees living in the community. For each self-report measure identified, we will note any reliability and validity testing within refugee groups as well as the settings in which the measures have been used. By doing this, we aim to gain a better understanding of how these measures are used in refugee health research. This will allow us to address the challenges of selecting appropriate assessments to measure health within refugee groups.

Methods

A scoping review was conducted between October 2016 and February 2017. Scoping reviews are rigorous, with methods that allow for replication, but findings are not synthesized or aggregated to the extent customary in systematic reviews. They allow for the inclusion of diverse study designs and involve iterative search process where search terms may evolve during the review [30]. A scoping review can help to identify gaps in the evidence base and summarize a more broad range of research findings [30]. We adopted the Arksey and O'Malley (2005) five stage methodological framework for scoping reviews:

Stage 1: Identifying the research question
Stage 2: Identifying the relevant studies
Stage 3: Selecting studies
Stage 4: Charting the data
Stage 5: Collating, summarizing and reporting the results

Stage 1: Identifying the research question

Our research question was: "What is known about the measurement tools used to measure self-rated health within resettled refugee groups?"

More specifically, the present review aims to address the following questions:

1. What settings have been described in studies that have measured self-rated health among refugee populations?
2. What self-rated health measurement tools have been used in these studies?
3. Which of these self-rated health measurement tools been evaluated for validity and reliability criteria within refugee populations?

Stage 2: Identifying the relevant studies

We searched five electronic databases (Medline, CINAHL, EMBASE, SCOPUS and PsychINFO) for English language papers published between January 2000 to March 2017. The following search terms were employed: "refugee", "asylum seeker", "settlement", "humanitarian", "self-perceived health", "subjective health", "mental health", "mental disorder", "physical health", "health status", "surveys and questionnaires", "scales", "screening", "measures" and

"instruments". The initial searches were performed in December 2016 and subsequently re-run in Medline in March 2017 to identify additional relevant studies published in 2016 and 2017. No additional studies were identified. This search was supplemented with a general Internet search using Google and Google Scholar to ensure our results were maximal.

Inclusion and exclusion criteria

For a measurement tool to be included in the review, two eligibility steps were required. First, published peer-reviewed articles were required to meet the following criteria:

1. Published in the English language.
2. Published between January, 2000 and March, 2017.
3. Focused on the collection of self-rated physical and mental health from refugees or asylum seekers using specific health assessment tools.
4. Focused on adults (defined as those aged 15 years and above)
5. Focused on community living refugees and asylum seekers; including those living within refugee camps which offer long-term or permanent settlement, and located outside of the refugee or asylum seeker's home country.
6. Included different population groups other than those of interest (e.g. immigrants) but reported refugee and asylum seeker data separately.
7. Studies were excluded if they were classified as an incomplete article (e.g. Editorial, commentary, letter or conference abstract); were review articles or reported data already used in another included article.

Second, the measurement tool(s) reported in the articles using eligibility criteria 1–7 were required to meet the following inclusion criteria:

8. Had been specifically tested for validity and/or reliability within refugee groups. (Given the limited volume of research in this area, the search was not limited by date of publication).
9. Had not been specifically tested for validity and/or reliability within refugee groups but were described in studies where:

- the refugee sample size was ≥ 150; or
- the tool(s) were described in 5 or more research articles.

These tools were included based on their use in research studies of what the study authors considered large sample sizes or in an acceptable number of research studies.

Stage 3: Selecting studies

The screening and selection procedure is shown in Fig. 1 using the Preferred Reported Items in Systematic Reviews and Meta-analysis (PRISMA) flowchart [31]. It was difficult to ascertain between projects and papers (i.e. projects are those where multiple papers were published from the one study as opposed to single studies from single projects) and based on this, the decision was made to look at papers, not projects, for the review.

A total of 390 references were obtained from the initial search of which 114 studies were duplicates. One author (AD) screened the remaining 276 references, applying the inclusion criteria to the titles and abstracts where possible. Full text review was conducted on 193 articles with a further 10 articles excluded because they did not report on resettled refugees; were studies that included different population groups other than those of interest (e.g. immigrants) but did not report refugee and asylum seeker data separately; did not specify the name of the measurement tool(s) used to collect refugee health data; or were studies researching the health of internally displaced refugees. The final set of articles was 183 papers with 52 measurement tools identified. To reduce bias caused by human error, two authors (GR and JE) repeated 10% of the study selection process. Rates of agreement were consistently high between the three reviewers, with any discrepancies resolved through discussion.

Stage 4. Charting the data

The 183 articles were charted in Microsoft Excel 2010, using the study characteristics (e.g. author information, publication year, study design), participant characteristics (e.g. demographic data), measurement tool name and statistical outcome information (e.g. measurement tool validation and reliability data).

Stage 5: Collating, summarizing and reporting the results

We devised the following categories of focus: self-rated health measurement tool name and description; health variable (eg. mental health, general health); study setting (eg. clinic, community, refugee camp); study population (eg. refugee, asylum seeker); and reliability/validation data regarding the measurement tool(s) conducted within refugee or asylum seeker populations. Common themes were identified across articles, and when possible, articles were compared.

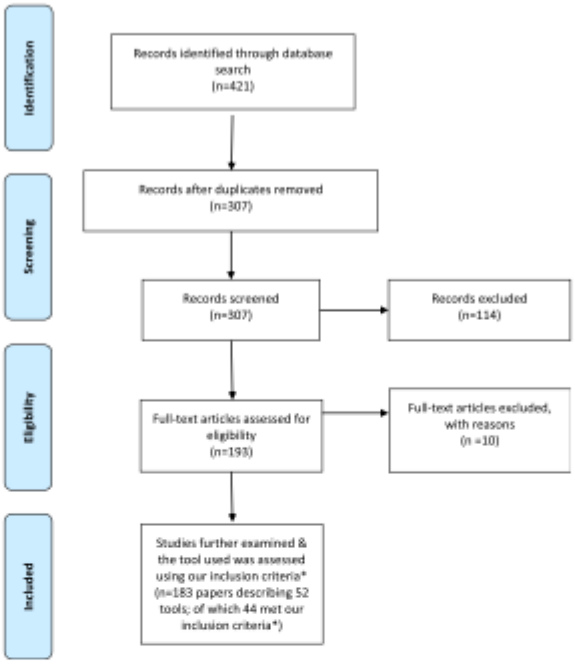

Fig. 1 PRISMA diagram: search and selection process. *Tools/Instrument(s) were assessed as meeting the inclusion criteria if they reported being tested for validity and/or reliability within refugee groups, or if the refugee sample size was >150, or if described in 5 or more research articles

Definitons

For the purpose of this scoping review, the following definitions have been applied.

Study population

Refugees and asylum seekers included in this study are those who were resettled in a community in a country outside of their own. This included those who had been offered permanent residency in a third country (either through United Nations High Commission for Refugees (UNHCR) mandate; permanent visas) or were living in a refugee camp for over 12 months.

Self-rated health measurement

Self-rated health measures are defined as any report on the status of an individual's health condition that comes directly from the individual, without interpretation of the individual's response by a clinician, researcher or anyone else [32]. Modes of data collection include interviewer-administered measurement tools, self-administered measurement tools, computer-administered measurement tools or interactively administered measures [33].

Reliability

Reliability was defined as to the extent to which scores are the same for repeated measurement under different conditions [34].

Validity

Validity is the extent to which a tool measures what it is supposed to measure and performs as it is designed to perform [34].

Results

The studies

A total of 183 articles were reviewed for this study (see Table 1 for a summary). Most of the studies (123 in total) were conducted within resettled refugees living in community settings within Western nations. Studies investigating the health of refugee populations living in non-metropolitan areas were limited, apart from 19 studies which were conducted in refugee camps. A large proportion of the research focused on populations from the Middle East, although Syrian refugees were under-represented with only 5 studies investigating the health

Table 1 Self-rated health study characteristics

Characteristic	# studies
	(N = 183)
Country:	
Western	
United States	59
Australia	20
Sweden	14
Norway	8
Canada	7
UK, Denmark, The Netherlands	6
New Zealand	4
Finland, Sth Korea	3
Ireland, Switzerland, Germany	2
Other	6
Non Western	
India, Uganda	4
Nepal, Rwanda	3
The Gambia, Jordan	2
Other	15
Setting:	
Non-clinical	135
Clinical	48
Health assessment	
Mental Health	153
General Health	30
Gender:	
Mixed sex sample	171
Female only sample	10
Male only sample	2
Sample size:	
< 500	163
500–1000	12
> 1000	8
Population/region	
Middle East	72
Sth East Asia	58
Sub-Saharan Africa	52
Eastern Europe	35
Study Design:	
Cross sectional	173
Longitudinal	9
Case control	1
Data type:	
Primary data collection	179
Secondary data analysis	4

status of this refugee group. Refugee mental health status was the focus of most of the reviewed studies ($n = 153$); particularly symptoms of depression, anxiety and post-traumatic stress disorder (PTSD). Studies were predominantly cross sectional in design and comprised of sample sizes of less than 500 participants. Recruitment mainly involved both sexes with the exception of 10 studies where only females were invited to participate and 2 studies where only males were recruited. The measurement tools were administered to participants using several methods; including face to face oral administration by trained interviewers/interpreters and self-completion.

The measurement tools

A total of 52 tools were identified in the retrieved studies, of which 45 met the study inclusion criteria (see Tables 2 and 3 for characteristics of these measurement tools). Seven tools were excluded because they had not been specifically tested for validity and/or reliability within refugee groups; were reported in studies where the refugee sample size was ≤150 or where the measurement tool(s) were described in less than 5 research articles.

Characteristics of measurement tools

The 45 measurement tools were used to measure general health, common mental disorders and trauma/PTSD among refugees. In terms of measurement focus, general health was measured using five tools; 19 tools assessed common mental disorders, such as anxiety and depression; and 21 tools investigated trauma/PTSD (see Tables 2 and 3). No consensus on the preferential use of different measurement tools emerged; although the most widely used tools across the studies were the Harvard Trauma Questionnaire for the assessment of trauma/PTSD and the Hopkins Symptom Checklist-25 for anxiety and depression. Sixteen of the identified measurement tools were developed specifically within samples of refugees and were used in half of the reviewed studies.

Aside from the Afghan Symptom Checklist, which was developed within a community sample in Afghanistan; the remaining 28 tools were designed for use in Western populations 12 of these Western developed tools were designed to be used in a clinical environment, but were frequently used in community studies of refugee populations. For example, over half of the community based studies used at least one tool that had been specifically developed for use within Western clinical populations. Translation of the Western designed tools mostly involved back-translation (85 studies). Twenty two studies reported translating English versions of measurement tools word-for-word into the refugee language. Pre-translated versions of the measurement tools were used in 28 of the articles reviewed and 15 studies reported

Table 2 Overview of the self-rated health measurement tools identified in the scoping review

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
General Health	Medical Outcomes Study Short Form - Ware & Sherbourne (1992)	Designed for use in clinical practice and research, and general population surveys.	18	Several versions: 36, 20, 12 or 6 items measuring perceived mental & physical health status across 8 health concepts in past month.	5–10 min to complete depending on version. Available in 50 languages.	Yes	SF-6: Afghani[1] SF-12: Russian[2] SF-20: Bosnian[3] SF-36: Bosnian[4]	SF-12: Russian[2]
General Health	WHO Quality of Life-BREF - WHO (1998)	Designed to assess self-rated quality of life across different cultures. Appropriate for large research studies, clinical trials, medical care.	6	26 items measuring 4 quality of life domains (physical health, psychological health, social relationships & environment) in past 2 weeks. Responses scored on 5-point Likert scale.	10–15 min to complete. Available in multiple languages	No	Somalian[5], Liberian, Togolese, Sierra-Leonean[6].	Somalian[5]
General Health	New Mexico Refugee Symptom Checklist-121 - Hollifield et al. (2009)	Designed for use within non-clinical refugee research.	2	121 items; 12 subscales assessing distressing physical and emotional symptoms in past year. Responses scored on 5-point Likert severity scale.	60–90 min to complete. Available in multiple languages	No	Kurdish & Vietnamese[7]	Kurdish & Vietnamese[7]
General Health	Personal Wellbeing Index - Cummins (2003)	Designed to be a cross-cultural instrument of quality of life.	2	8 items assessing life satisfaction (eg.health, community belonging, future security, religion & spirituality). Responses scored on 11 point Likert satisfaction scale.	5–10 min to complete. Available in multiple languages	Yes	Afghani & Kurdish[8]	No
General Health	World Health Organisation Disability Assessment Schedule 2.0 - WHO (2004)	Designed to be used within clinical, community and general populations.	1	36 items measuring quality of life (eg. mobility, self-care, inter personal). Responses scored on 5-point Likert scale.	5–20 min to complete. Available in multiple languages.	No	Sudanese[9]	No
Common Mental Disorders	Hopkins Symptom Checklist-25 - Mollica et al. (1987)	Originally designed for use in Western clinical settings. Indochinese version developed to screen anxiety & depression in clinical refugee samples.	62	25 items; 15 anxiety and 10 depression symptoms. Responses scored on a 4-point scale. An average-item score > 1.75 indicates clinically significant distress.	5–10 min to complete. Available in multiple languages (eg. English, Amharic, Bosnian, Cambodian, Dari, Khmer, Laotian, Pashto, Vietnamese, Tibetan)	No	African (10) (11, 12) (13) (14) (15) (16) Nth & Sth East Asian (17)(18)(19)(20)(21) (22)(25) Middle Eastern (12)(13)(14)(18) (19)(20) Southern & Eastern Europe (24)(12)(13)(14)(22) (18)(3) Central American (13)(19)	Tibetan[17], Cambodian, Laotian, Vietnamese[18], Syrian[20].
			11			No	Somalian[21]	No

Table 2 Overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
Common Mental Disorders	General Health Questionnaire - Goldberg & Blackwell (1970)	Designed for identifying psychiatric illness in Western general practice patients.		Several versions: 60, 30, 28 or 12 items measure depression, anxiety, social impairment, & hypochondriasis. Responses scored on 4 point Likert scale indicating presence or absence of symptoms. Cutoff scores vary according to version.	2–10 min to complete depending on version. Available in 38 languages.		Bosnian[22] Kosovan[23] Bhutanese[24]	
Common Mental Disorders	Centre for Epidemiologic Studies-Depression Scale - Radloff et al. (1977)	Designed to measure current depressive symptoms in general populations.	10	20-item measure assessing symptoms of depression in past week. Responses scored on 4-point Likert scale. Sug gested cut-off >16.	10–20 min to complete. Available in multiple languages.	Yes	Iraqi[25] Syrian[26] Iraqi, Lebanese, Yemenese[26] Arabic[27] Bosnian[28]	No
Common Mental Disorders	Beck Depression Inventory - Beck (1961)	Designed to detect/assess/ monitor changes in depressive symptoms in clinical setting by trained professionals.	9	21 items of depression rated from 0 to 3 in terms of intensity. Suggested cut offs: minimal depression <10; mild-moderate depression 10–18; mod to severe depression 19–29; severe depression 30–63.	10–15 min to complete. Available in multiple languages.	Yes	Hmong[29] Syrian[30] Somalian[29]	Hmong[37]
Common Mental Disorders	Kessler Psychological Scale - Kessler & Mroczek (1994)	Developed to screen for distress/mental illness in Western populations. Has been adopted in Western and non-Western countries as a screen ing & outcome measure in pri mary care and mental health settings.	8	10 or 6 items measuring psychological distress over previous 4 weeks. Responses scored on 5 point Likert scale. Recommended cut-off scores: low to mild distress (10–20); moderate (22–29); severe (> = 30).	10 mins to complete. Available in multiple languages.	Yes	Iraqi[31, 32] Kurdish[29] Afghani[33] Malian[34]	No
Common Mental Disorders	Symptom Checklist-90 - Derogatis & Cleary (1977)	Designed as mental health screening tool for Western clinical samples.	8	90 items; 10 subscales asking about anxiety, depression, somatization, hostility, interpersonal sensitivity, phobic anxiety, paranoid ideation, obsessive-compulsive ideation, psychoticism in past week. Responses scored on 5 point scale of distress.	15–30 min to complete. Available in multiple languages.	No	No	Hmong[35]
Common Mental Disorders	Self-Reporting Questionnaire - WHO (1995)	Designed as psychiatric screening instrument for use in primary health care and/or community settings in low/ middle income countries.	5	Depending on version, Items range from 5 to 20 asking about psychological and somatic symptoms in the past 30 days. Optimal cut-off considered to be 7/8.	5–10 min to complete. Available in multiple languages.	Yes	No	No
Common Mental Disorders	Internalized Stigma of Mental Illness Scale - Ritschcer et al. (2003)	Designed to measure internalized stigma within Western clinical samples.	3	29 items; 5 subscales measuring subjective experience of stigma. Responses scored on 4 point Likert	Completion time: n/a. Available in multiple languages.	Yes	Iraqi, Lebanese, Yemeni[36]	Iraqi, Lebanese, Yemeni[36]

Table 2 Overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
				scale. Higher total scores indicate greater internalized stigma.				
Common Mental Disorders	Afghan Symptom Checklist - Miller et al. (2006)	Designed to measure psychological distress within non-clinical samples of Afghanis.	2	23 items measuring well-being and distress in the previous 2 weeks. Responses scored on 5 point Likert scale.	10 mins to complete. Available in English & Dari.	No	Afghani[1]	No
Common Mental Disorders	Hospital Anxiety & Depression Scale - Zigmond & Snaith (1983)	Designed for use in Western clinical & research settings.	2	14 items measuring cognitive & emotional aspects of depression and anxiety. Responses on 4-point Likert scale.	5 mins to complete. Available in multiple languages.	No	No	No
Common Mental Disorders	Augmented Anxiety Sensitivity Index -Hinton et al. (2006)	Designed to measure culturally specific fears within Cambodian refugee outpatients in USA.	1	ASI: 16 items assessing fear of different anxiety symptoms. Responses scored on 5-point Likert scale. Augmented ASI: ASI with 9-item addendum assessing anxiety-related concerns.	Completion time: n/a. Available in English & Cambodian.	No	Cambodian[36]	No
Common Mental Disorders	Beck Anxiety Inventory - Beck (1988)	Designed to measure anxiety in adults and adolescents in clinical & research settings.	1	21 items of anxiety rated from 0 to 3 with total possible score of 63. Suggested cut-offs: 0–7: minimal anxiety; 8–15: mild anxiety; 16–25: moderate anxiety; >26: severe anxiety.	5–10 min to complete. Available in multiple languages.	Yes	No	No
Common Mental Disorders	Depression, Anxiety Stress Scale - Lovibond & Lovibond (1995)	Designed to measure symptoms of depression, anxiety & stress in community settings.	1	20-item measure assessing symptoms of depression in past week. Responses scored on a 4-point Likert scale. Suggested cut-off >16.	10–20 min to complete. Available in multiple languages.	Yes	Arabic[34]	No
Common Mental Disorders	General Perceived Self-Efficacy Scale - Schwarzer & Jerusalem (1995)	Designed to assess self-efficacy within Western non-clinical/ clinical populations.	1	10 items assessing ability to cope with daily hassles and flexibility to adapt after experiencing stressful life event(s). Responses scored on 4 point Likert scale. Higher scores indicate stronger patient's belief in self-efficacy.	2–10 min to complete depending on version. Available in multiple languages.	No	Afghani, Kurdish[8]	No
Common Mental Disorders	Mental Health Inventory - Veit & Ware (1983)	Designed for use in general Western populations to detect mental health disorders.	1	18 items, consisting of two subscales: psychological distress (22 items) and psychological wellbeing (16 items). Responses scored on 6-point Likert scale. Higher scores reflect better mental health.	5–10 min to complete. Available in multiple languages.	Yes	Bosnian[37]	No
Common Mental Disorders	Patient Health Questionnaire -	Designed to measure depression & severity in Western clinical samples.	1	9 items measuring depressive disorder according to the DSM-IV.	5 mins to complete. Available in multiple languages.	No	No	No

Table 2 Overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
	Spitzer & Williams (1994)			Responses scored on 4-point Likert scale indicating degree of severity.				
Common Mental Disorders	Refugee Health Screener-15 – Holli field et al. (2013)	Designed to screen common mental disorders in clinical samples of refugees.	1	15 items assessing distress, anxiety and depression. Items include 1 coping item, 13 symptom items and 1 distress thermometer. Responses scored on 5 point scale. Suggested cut-offs >12 or >5 on distress thermometer (postive cases).	5–10 min to complete. Available in 11 languages.	Yes	Burmese, Bhutanese, Iraqi[38]	Burmese, Bhutanese, Iraqi[40,39]
Common Mental Disorders	Sheehan Disability Inventory - Sheehan (1983)	Designed to assess functional impairment associated with anxiety disorder diagnosis in Western clinical samples.	1	3 items measuring impairment due to the disruption of daily activities in the areas of work, social life, family and home life due to current psychiatric symptoms. Responses scored on analogue scale from 1 to 10 with 10 being the lowest possible level of functioning.	5–10 min to complete. Available in 48 languages.	Yes	No	No
Common Mental Disorders	Vietnamese Depression Scale -Kinzie et al. (1982)	Designed to measure depression among clinical samples of Vietnamese refugees.	1	15 items assessing depression and physical & psychological symptoms associated with depression. 6 depression items are culturally specific for Vietnamese population. Uses 3- and 4-point Likert scales. Optimal cut-off ≥13.	5–10 min to complete. Available in English & Vietnamese.	No	Vietnamese[40, 41]	Vietnamese[48&49]
Trauma/PTSD	Harvard Trauma Questionnaire -Mollica et al. (1992)	Designed for clinical samples of refugees. Must be modified and adapted to the characteristics of each cultural group.	62	4 parts: Part 1-measures 17 trauma items. Part 2- respondent describe most traumatic experience/event experienced during their refugee experience. Part 3- assesses likelihood of head injury. Part 4-measures 30 trauma symptoms. Scores of 2.5 or above considered "positive" for PTSD in Indochinese populations.	50–60 min to complete. Available in multiple languages.	No	African (11)(12)(14)(15)(16)(42) (43) Nthn & Sth East Asian (11)(17)(20)(22)(44)(45)(46) Middle Eastern (12)(14)(21)(24)(44)(45)(54) Sthn & Eastern Europe[12&44&14&45&17] Central American[27]	Cambodian, Laotian & Vietnamese[52&53] Sub-Saharan Africa[50] Chechen & Afghan[12]
Trauma/PTSD	Posttraumatic Diagnostic Scale (PDS) – Foa et al. (1996)	Designed to provide brief self-report measure of PTSD in both clinical and research settings.	15	4 parts. Part 1-checklist of traumatic events that respondent may have experienced or witnessed. Part 2-Respondents indicate which event has disturbed them the most in past month. Part 3–17 PTSD symptoms items experienced in past month.	20 mins to complete. Language availability: English	Yes	Turkish, Iranian, Sri-Lankan, Bosnian, Afghani[46] Iraqi[23&46] Asian, European, African[46]	Iraq, Lebanese, & Arab[33] Ugandan & Somalian[47] Syrian[28] Asian, European, & African[46]

Table 2 Overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
				Responses scored on 4-point Likert scale (0-not at all or only one time to 3-five or more times a week or almost always).				Kosovar[48] Rwandan[49]
Trauma/PTSD	Post Migration Living Difficulties Scale - Silove et al. (1998)	Designed to assess current life stressors of asylum-seekers.	10	23 items to assess recent adverse life experiences typical of migration (eg. delays in processing applications, access to health & welfare, & stressor elated to resettlement). Responses scored on 5-point scale.	10–20 min to complete. Languages: English.	No	No	Tamil[50]
Trauma/PTSD	Posttraumatic Symptom Disorder Checklist - Weathers et al. (1993) PCL-90	Designed to measure PTSD among non-clinical sample in USA.	7	17 items assessing DSM-IV PTSD symptoms. Responses on 5 point Likert scale as to how much these have been bothered by each item in past month. Some training is required to administer test.	5–10 min to complete. Language availability: English.	Yes	No	Somali & Oromo[51] Darfuri[52]
Trauma/PTSD	Impact of Events Scale-Revised - Horo witz et al. (1979)	Designed to measure current subjective distress related to a specific event among Western clinic samples.	5	15 items related to a particular event. 7 items measure intrusiveness & 8 items measure avoidance. Responses scored on 4-point Likert scale according to how often each item has occurred in past 7 days.	45–60 min to complete. Available in multiple languages.	Yes	Chechyan, Afghani & West African[12] Middle Eastern[53]. Bosnian[54]. Middle East, Central Africa, Sth Asia & Sth E Europe[10]. Somalian[55]	Chechyan, Afghani & West African[12]
Trauma/PTSD	Comprehensive Trauma Inventory-104 - Hollifield et al. (2005)	Designed for use within community samples of refugee.	4	104 items; 12 scales assessing range of traumatic events (eg psychological & physical injury, detention, intentional abuse, deprivation, discrimination). Responses scored on 5-point Likert scale whether or not the event was experienced and, if so, how much impact the event had.	60 mins to complete. Available in English, Kurdish, Vietnamese.	Yes	Kurdish & Cambodian[56]	Kurdish & Cambodian[70]
Trauma/PTSD	Cumulative Trauma Disorder Scale - Kira et al. (2012)	Designed for use within clinical & non-clinical samples of refugees.	4	15 items measuring trauma symptoms (eg depression, anxiety, somatization) in previous month. Responses on 5 point scale.	10 mins to complete. Languages: English.	No	Iraqi, Lebanese & Yemeni[57] Arabic[34]	Iraqi[71]
Trauma/PTSD	HADStress - Westermeyer et al. (2010)	Designed to measure somatic symptoms within community sample of Somali refugees living in USA.	4	4 items measuring somatic symptoms: headaches, appetite change, dizziness and sleep problems. Responses on 0–4 scale with higher scores	10 mins to complete. Languages: English.	No	No	Somalian[58] Ethiopian[59]

Table 2 Overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
				indicating more somatic symptoms. Cut off score of >3 recommended.				
Trauma/PTSD	Post Traumatic Growth Inventory - Tedeschi & Calhoun (1996)	Designed to assess positive outcomes among traumatized non- clinic Western samples.	3	21 item assessing positive outcomes among those who have experienced traumatic events. Responses scored on 6 point scale.	5–10 min to complete. Available in multiple languages.	Yes	Arabic[57] Yugoslavian(60)	Arabic[57] Bosnian[61]
Trauma/PTSD	Posttraumatic Symptom Scale - Holen et al. (1983)	Designed in sample of German Armed Forces following a UN peace keeping mission to Cambodia to determine causes and scale of stress reactions.	3	10 or 16 items measuring PTSD symptoms in past 7 days according to DSM-III criteria. Presence or absence of symptoms is rated in Yes/No format. Sum of positive items used as total score.	10 mins to complete. Languages: English	Yes	Bosnian[62]	No
Trauma/PTSD	Annihilation Anxiety Scale - Kira et al. (2012)	Designed for use in clinical settings as well as in research with severely traumatized populations, such as refugees.	2	3 items that assess annihilation anxiety. Responses are scored on 5 point Likert scale.	5 mins to complete. Languages: English,	No	Iraqi, Lebanese & Yemeni[34]	Iraqi, Lebanese & Yemeni[34]
Trauma/PTSD	Health Leaflet -Sondergaard et al. (2003)	Designed to measure PTSD within community samples of refugees	2	15 items to screen for PTSD. Yes/No responses to items consisting of psychological symptoms, network and attitude towards the future in the new country and persecution. Suggested cut off = 10.	10 mins to complete. Languages: n/a.	No	No	Iraqi[63]
Trauma/PTSD	Minnesota Multiphasic Personality Inventory-2 and Minnesota Multi phasic Personality Inventory-2-RF - Tellegen & Ben-Porath (2008)	Designed to assess personality traits and psychopathology among Western clinic samples.	2	MMPI-2: 567 items measuring personality and psychopathology, consisting of 8 validity scales, 10 clinical scales & 15 content scales. Responses are recorded as True/ False. MMPI-2-RF: 338 items from MMPI-2, including 9 validity scales.	25–90 min to complete depending on version. Available in multiple languages.	Yes	No	Korean[64] Vietnamese[65]
Trauma/PTSD	Traumatic Life Events Questionnaire - Kubany (2000)	Designed in general clinic western population for use in research, primary care or emergency rooms.	2	23-items measuring 22 types of potentially traumatic events. Responses scored on Likert scale range from "never" to "more than 5 times" and whether fear, helplessness or horror was present ("yes/no").	10–15 min to complete. Available in English & Spanish.	No	No	No
Trauma/PTSD	Cambodian Somatic Symptom & Syndrome Inventory - Hinton et al. (2013)	Designed for use in clinical samples of Cambodian refugees. Very specific to Cambodians.	1	23 items; 2 subscales assessing somatic symptoms & cultural syndromes in past week. Somatic subscale (12 items) & syndrome scale (11 items). Responses scored	10 mins to complete. Languages: English & Cambodian.	No	Cambodian[66]	Cambodian[66]

Table 2 Overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement name, Author & Year	Design/use	No. of studies tool cited in	Composition	Completion time (CT); Language Availability (LA)	Publically available	Reliability testing in refugee population group	Validity testing in refugee population group
				on 5 point Likert scale asking how much he/she was bothered by certain somatic symptoms & syndromes.				
Trauma/PTSD	Dissociative Experiences Scale - Carlson & Putnam (1986)	Designed to measure dissociation in normal & clinic Western populations	1	28 items that assesses dissociative symptoms. Each item asks about the frequency (from Never to Always) that a particular dissociative symptom is experienced. Scores of >20 indicate probable posttraumatic or dissociative disorders.	10 mins to complete. Available in multiple languages.	Yes	Ethiopian[51] Bosnian[67]	No
Trauma/PTSD	Posttraumatic Stress Disorder Interview for Vietnamese Refugees - Doa et al. (2012)	Designed to assess trauma among clinic samples of Vietnamese refugees.	1	Part A: 30 items assessing pre-migration, migration, encampment, post-migration traumas. Yes/No response. 'Yes' response to Part A item(s), respondent proceeds to Part B which assesses PTSD criteria.	Completion time: n/a. Available in English & Vietnamese.	No	Vietnamese[68]	Vietnamese[82]
Trauma/PTSD	Primary Care Post-Traumatic Stress Disorder Screen - Prins et al. (2003)	Designed for use in primary care and other medical settings.	1	5 items assessing dimensions of PTSD (re-experiencing, numbing, avoidance, hyperarousal) with Yes/No response options.	5 mins to complete. Language availability: English,	Yes	No	No
Trauma/PTSD	Resettlement Stressor Scale - Clarke et al. (1993)	Designed to measure stressors faced within a community sample of Cambodian refugee adolescents.	1	32 items assessing trauma events in migration/present settlement. Responses scored on 5-point scale.	10–20 min to complete. Avail in English & Cambodian.	Yes	No	Cambodian[69]
Trauma/PTSD	War Trauma Scale -Clarke et al. (1993)	Designed for use within clinical samples of Cambodian adolescent refugees that had lived through the Pol Pot regime.	1	42 items measuring traumatic experiences inflicted by Pol Pot regime. Items are all worded in relation to Pol Pot era.	20–30 min to complete. Available in English & Cambodian.	No	Cambodian[83]	Cambodian[83]

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Table 3 Brief overview of the self-rated health measurement tools identified in the scoping review

Measurement focus	Measurement tool	Design/use & composition	Publically available	Reliability testing in refugee research	Validity testing in refugee research
General Health	Medical Outcomes Study Short Form (MOS-SF)	Designed for use in clinical practice/research/general pop'n surveys to measure perceived mental/physical health status in past month. Several versions with 6, 12, 20 or 36 items.	Yes	Yes, versions SF-6, SF-12, SF-20 & SF-36	Yes, version SF-12
General Health	New Mexico Refugee Symptom Checklist-121 (NMRSC-121)	Designed for use within non-clinical refugee research for assessment of distressing physical/emotional symptoms in past year (121 items).	No	Yes	Yes
General Health	Personal Wellbeing Index (PWI)	Designed to measure quality of life across cultures in general pop'n (8 items).	Yes	Yes	No
General Health	WHO Quality of Life-BREF (WHOQOL-BREF)	Designed for use in research/clinical settings to assess self-rated quality of life across different cultures in past 2 weeks (26 items).	No	Yes	Yes
General Health	WHO Disability Assessment Schedule 2.0 (WHO-DAS5)	Designed for use within clinical/community pop'ns to measure quality of life (36 items).	No	Yes	No
Common Mental Disorders	Afghan Symptom Checklist (ASCL)	Designed to measure psychological distress within non-clinical samples of Afghanis in past 2 weeks (23 items).	No	Yes	No
Common Mental Disorders	Augmented Anxiety Sensitivity Index (AASI)	Designed to measure culturally specific fears within Cambodian refugee outpatients (16 items).	No	Yes	No
Common Mental Disorders	Beck Anxiety Inventory (BAI)	Designed to measure anxiety in adults & adolescents in clinical/research settings (21 items)	Yes	No	No
Common Mental Disorders	Beck Depression Inventory (BDI)	Designed to detect/assess/monitor changes in depressive symptoms in clinical settings (21 items).	Yes	Yes	Yes
Common Mental Disorders	Centre for Epidemiologic Studies-Depression Scale (CES-D)	Designed to measure level of depressive symptoms in a general population in past week (20 items)	Yes	Yes	No
Common Mental Disorders	Depression, Anxiety Stress Scale (DASS)	Designed to measure symptoms of depression/anxiety/ stress in community settings in past week (20 items).	Yes	Yes	No
Common Mental Disorders	General Health Questionnaire (GHQ)	Designed for identifying psychiatric illness in Western patients. Several versions with 12, 28, 30 or 60 items.	No	Yes	No
Common Mental Disorders	General Perceived Self-Efficacy Scale (GPSE)	Designed to assess self-efficacy within Western non-clinical & clinical populations (10 items).	No	Yes	No
Common Mental Disorders	Hopkins Symptom Checklist-25 (HSCL-25)	Originally designed for use in Western clinical settings. Indochinese version developed to screen anxiety & depression in clinical refugee samples (25 items).	No	Yes	Yes
Common Mental Disorders	Hospital Anxiety & Depression Scale (HADS)	Designed for use in Western clinical & research settings to measure anxiety & depression (14 items).	No	No	No
Common Mental Disorders	Internalized Stigma of Mental Illness (ISMI)	Designed to measure internalized stigma within Western clinical samples (29 items)	Yes	Yes	Yes
Common Mental Disorders	Kessler Psychological Scale (KPS)	Developed to screen for distress & mental illness in Western populations in past 4 weeks. Has been adopted in Western & non-Western countries as screening & outcome measure in primary care and mental health settings. Several versions with 6 or 10 items.	Yes	Yes	No
Common Mental Disorders	Mental Health Inventory (MHI)	Designed for use in general Western pop'ns to detect mental health disorders (38 items).	Yes	Yes	No
			No	No	No

Table 3 Brief overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement tool	Design/use & composition	Publically available	Reliability testing in refugee research	Validity testing in refugee research
Common Mental Disorders	Patient Health Questionnaire (PHQ)	Designed to measure depression & severity in Western clinical samples (9 items)			
Common Mental Disorders	Refugee Health Screener-15 (RHS-15)	Designed to screen distress, anxiety & depression in clinical samples of refugees (15 items).	Yes	Yes	Yes
Common Mental Disorders	Self-Reporting Questionnaire (SRQ)	Designed as psychiatric screening instrument for use in primary health care/community settings in low/middle income countries. Several versions with 5 or 20 items.	Yes	No	No
Common Mental Disorders	Sheenan Disability Inventory (SDI)	Designed to assess functional impairment associated with anxiety disorder diagnosis in Western clinical samples (3 items)	Yes	No	No
Common Mental Disorders	Symptom Checklist-90 (SCL-90)	Designed as mental health screening tool for Western clinical samples (90 items; 10 subscales asking about mental health symptoms in past week).	No	No	Yes
Common Mental Disorders	Vietnamese Depression Scale (VDS)	Designed to measure depression among clinical samples of refugees (15 items)	No	Yes	Yes
Trauma/PTSD	Annihilation Anxiety Scale (AAS)	Designed for use in clinical settings & in research with severely traumatized populations (eg refugees). (3 items)	No	Yes	Yes
Trauma/PTSD	Cambodian Somatic Symptom & Syndrome Inventory (CSSI)	Designed for use in clinical samples of Cambodian refugees to assess somatic symptoms & cultural syndromes in past week (23 items). Very specific to Cambodians.	No	Yes	Yes
Trauma/PTSD	Comprehensive Trauma Inventory-104 (CTI-104)	Designed for use within community samples of refugees to assess traumatic events (104 items).	Yes	Yes	Yes
Trauma/PTSD	Cumulative Trauma Disorder Scale (CTDS)	Designed for use within clinical & non-clinical samples of refugees to measure trauma symptoms in past month (15 items)	No	Yes	Yes
Trauma/PTSD	Dissociative Experiences Scale (DES)	Designed to measure dissociation in general & clinic Western populations (28 items).	Yes	Yes	No
Trauma/PTSD	HADStress	Designed to measure somatic symptoms within community sample of refugees (4 items).	No	No	Yes
Trauma/PTSD	Harvard Trauma Questionnaire (HTQ)	Designed for clinical samples of refugees to measure trauma. Must be modified and adapted to the characteristics of each cultural group. 4 parts. Part 1 measures trauma. Part 2 asks for description of most traumatic experience/event experienced during the refugee experience. Part 3 assesses likelihood of head injury. Part 4 measures trauma symptoms.	No	Yes	Yes
Trauma/PTSD	Health Leaflet	Designed to measure PTSD within community samples of refugees (15 items).	No	No	Yes
Trauma/PTSD	Impact of Events Scale-Revised (IES-R)	Designed to measure current subjective distress related to a specific event among Western clinic samples (15 items).	Yes	Yes	Yes
Trauma/PTSD	Minnesota Multiphasic Personality Inventory (MMPI)	Designed to assess personality traits & psychopathology among Western clinic samples (567 items).	Yes	No	Yes
Trauma/PTSD	Post Migration Living Difficulties Scale (PMLD)	Designed to assess current life stressors of asylum-seekers (23 items).	No	No	Yes
Trauma/PTSD	Post Traumatic Growth Inventory (PTGI)	Designed to assess positive outcomes among traumatized non clinic Western pop'ns (21 items).	Yes	Yes	Yes
Trauma/PTSD	Posttraumatic Diagnostic Scale (PDS)	Designed to measure self-report measure of PTSD in clinical/ research settings. 4 parts. Part 1 is checklist of traumatic events experienced/witnessed by respondent. Part 2: asks respondents to indicate which event has disturbed them the most in past month. Part 3 asks for PTSD symptoms items experienced in past month.	Yes	Yes	Yes

Table 3 Brief overview of the self-rated health measurement tools identified in the scoping review *(Continued)*

Measurement focus	Measurement tool	Design/use & composition	Publically available	Reliability testing in refugee research	Validity testing in refugee research
Trauma/PTSD	Posttraumatic Stress Disorder Interview for Vietnamese Refugees (PTSD-IVR)	Designed to assess trauma among clinic samples of Vietnamese refugees (30 items)	No	Yes	Yes
Trauma/PTSD	Posttraumatic Symptom Disorder Checklist-90 (PCL-90)	Designed to measure PTSD among non-clinical samples in past month (17 items)	Yes	No	Yes
Trauma/PTSD	Posttraumatic Symptom Scale (PTSS)	Designed to measure PTSD symptoms in past week within trauma affected samples (10 or 16 items)	Yes	Yes	No
Trauma/PTSD	Primary Care Post-Traumatic Stress Disorder Screen (PC-PTSD)	Designed for use in primary care/other medical settings to assess dimensions of PTSD (5 items).	Yes	No	No
Trauma/PTSD	Resettlement Stressor Scale (RSS)	Designed within a community sample of Cambodian refugee adolescents to assess trauma events in migration/present settlement (32 items).	Yes	No	Yes
Trauma/PTSD	Traumatic Life Events Questionnaire (TLEQ)	Designed in general clinic western population for use in research/primary care/emergency rooms to assess potentially traumatic events (23 items).	No	No	No
Trauma/PTSD	War Trauma Scale (WTS)	Designed within clinical samples of Cambodian adolescent refugees that had lived through the Pol Pot regime. Items are all worded in relation to Pol Pot era. (42 items).	No	Yes	Yes

using bilingual interpreters were used to verbally translate the tool items to the target population.

The pre-determined cut-off scores of measurement tools were routinely applied across most studies in spite of the conditions of their original development. Only two studies were identified that adjusted the cut-off score of their selected measurement tools to suit their target population [35, 36]. Measurement tools for use in non-clinical environments must be brief, easy to use and interpret, cost-effective and accessible. For example, the Minnesota Multiphasic Personality Inventory is designed for use in clinical samples, yet was used in several community studies of refugees [37, 38]. This tool is 567 items long, takes 60–90 min to complete and requires specialist training to administer and score.

Statistical testing of measurement tools

More than half of the 45 tools have been evaluated statistically for reliability and validity among refugee populations. Reliability data was reported for 33 of the tools and 24 tools had published validation data (see Tables 2 and 3). Twenty tools have published reliability *and* validity data among refugee populations. Prior to the year 2000 only seven of the tools described in this review had evidence of reliability testing and validity within refugee populations. A notable finding is that eight of the tools have published reliability data in refugee groups, but no published reliability data. A measurement tool cannot be valid unless it is reliable [39] and reasons for the absence of reliability data for these tools could not be ascertained in this review. Six of the reviewed tools have not been tested for either validity or reliability among refugees, but meet the criteria of being used in refugee research where the sample size was 150 participants or greater. Eighteen tools were validated by one study each and six tools were validated by two or more studies (see Table 2).

The methods used to conduct reliability and validity testing within studies was highly variable and there appeared an emphasis on conducting reliability testing rather than validation testing of measurement tools. In terms of reliability testing, internal consistency the most commonly reported statistic while test-retest reliability and inter-rater reliability was mostly overlooked. Test-retest reliability was only reported in studies using 11 tools and inter-rater reliability was reported in only 2 studies. Where the validation testing of measurements was conducted, there were inconsistencies across studies in the extent of testing. Ideally, refugee health measures should have, at a minimum, confirmed content and construct validity within refugee populations; however this was only observed in a few of the studies. Where a tool was adapted for refugee research, there appeared an emphasis on reliability and criterion validation. Testing only criterion validity does not assess whether the measure appropriately captures culture specific constructs, such as depression, anxiety or PTSD.

Where the development of a measurement tool was described, few studies described efforts to conduct a qualitative analysis of the concepts being measured in the development of the tools; incorporating ten tools.

These tools were all designed specifically for use in refugee research, with the exception of the Hopkins Symptom Checklist-25 (Indochinese version) and Medical Outcomes Study Short Form −12, which have been adapted for use in refugee populations.

Modification of measurement tools

Eight of the 44 measurement tools underwent some form of modification to make them more culturally appropriate. These modifications included addition/removal of items [40–46] and cut-off score modification [35, 36]. The Harvard Trauma Questionnaire was the most commonly modified tool, and is in accordance with the authors' recommendation that the tool be modified and adapted to the characteristics of each cultural group [40]. Fourteen of the 62 studies which used the Harvard Trauma Questionnaire modified the tool to be more appropriate for their target refugee population.

The translation of measurement tools across studies was variable. Ideally, translation of measures should undergo a standard translation/backtranslation process to ensure semantic and conceptual equivalence [47] and to avoid culturally sensitive material. In less than half of the studies reviewed, there was evidence that the researchers had undertaken thorough back-translation of the measurement tool(s). A number of studies reported translating English versions of measurement tools word-for-word into the refugee language, which is problematic in cross cultural research as the questions or items may not be communicated correctly, especially if any idioms were used in the source language [48]. Attempts to establish conceptual and/or thorough linguistic equivalence of only 11 tools was identified.

Discussion

This scoping review identified that 45 different self-rated health measurement tools were used to measure self-rated health in refugee populations. Most of the 183 studies detected in the review study were cross sectional explorations of the mental health status of refugees living in community settings in Western nations. A third of the tools were designed specifically for use within refugee populations. More than half of the measurement tools have been evaluated for reliability and/or validity within refugee populations.

Apparent from this review is that no consensus exists on the use of different measurement tools amongst researchers and there are no standard criteria against which quality assessment of these tools can be made. This has resulted in a large number of tools of varying rigour being used in refugee health research. The resulting variability in structure, reliability and validity increases the potential for inaccurate conclusions to be made concerning the health of refugee populations. Several studies have previously reported large variations in prevalence rates of mental health disorders among refugees [4, 8, 14, 49] and these disparities have been attributed to inconsistencies in methods and measurement tools used for data collection, analysis, and reporting [50]. Tools used in refugee health research should have at a minimum, demonstrated reliability and validity of the construct within refugee populations to ensure that cultural concepts and constructs are able to be accurately measured [26, 51]. A number of tools identified in this review have published reliability and validity within refugee groups, but few provided evidence of testing for construct validity and the methods used to confirm reliability and validity were highly variable across studies.

Refugee self-rated health measurement tools are also frequently used out of the context for which they were designed. For example, clinical tools are developed for use among treatment seeking patients and are designed to be administered in safe and trusting environments where care can be provided for any adverse reactions. They are not specifically designed for non-clinical settings where the level of contact between respondents and often non-clinical, administrators is brief. Clinically developed tools also have established cut off points for identifying individuals who are identified as being positive for specific disorders and these may shift as the setting changes from a clinic to a community sample. It is not known whether the application of measurement tool scores across heterogeneous populations leads to reasonable inferences concerning symptom severity and diagnoses [47, 51], but there is a body of work suggesting that using a single cut-off score may not be a valid procedure for cross cultural samples [51–55].

The challenges in developing and adapting health measurement tools for refugee research were evident in the reviewed literature. The methods used were inconsistent and/or limited across studies. For example, testing only reliability was common across the reviewed studies. Reliability only addresses the degree to which measurement tools result in reproducible results across different interviewers and applications [56]; it does not measure the degree to which the tool actually measures the construct of interest. Where validity testing was conducted, there was a focus on criterion validity (or 'caseness'). Criterion validity does not assess whether the measure appropriately captures culture specific constructs, such as depression, anxiety or PTSD. Determining the construct validity of a tool demonstrates how well the tool measures the constructs it was designed to measure [34] and ensures that inferences made using the results of such assessments, such as severity of symptoms and prevalence rates are supported. For example, the PTSD symptom patterns of refugees may deviate from those of Western populations because of

both cultural and war-related factors, as well as post-traumatic life circumstances [53, 57]. The failure to appropriately standardize or adapt existing measures for use with refugee populations means that they may lead to incorrect generalizations about the health of refugees and this can have a widespread effect and can lead to the development and implementation of incorrect interventions and policies [58].

This review found inconsistencies in the translation of measurement tools across studies. Translation should be undertaken using thorough back-translation of the measurement tool(s) into the first language of those being assessed by using the back-translation method by itself or in combination with a committee or bilingual assessment method [47, 59]. The translation of English versions of measurement tools word-for-word into the refugee language is problematic in cross cultural research as the questions or items may not be communicated correctly, especially if any idioms were used in the source language [48, 50]. Appropriate translation ensures ensuring semantic and conceptual equivalence and is one of the requirements for establishing validity [47, 60].

Health measurement tool items should also be examined to illustrate why they are culturally relevant in terms of the rationale behind their inclusion and understanding what it means for a person in that culture to have the symptom or syndrome or how they vary across cultures. For example, the way in which western psychology describes PTSD does not fit the symptoms of people from non-western cultures, yet tools measuring trauma in refugees often use western trauma concepts and constructs. The exploration and establishment of equivalence of measurement tools between local indigenous constructs and symptoms is an important step in ensuring that the measurement tools are tapping into the respondents' understanding of their health [26, 61] and was frequently overlooked in the reviewed refugee research studies.

Recommendations

Researchers would benefit from the development of guidelines to instruct proper and consistent measurement design and testing; such as the achievement of cultural equivalency across health concepts, reliability and validity across refugee population groups and settings. For example, researchers would benefit from the use of standardized procedures such as the Translation Monitoring Form [62] which provides a method for the systematic translation and adaptation of measurement tools. Evaluation of the performance of measurement tools needs to be undertaken in rural and remote settings. Given that receiving nations, such as Australia and the United States of America (USA), are resettling refugees beyond the major metropolitan regions, it is important that these populations are not overlooked so that we can understand the ongoing health needs of remote refugee populations to inform often limited, and often over-stretched, rural and regional health services.

The development of integrated and comprehensive measurement tools to assess all elements of relevance to the health of refugees would be beneficial to health service providers. The current tools are not comprehensive, but rather assess parts of experiences and/or symptoms and disorders. Measures, such the *Refugee Mental Health Assessment Package*, hold promise as an integrated and comprehensive package of measures to assess all elements of relevance to the mental health of refugees [63].

Currently, there is an underrepresentation of tools measuring resettlement stressors, pre-war, pre-conflict and non-conflict trauma within refugees. The resettlement environment is significant to the health of refugees and the lack of measurement tools to capture this information means that the development of health interventions during resettlement is challenging. Many refugees may experience trauma prior to the war or conflict-related event that can causes them to flee their home. This trauma could be due to religious or political oppression which then resulted in the outbreak of civil or international war. Therefore, these refugees are traumatised prior to displacement, yet there are no assessments to measure this pre-war or pre-conflict trauma. This represents a significant gap in refugee research and research is required into the development of such measures.

Optimal tools for the measurement of refugee self-rated health are those that have reported reliability and validity testing in refugee populations. Several tools fit these criteria and include the Medical Outcomes Study Short Form and New Mexico Refugee Symptom Checklist-121 for general health assessment; the Hopkins Symptom Checklist-25 and Refugee Health Screeners-15 for common mental disorders; and the Harvard Trauma Questionnaire and Comprehensive Trauma Inventory-104 for the assessment of trauma/PTSD within refugees (see Tables 2 and 3). Also, tools should not be used out of context for which they were designed. Measurement tools designed for use in clinical settings may not be suitable for use in community environments and vice-versa (see Tables 2 and 3).

Limitations

There are several limitations to this review. Firstly, electronic searches of the literature are not error free, and citations to some studies and measurement tools may not be included in the literature. In addition, our review will be limited by the fact that the searches were limited to articles in English published since 2000. However, given the limited volume of research in this area, the search for validation studies of tools utilised in refugee

research was not limited by date of publication. The results of the review should be interpreted with the knowledge that scoping reviews do not screen for quality of studies and, therefore, they include studies with large variations in study methodologies.

What does this study add to the literature?

The results of this review have important research, policy and practice implications, which are outlined below.

Research implications

This review study provides an up to date compilation of contemporary general health, common mental disorders and trauma/PTSD assessments that rely on client self-report. We have identified a number of measurement tools that had been evaluated for reliability and/or validity since the publishing of prior reviews and this included a number of newly developed tools as well as those used to assess general health.

Policy implications

Given the increasing importance of patient measured outcomes, our results provide (particularly in Table 2) a compendium of self-report measurements for policy makers to use for program evaluation.

Practice implications

A number of jurisdictions are seeking input from patients on the quality and accessibility of health care services. A number of the measurement tools would be highly relevant for clinicians to identify performance as part of quality improvement.

Conclusion

Tools for use in refugee health research should have demonstrated reliability and validity in refugee populations to ensure accurate measurement of the health concept(s) under investigation. Consideration should also be given to the setting in which the tool was originally designed. This review shows that there are currently a number of reliable and valid measurement tools available for use in refugee health research which can be used across a variety of settings. However, further work is required to achieve consistency in tool quality and in the use of these tools. Methodological guidelines are required to assist researchers and clinicians in the development and testing of subjective health measurement tools. In the interim, an achievable and very useful study would be a comprehensive evaluation of the most current and robust self-rated health measurement tools for use within refugee health research.

Abbreviations

PRISMA: Preferred reported items in systematic reviews and meta-analysis; PTSD: Post-traumatic stress disorder; UNHCR: United Nations High Commission for Refugees; USA: United States of America

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Authors' contributions

AD, JE and GR conceived and designed the scoping review. AD developed the search strategy, completed the database searches and preliminary synthesis of findings. AD screened all potential articles and reviewed all included studies. As a quality check, GR and JE independently reviewed 10% of the included studies. AD collated all materials, completed the analysis of key findings and prepared the manuscript. JE and GR edited the final manuscript, and all authors read and approved the final version prior to submission.

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Appendix 2: An investigation into the association between pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia. A protocol for a mixed methods study

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An investigation into the association of pre- and post-migration experiences on the self-rated health status among new resettled adult humanitarian refugees to Australia: a protocol for a mixed methods study

Alison Dowling[1*], Joanne Enticott[1,2], Marina Kunin[1] and Grant Russell[1]

Abstract

Background: Refugees are one of the most vulnerable groups in our society. They are at risk of poor physical and mental health outcomes, much of this attributed to traumatic events prior to migration and the additional risk factors refugees face in the host nations. However, how migration factors shape the health of resettling refugees is not well understood. This study uses a mixed methods approach to examine how pre- and post-migration factors shape the self-rated health of resettling adult refugees in an effort to address the current knowledge gap.

Methods: This study will use a sequential explanatory mixed method study design. We begin by analyzing resettlement and health data from the 'Building a New Life In Australia' longitudinal study of humanitarian refugees resettled in Australia to identify significant associations between migration factors and refugee health. Then, a series of semi-structured interviews with resettled refugees will further explore the lived experiences of refugees with respect to the relationship between migration and refugee health. Finally, we will integrate both sets of findings to develop a detailed understanding of how and why migratory factors contribute to refugee health during resettlement.

Discussion: There is a paucity of studies that examine the multidimensional nature of refugee health during resettlement and as a result, little is understood about their resettlement health needs. This information is required to inform existing or new resettlement interventions to help promote or improve refugee health. To overcome these limitations in the research knowledge, this study will use a mixture of study methods to illustrate the complex and multifaceted determinants of refugee health during resettlement in Australia.

Keywords: Refugees, Humanitarian, Resettlement, Self-rated health, Longitudinal, Explanatory mixed-methods

Background

Violent conflicts and persecution are causing increasing numbers of people to be forcibly displaced [1]. Among the 65.6 million people displaced in 2016 are 22.5 million refugees [1]. Refugees who are unable to return to their home country for fear of persecution may be offered resettlement in a third country [1]. Refugees who are accepted for resettlement are among the most vulnerable groups in our society in terms of risk for poor health due to their past and current experiences [2–10]. As one of the current 37 countries worldwide that provide resettlement programs, Australia currently accepts approximately 16,550 refugees each year for permeant resettlement [11].

Many refugees are affected by their pre- and post-migration experiences [12–14]. Most will have witnessed or experienced pre-migration trauma including: torture; human rights violations and systematic violence [15–18].

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These events may have a lasting impact on psychological and physical well-being [6, 10]. For example, pre-migration trauma is among the most consistent factors associated with poor mental health in resettled refugees [19, 20]. The time following immigration is often experienced as a time of crisis, stress and adjustment and there is evidence suggesting that resettlement issues, such as housing, employment and financial stress, worsens refugees' health [19, 21–26]. Therefore, past and current experiences can potentially place refugees at an increased risk for health problems.

Refugee host nations need to understand the health needs of this vulnerable and ever-growing population. However, the impact that migration experiences have upon the health of resettling refugees is not well understood. Some of this knowledge gap can be attributed to methodological limitations in the current research. While qualitative studies of the refugee migration experience provide valuable insights into the meanings of displacement, transition and resettlement [27], it is often difficult to generalise these findings to the broader resettled population [28]. When it comes to the measurement of refugee health, most studies are cross-sectional in design and utilize a variety of quantitative instruments [29]. This has meant that refugee health data is often conflicting and difficult to interpret and compare and can provide only a 'snapshot' of a single moment in the refugee resettlement experience. Also lacking are approaches combining longitudinal and qualitative designs that can adequately capture the multidimensional, transitional and contextual elements of the refugee resettlement experience.

Longitudinal studies are needed to detect changes in the characteristics of resettling refugees over time and factors associated with these changes (ie. cause and effect relationship). The refugee resettlement experience is a time of change and resilience, and refugee research must be responsive to such change. Longitudinal studies of resettling refugees can gather important data about the health of refugees, including risk and protective factors and long -term health outcomes. The combination of longitudinal inquiry with qualitative research allows for both measurement and meaning [28]. That is, the qualitative approach gives voice and context to the refugee experience, while the longitudinal approach can be used to provide population-based evidence [28]. This is important because without such information, support services may not be able to effectively deal with the range of challenges that have evolved from the refugee journey and new settlement. Without this knowledge, it is difficult for resettlement nations, such as Australia, to support positive resettlement experiences for refugees and can lead to a significant financial cost to the resettlement nation.

We present a study protocol designed to address these knowledge gaps. The protocol describes a mixed methods approach to identify migration factors that play an important role in the long term refugee health using a combination of quantitative and qualitative data obtained from resettled refugees. Firstly, we will examine pre- and post-migration factors that are associated with self-rated general and mental health using data from a large, longitudinal survey of resettled refugees in Australia. Semi-structured interviews will then be conducted to explain the results of the quantitative study that require further follow up or explanation; such as unexpected findings. To our knowledge, this is the first study of its kind to use the described methodological approach to investigate the health of resettled refugees. It is anticipated that the knowledge that emerges from this study will provide a valuable insight into the health of resettling refugees and lead to recommendations for resettlement services that might be more effective than those currently in place.

Aim

The overall aim of the study is to identify and explore how pre- and post-migration factors influence self-rated health within adult humanitarian refugees to Australia.

Research questions

Quantitative study

Which pre- and post-migration factors are associated with the self-rated health of adult refugees during the first 3 years of resettlement?

Qualitative study

How do migration experiences influence the health of resettled refugees in Australia?

Methods

The study will adopt an explanatory mixed methods design using sequential quantitative-qualitative methods [30]. Sequential procedures elaborate or explain the findings of one method with another method [30]. The first phase of the study will involve the secondary analysis of settlement data collected as part of the Australian Government's 'Building A New Life in Australia' longitudinal survey of resettled refugees living in Australia [31]. Statistical analysis of the 'Building A New Life in Australia' survey data will be used to identify migration variables that are significantly associated with the health outcomes of resettled refugees. The second phase of the study, namely the qualitative stage, will be designed and carried out for the purpose of interpreting and explaining the results of the quantitative phase using the perspectives of refugees themselves via semi-structured interviews. In the third phase, the quantitative and qualitative data are merged and interpreted. This type of

mixed methods study design is used when qualitative data is valuable for explaining or expanding the quantitative findings, particularly in the context where further explanation is required, such as statistical differences among groups or individuals with unexpected findings [32]. In this study, the qualitative portion will explain *how* the migration factors, identified in the quantitative study; play a role in the health of resettling refugees; thereby providing both objective and subjective knowledge of the phenomena under investigation.

See Fig. 1 for the mixed methods study framework.

Phase 1: quantitative study

We will examine data from the first three waves of the BNLA study, collected from October 2013 to March 2016. The BNLA is a 5 year national study (2013–2018) conducted by the Australian Government's Institute of Family Studies to examine how humanitarian refugees settle into a new life in Australia [31, 33]. Details of the 'Building A New Life in Australia' study is outlined in existing documents [31, 33] and briefly described below.

Ethics approval and consent to participate

The original 'Building A New Life In Australia' study was approved by the Australian Institute of Family Studies (AIFS) ethics committee, which is registered with the National Health and Medical Research Council (NMHRC). All necessary administrative permission to use the "Building A New Life in Australia" data have been obtained by the study authors. De-identified BNLA data is accessible by authorized researchers who have obtained permission from the Australian Department of Social Services. This permission was obtained by study authors AD, JE and GR. Ethics exemption to use the data was granted by the Monash University Research Ethics Committee.

Consent for publication

Obtaining individual consent from participants to use their de-identified data was not required by the study authors and ethics exemption to use the data was granted by the Monash University Research Ethics Committee.

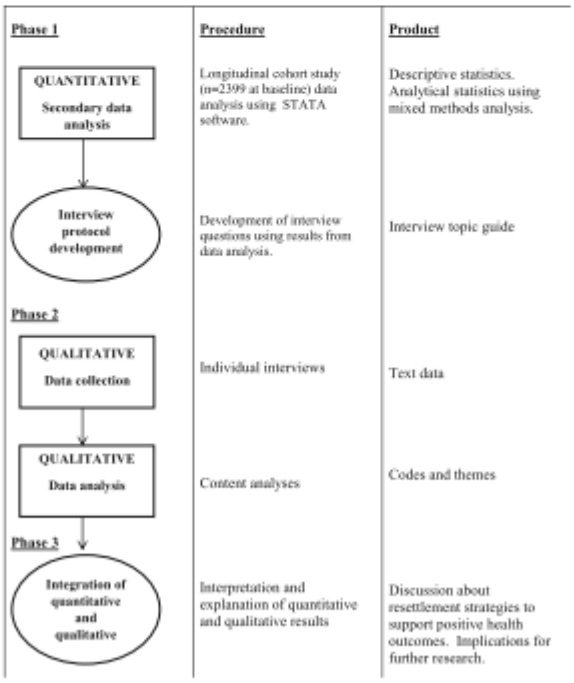

Fig. 1 The mixed methods study framework. (Figure adapted from Creswell et al., 2003) [30]

Participants

In this part of the study, no participants will be recruited or contacted by the researchers. Instead, we will conduct a secondary analysis of the sample recruited for the 'Building A New Life in Australia' study. To be eligible for the 'Building A New Life in Australia' study, individuals needed to be aged 15 years and over and had been granted a permanent humanitarian visa by the Australian Government in the 3–6 months preceding the baseline survey [31]. The respondents are from 35 different countries and speak 50 different languages. At baseline, the ages of respondents ranged from 15 to 83 years [31].

Sampling

Participants for the 'Building A New Life in Australia' study were drawn from the Australian Department of Immigration and Border Protection settlement database from 11 locations around Australia. Migrating Units (MU) were the primary sampling units for the 'Building A New Life In Australia' study [31, 33]. Migrating Units consisted of principal applicants (PA) and secondary applicants (SA). Principal Applicants were the lead participant for the study, and were the initial individuals contacted for participation. Secondary Applicants are other members of the Migrating Unit noted on the Principal Applicant's visa application (eg. spouse or child) [31, 33].

Recruitment

Invitations to participate in Wave 1 of the study, in English and primary Principal Applicant language, were sent to the Principal Applicants. Bilingual Community Engagement Officers, also employed to assist researchers recruit for Wave 1; liaised with community leaders to locate individuals and provide a bilingual perspective to optimise recruitment of study participants. After Principal Applicant agreement to participate, Secondary Applicants within consenting Migrating Units invited to participate. Invitations to participate in waves 2 and 3 were extended to participants in the previous wave, via mail and telephone [31].

Measurement

This study will utilise data collected via the 'Building A New Life in Australia' survey and covers a range of key domains relevant to refugee resettlement (eg. demographic, housing, pre-migration experiences, health) [31]. The 'Building A New Life in Australia' survey was translated into 14 different languages with the availability of interpreters [31].

Data collection

The first three waves of 'Building A New Life in Australia' data were obtained using alternating waves of home visits (Waves 1 and 3) and telephone interviews (Wave 2) [31].

Variable selection

Variable selection for this study was informed by a conceptual framework oriented to Cross-Denny & Robinson's social determinant of health model (SDOH) [34]. A review of the literature reporting significant predictors of refugee health outcomes informed the selection of candidate variables from the 'Building A New Life in Australia' dataset to populate the social determinant of health model. The model includes five key areas or determinants of refugee health: Political and Socio-economic, Economic stability, Education, Community and Social Context and Neighborhood and Physical Environment. See Fig. 2 for the social determinant of health model used to frame this study. Only variables asked across all three waves will be included in this study.

Outcome variables

We have four outcome variables: 1) general health; 2) severe mental illness; 3) Post Traumatic Stress Disorder (PTSD); and 4) aggregated mental health, combining 2) and 3).

1) The general health status item used in the BNLA study is "Overall, how would you rate your health during the past 4 weeks?" and is taken from the 36-Item Short Form Health Survey (SF-36) [35]. The SF-36 is a generic measure of self-reported mental and physical health status in past month. Shorter versions of the SF-36, in which this single item are contained, have reliability and validity among refugee populations [29]. Responses in the BNLA survey are scored on a 6-point Likert scale ranging from "Excellent" to "Very Poor". A dichotomous variable will be created and comprise of two response categories of "Excellent-good" health and "Fair-Poor" health.
2) Severe mental illness experienced in the past 4 weeks is measured in the 'Building A New Life in Australia' survey using the Kessler Screening Scale for Psychological Distress (K6). The Kessler-6 (K6) is a simple six-item measure of non-specific psychological distress [36]. In the 'Building A New Life in Australia' survey, the K6 scores range from 9 to 30 and a score ≥ 19 is used as a cut-off for the positive outcome of 'severe mental illness' [31]. While the validity of the K6 is not yet formally established in refugee populations, it has good reliability among refugee groups [29] and is well-validated among non-refugee populations [37]. Our study will use a dichotomous variable indicating the

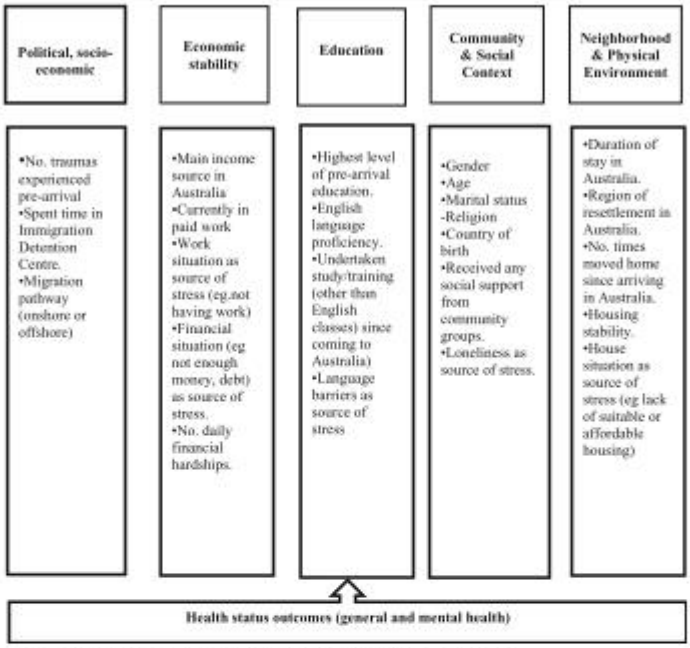

Fig. 2 Conceptual framework for the social determinants of health in resettled refugee populations

presence or absence of probable serious mental illness.

3) Post Traumatic Stress Disorder (PTSD) is measured in the 'Building A New Life in Australia' survey using the PTSD-8 [38]. The PTSD-8 is derived from Part 4 of the Harvard Trauma Questionnaire [39], which is a longer measure of trauma symptoms specifically designed for use in refugee populations. Respondents are asked how much each symptom has bothered them a) since the trauma and, if yes, b) in the past month. Items are answered on a 4-point scale ("not at all" to "extremely"). Respondents who answered "sometimes" or "most of the time" for at least one item in each PTSD domain are classified as having PTSD [31]. The PTSD – 8 has both reliability and validity among refugee populations [29].
4) An aggregate ordinal measure combining both serious mental health and PTSD outcome variables will also be examined. This variable will be coded to comprise of three response categories indicating the presence or absence of 'mental illness' and/or 'PTSD' across a given wave. (That is, "neither serious mental illness or PTSD present"; "serious mental illness present, but not PTSD"; "PTSD present, but not serious mental illness"; "both mental illness and PTSD present".

Data analysis

Statistical analysis will include descriptive and modelling stages. Descriptive statistics, such as frequencies and percentages, will be used to describe the overall characteristics of the sample population, such as socio-demographics, migration experiences and self-rated health outcomes. Modelling will be used to guide variable selection, examine relationships longitudinally between categorical outcomes and predictor variables. A variable exclusion process will be applied in several steps. Firstly, univariate ordinal regressions will be used to examine associations between baseline predictor variables and outcome variables, with variables retained at $p < 0.1$. Secondly, collinearity will be examined using Pearson's correlation coefficient and one candidate variable will be selected from two or more collinear variables when $r > 0.5$. This will ensure that variables giving the same information will be excluded from the final model. Third, multivariate panel data models will be used to examine associations between candidate variables and the primary outcome measures longitudinally. Variables at $p <$

0.1 will be retained. Finally, candidate variables will be modelled over 100 bootstrap samples at 95% resampling for the data set. Candidate variables will be selected for use in final models if they are identified as significant in 100 bootstraps.

Mixed effects models will be used to examine associations between predictor variables and outcome variables. As the Migrating Unit was the primary sampling unit for the 'Building A New Life in Australia' study, the sampling method was clustered and therefore appropriate for analysis with mixed effects modelling. The mixed effects model account for *inter*-individual random effects *between* different families (Migrating Units) and individual participants [40]. Mixed effects modelling also account for *intra*-individual fixed effects; repeated measures *within* individuals [40].

Stata/SE 15.1 will be used for all analysis [41]. All analyses will use adjusted weights unless otherwise specified.

Phase II: qualitative study

The second phase of this study, the qualitative research, will be used to interpret or reflect on the quantitative findings in terms of deeper understanding of what meanings and reasoning refugees attribute to their health during resettlement, in particular with regard to their migration experiences.

Ethics approval

Permission to carry out the qualitative study and its design has been granted by Monash University's Human Research Ethics Committee: Approval Certificate Number 12616. All participants in the qualitative study will be required to provide written informed consent prior to the interviews.

Conceptual framework

A qualitative phenomenological approach will be used in this research to understand the experience of health of resettled refugees in Australia. It will explore the meaning of health for resettling refugees as reflected in their thoughts on health and migration. Understanding their perspectives will help to elucidate further the explanatory models of this population group and develop evidence based strategies to improve health services for this population.

Recruitment

A purposive criterion sampling strategy will be used to recruit participants for this study as this approach will allow us to select respondents based on the shared experience of becoming a refugee who has migrated to, and resettled in, Australia. The sample size for this study will follow the concept of saturation [42]. That is, we will recruit participants until the collection of new data does not provide any further information that will assist in our answering the research question. We anticipate that a minimum of 10 interviews will be required before saturation starts to occur.

Participants will be recruited through centers that provide adult migrant English language programs to refugees located in Melbourne. Permission will be obtained from each center to allow the students to be approached. The primary researcher will visit classes to speak to the students about the study and students will be invited to participate in the study. The primary researcher will then work with potential participants/participants to organize another time to meet with them for interview at a location (eg. a private room at the English learning center or their home) and time suitable to them, (eg. prior to or after their English class).

Inclusion criteria

Refugees who participate in English language classes in Melbourne will be eligible to participate in the study. The rationale behind our recruitment strategy is that humanitarian refugees who resettle in Australia are offered 510 h of free English language tuition [11]. In addition, those on humanitarian visas must meet the following time frames from the date of visa commencement or arrival in Australia to remain eligible: 1) they must register within 6 months of receiving their protection visa; 2) start studying within 12 months and 3) finish studying within 5 years [11]. Therefore, humanitarian refugees living in Australia are required to undertake and complete English language classes. Other inclusion criteria for the study will include individuals who:

(1) aged over the age of 18 years;
(2) have been permanently resettled in Australia for ≤ 4 years;
(3) have sufficient English language competency as assessed by general ability to hold a conversation and read basic English; and
(4) are able to provide informed consent to participating in the study

Data collection

Semi-structured, one-on-one interviews will be used to examine the migration and health experiences of participants. The use of semi-structured interviews is suitable for this study as they are designed to draw out the refugee narratives of the significant domains of the refugees' experience of health and migration. The explication of these narratives will allow us to gain a better understanding of the ways in which these experiences are perceived, encountered and negotiated within refugee populations [43]. Such knowledge can be used to ensure that interventions designed for resettled refugee communities are

appropriate and are targeting those variables considered most critical by the refugees themselves [43].

Participants will be invited to be interviewed individually to capture the experience of health and migration. Semi-structured interviews will be conducted at a venue of the participant's choosing (e.g. home, English learning centre). The interview data will be recorded through tape recording and note taking.

Measures

The data will be collected using an interview designed using the results of the quantitative study. The interview will further probe significant or anomalous results obtained from the quantitative study regarding the relationship between migration factors and health status.

Data analysis

Data analysis in this study will be informed by the recommendations for phenomenological and qualitative analysis set forth by Creswell [30]. All interviews will be transcribed verbatim and then checked for accuracy. The data analysis will involve the identification of themes that are considered the respondents' expressions of the salient experiences of their health and migration, as well as their concerns [30]. This process involves two steps. The first step involves open coding where interview transcripts are read several times and key issues mentioned by respondents are noted [30]. The second step will involve selective coding where phrases, statements, and comments are labelled and categorized according to their content. The second stage involves identifying connections between the codes identified in stage one so that emergent themes can be identified [30]. The identification of emergent themes occurs by noting similarities and differences in the content of the respondents' statements [30]. This is then followed by translating the emergent themes into a narrative account of the experiences of the participants [30].

Phase III: mixed methods study

Mixed methods research provides strength to offset the weaknesses of both quantitative and qualitative research [44] and is well suited the current study as it can ensure a rigorous examination of the association of migration factors and refugee health. A mixed methods research design will enable us to utilize multiple methods of data collection and analysis. This will enable a comprehensive study of our complex study of migration and refugee health [44]. Further, a mixed method framework will help us answer questions that cannot be answered by a singular quantitative or qualitative study [32]. While the quantitative phase will allow us to identify *what* migration factors are associated with health outcomes among resettling refugees, it will not explain or elaborate why (or how) this association occurs and relies on qualitative explanations from the community under investigation. Therefore, both methodologies will complement and extend each other, by addressing the research questions from different perspectives. In this way, the study design is sequential and explanatory (or connected) [30].

In this study, the authors will connect the quantitative and qualitative data by selecting the participants for the qualitative interviews using similar criteria to the quantitative study. This will ensure that comparisons are able to be made across the two study phases in terms of the information collected from the study participants. Furthermore, as the findings from the quantitative study will be used to develop a framework for the topic guide for the subsequent interviews, integration will flow from quantitative data analysis into qualitative data collection. For example, any significant, non-significant or surprising quantitative results that require explanation will be used in the development of the qualitative interview guide.

In this way, the themes from the qualitative study will explain the quantitative results in a manner that could not be accomplished using either study method alone.

Discussion

This explanatory mixed methods study design in refugee health research is an approach to examine the association of migration experiences on the self-rated health status of resettled humanitarian refugees in Australia. It is more comprehensive than previous studies due to a quantitative and longitudinal analysis of refugee health determinants using a large and ethnically diverse cohort of resettled refugees living in Australia. This inquiry will reveal significant health factors and health outcomes among refugees within the initial stages of resettlement. For example, post-migration unemployment rates among resettled refugees are typically high [45] and studies have shown a strong positive association between unemployment and mental illness among refugee populations. However, the mechanism of employment in relation to mental illness among refugees is unknown. Evidence as to whether it alleviates economic stress, provides a sense of purpose or is a source of community support is lacking in the literature. Such insights could be gained from explanations derived from the refugees themselves. Further, this information would provide a useful framework for the provision or improvement of refugee resettlement programs, such as job skills and literacy programs.

It is only once we understand the determinants of refugee health that effective interventions can be provided. The combination of quantitative and qualitative methods will give new and rich insights into the health of resettling refugees as navigate their way into a new life. Such information is important so that we understand

the range of adversities refugees face and their relation with mental and physical health symptoms, as well as how health changes from the point of arrival and across years of residence in the host country. This knowledge could build an evidence base for development of improved settlement policies and programs, such as targeted health care and health promotion. It is also intended that this protocol will contribute to the awareness among researchers of the value of mixed methodologies in future refugee health research.

Ethical considerations

Research involving refugees as study participants poses unique ethical challenges. Refugees can be vulnerable, particularly when engaging as subjects in research [46]. Ethical concerns can include how refugees may be harmed or benefited by research; what they might understand or not about the research process, and to what extent they will feel able to make a free choice [28]. Some of the key methodological challenges of research with refugee populations are developing appropriate research approaches with populations with a range of literacy skills and languages, who are unfamiliar with research and have diverse migration experiences. In addition, research must not add to the burdens of resettlement, and should ideally contribute to a positive experience of adjustment to a new country. To minimize such challenges, the current study has been designed with a number of ethical considerations in mind. These are discussed below.

The recruitment strategy for the qualitative study will focus on settings, such as English migrant learning centers, because it is anticipated that potential participants may already feel some sense of belonging, security and trust with the these center(s). Potential participants will be chosen by the center staff to ensure that only students with sufficient English language competency are approached. To address any difficulties with disclosure and comprehension, all participants will receive a short oral presentation about the study. This talk will be given by the first author at each recruitment site so that a relationship with potential participants can be established. Also, any questions about the study can be addressed at the time. To ensure all potential participants have the capacity to make an informed decision about participating in the study, they will be given detailed written information on the study, which informs them that they will be asked to sign a consent form indicating their willingness to participate and attend an interview. Translated copies of study documentation will be also available to participants. Where required, translators will be available to attend the interviews. All interpreters will be briefed around issues of confidentiality.

To minimize the likelihood of distress among participants, the interviews have been to ensure that participants are not asked to disclose any details of any past traumatic traumas experienced. The questions are designed so that participants provide as much or as little information as they feel comfortable providing, regarding their migration experiences. The participant Information Sheet provides information regarding appropriate counselling and support services that can be accessed by participants should they feel distress or discomfort at any time during their participation in the study or interview. Participants will also be informed that they can stop the interview until such time that they wish to continue. Participants will be given a $20.00 gift card to acknowledge the time and effort involved in participating in the study and to offset any travel costs.

Abbreviations

BNLA: Building A New Life In Australia; K6: Kessler Screening Scale for Psychological Distress; MU: Migrating Units; NMHRC: National Health and Medical Research Council; PA: Principal applicants; PTSD: Post Traumatic Stress Disorder (PTSD); PTSD-8: Posttraumatic Stress Disorder Inventory- 8 items; SA: Secondary applicants; SDOH: Social determinant of health model; SF-36: 36-Item Short Form Health Survey

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Availability of data and materials

The results of the quantitative and qualitative studies are yet to be published. The de-identified BNLA data was obtained (with approval) from the Australian Government's Department of Social Services. All datasets used in this study are publically available from the Australian Government's Department of Social Services at the website: https://www.dss.gov.au/national-centre-for-longitudinal-data-ncld/access-to-dss-longitudinal-datasets.

Authors' contributions

AD and GR designed the original proposal. AD and MK designed the social determinants of health model used to guide the quantitative study variable selection. AD is responsible for drafting the manuscript supported by all authors. All authors (AD, GR, JE and MK) participated in discussing the design of the study and developing the research protocol. All authors (AD, GR, JE and MK) have read and approved the final manuscript.

Ethics approval and consent to participate

The quantitative study has been exempt by the Monash University Human Research Ethics Committee. The qualitative study has been approved by the Monash University Human Research Ethics Committee (Approved 03 May, 2018; Project Number 12616). All participants in the qualitative study will be required to provide written informed consent prior to the interviews.

Consent for publication

Not applicable

Competing interests

All authors declare that they have no competing interests.

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Appendix 3: The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study

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The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study

Alison Dowling[1*], Joanne Enticott[1,2], Marina Kunin[1] and Grant Russell[1]

Abstract

Background: Refugees are potentially at an increased risk for health problems due to their past and current migration experiences. How migration factors shape refugee health is not well understood. We examined the association between migration factors and the self-rated general health of adult humanitarian refugees living in Australia.

Methods: We analyzed the first three waves of data from the 'Building A New Life In Australia' longitudinal survey of 2399 humanitarian refugees resettled in Australia. The study outcome was self-rated health measured by the 36-Item Short Form Health Survey. Predictors were migration process and resettlement factors. We used generalized linear mixed models to investigate the relationship between predictor and outcome variables.

Results: Poor general health persisted among this refugee population at high levels throughout the three-year follow-up. At baseline, 35.7% (95% CI: 33.8–37.7%) of the study population reported poorer general health. Female gender, increasing age and post-migration financial stressors were positively associated with poorer general health. Having a university degree and absence of chronic health conditions were seemingly protective against declining general health (OR: 0.50; 95% CI: 0.65–1.81 and OR: 0.15, 95% CI: 0.09–1.04, respectively).

Conclusion: Our results show that there is persisting high prevalence of poorer general health among adult refugees across the initial years of resettlement in Australia. This finding suggests unmet health needs which may be compounded by the challenges of resettlement in a new society, highlighting the need for increased clinical awareness of this sustained health burden to help inform and prepare refugee health care and settlement service providers.

Keywords: Refugees, Humanitarian, Self-rated health, General health, Migration, Resettlement, Longitudinal, Building A new life in Australia

Background

In 2017, almost 68.5 million people have been forcibly displaced from their homes, the largest number ever recorded. Of these, 25.4 million were recognised as refugees, while 3.1 million were asylum seekers [1]. Refugees are often unable to return to their home country for fear of death or persecution and may be offered resettlement in a third country [1], such as Australia, which offers resettlement to 18,750 refugees and others with humanitarian needs each year [2]. Refugees who are accepted for resettlement are among the most vulnerable groups in our society in terms of risk for poor health due to their past and current experiences [3]. Therefore, it is important for resettlement nations to understand the long-term health needs and settlement prospects of this vulnerable and ever-growing population, so that timely and appropriate supports can be provided [4–9]. However, the extent to which migration factors shape the

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long-term health of resettling refugees is not well understood.

Some of this knowledge gap can be attributed to methodological limitations in the current research [3]. To date, the bulk of the research investigating the health of resettling refugees has largely employed a cross-sectional methodology to investigate mental health outcomes, using a variety of quantitative measurement tools [3]. This has meant that information is not available on the full spectrum of the refugee health burden, but that refugee health data is often conflicting and difficult to interpret and compare and can provide only a 'snapshot' of a single moment in the refugee resettlement experience [3]. Longitudinal approaches that collect self-rated general health information from refugees may be one way to overcome this knowledge gap.

Self-rated general health (SRGH) is the subjective measurement of an individual's general health and is based upon a simple question in which respondents are asked to rate their general health during the past 4 weeks on a scale ranging from "excellent" to "very poor" [10]. Despite its simplicity, SRGH has been found to be an unusually strong predictor of mortality, morbidity and health service utilization [10]. For example, a recent meta-analysis found that those who report "poor" health have a twofold higher risk of all-cause mortality relative to those who report "excellent" health [10]. In ways that are still unclear, SRGH integrates biological, mental, social and functional aspects of a person, including individual and cultural beliefs and health behaviours [11, 12]. Therefore, SRGH can capture information about an individual's health and well-being that more objective measures cannot. Given that refugees have been shown to rate their health as fair-to-poor more frequently than other immigrants after arrival in a developed country [13], we propose that SRGH may be a valuable health index for use among refugee populations; especially given that SRGH has proven reliability and validity among refugee populations [3].

To address the empirical gap in the refugee health literature, this present study examined the association between self-rated general health and pre- and post-migration experiences of resettled adult humanitarian refugees living in Australia. We used the first three years of data from the Australian Government's 'Building A New Life in Australia' (BNLA) longitudinal survey. Other analyses of the BNLA survey have been published [4, 14–17], but none have investigated the impact of migration on the self-rated health of the BNLA respondents. To our knowledge, this is the first study of its kind to use the described methodological approach to investigate the health of resettled refugees. It is anticipated that the knowledge that emerges from this study will lead to recommendations for resettlement services that might be more effective than those currently in place. The aim of our study is to gain insight into the impact of migration on the long-term general health of refugees during their initial resettlement in Australia.

Methods

Data sources

We conducted a secondary examination of the first three waves of the BNLA study, collected from October 2013 to March 2016. The BNLA is a five-year national study (2013–2018) conducted by the Australian Government's Institute of Family Studies to examine how humanitarian refugees settle into a new life in Australia [18]. The Australian Federal Government's Department of Social Services (DSS) funded the BNLA study. Further information about the BNLA study design can be found in publicly available documents [18].

Ethics approval

The BNLA study received ethics approval by the Australian Institute of Family Studies Human Research Ethics Committee. De-identified BNLA data is accessible by authorized researchers who have obtained permission from the Australian Department of Social Services. This permission was obtained by study authors AD, JE and GR. Ethics exemption to use the data was granted by the Monash University Research Ethics Committee (see Additional file 1).

Study population and sampling

The BNLA cohort comprised of individuals aged 15 years and over who had been granted a permanent humanitarian visa by the Australian Government in the 3–6 months preceding the baseline BNLA study [18]. Eligible participants were identified via the Australian Department of Immigration and Border Protection settlement database from eleven locations around Australia to ensure adequate sample size. Migrating Units (MU) were the primary sampling units for the study and consisted of principal applicants (PA) and secondary applicants (SA). Principal Applicants were the lead participant for the study, and were the initial individuals contacted for participation. Secondary Applicants comprised other members of the Migrating Unit listed on the Principal Applicant's visa application. The Principal Applicant had to consent to participating before SAs could be invited to do so [18]. A total of 2031 out of 4035 eligible Principal Applicants were contacted and 1509 Principal Applicants and 890 Secondary Applicants completed baseline interviews. The respondents are from 35 different countries and speak 50 different languages and at baseline, aged between 15 and 83 years [18].

Data collection

The first three waves of 'Building A New Life in Australia' data were obtained using either home visits (Waves 1 and 3) or telephone interviews (Wave 2). The BNLA written survey was translated into 14 different languages for Wave 1. A total of 19 languages were covered for the survey with the aid of interpreters [18].

Variable selection

A number of predictor variables were selected from the BNLA survey and related to migration and resettlement, socio-demographics and the presence/absence of chronic conditions.

A conceptual framework used for this study was informed by Cross-Denny & Robinson's social determinants of health model [19]. The Cross-Denny & Robinson's model uses five key areas or determinants that are particularly relevant for oppressed and marginalised populations. We added "Political, Socio-Economic" category to encompass the significant associations between structural/political factors (such as spent time in immigration detention centres, migration pathway) and poorer health among refugees. Our adapted model includes six key determinants of refugee health and 25 candidate variables (See Fig. 1). A review of the literature reporting predictors of refugee health outcomes informed the selection of candidate variables from the BNLA dataset to populate the social determinant of health model.

Outcome measures

Factors relating to migration and resettlement in host country and health were measured by the 'Building A New Life In Australia' self-report survey [18]. Our principal outcome variable was self-rated general health and used the question "Overall, how would you rate your health during the past 4 weeks?" selected from the SF-36 [20]. The SF-36 is a generic measure of health status with reliability and validity among refugee populations [3]. The BNLA survey uses a 6-point Likert response scale (*"Excellent"* to *"Very Poor"*). For our study, we use a dichotomous variable comprising of two health response categories of *"Excellent-Good"* and *"Fair-Very Poor"*. The decision regarding the creation of the two response categories was based on a review of the literature, which confirmed that our dichotomous response groupings were appropriate [21].

Statistical analysis

Analysis included descriptive and generalized linear mixed modelling (GLMM). Descriptive statistics describe the overall characteristics of the sample population at baseline, such as socio-demographics, migration experiences using means and standard deviations (SDs) for continuous variables and frequencies and percentages for categorical variables. All analyses used adjusted weights, provided by the BNLA project. Variables with over 10% missing data at baseline were excluded if we were unable to account for the missing data. Only variables asked across all three waves were included in the analysis. Continuous outcome variables, such as age, were transformed into categorical variables. All analyses were done with Stata/SE 15.1 [22].

To examine the relationships longitudinally between outcomes and predictor variables, GLMM were used. As the BNLA data involved multi-level, clustered sampling, GLMMs accounted for inter-individual random effects between different 'migrating unit' clusters (ie. the families) and individual participants, as well as intra-individual fixed effects or the repeated measures within individual participants. GLMMs were appropriate for our analysis as ordinary linear models are unable to handle clustered data. Variable selection for the final models occurred in several steps. Firstly, univariate regressions were used to examine associations between baseline candidate variables and outcome variables, with variables retained at $p < 0.1$. In the second step, collinearity was then examined using Pearson's correlation coefficient to remove highly correlated variables from the final model. In this study, one candidate variable was selected from two or more correlated variables when $r > 0.5$. The third step involved examining associations between candidate variables and outcome variables using multivariate GLMM. A variable denoting study time: 'wave' was included in these models. Variable at $p < 0.1$ were retained. In the last step, candidate variables were modelled over 1000 bootstrap samples at 95% resampling for the data set. Candidate variables were retained in final models if they were identified as significant ($p < 0.05$) in 1000 bootstraps over 50% of the time.

Role of the funding source

The BNLA is funded by the Australian Government's Department of Social Services and were not involved in the preparation of this manuscript or the analyses reported.

Results

Demographics

At baseline, 2399 individuals took part in the BNLA study. The mean age was 35.5 years (SD = 13.9) and 54.0% were male. Over half of the participants (61.0%) were married or partnered and nearly half (45%) were born in the Middle East. Almost a third (32.5%) had little to no schooling upon arrival to Australia and 12.1% held university qualifications. Before coming to Australia, 33.6% could speak English *'very well-well'*. A vast majority (88.9%) of participants had exposure to one or more traumatic experiences. Mostly, participants had been in Australia less than six

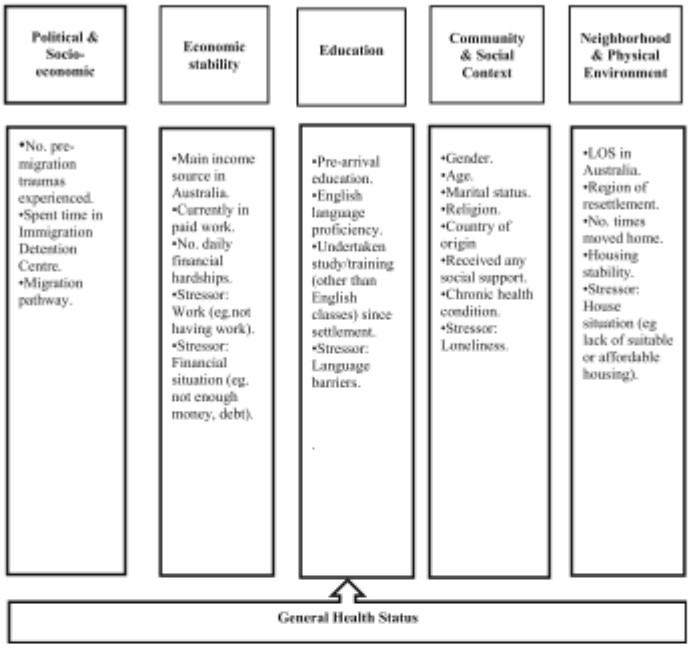

Fig. 1 Conceptual framework for the social determinants of health in resettled refugee populations (authors' own figure)

months (82.1%) and were living in metropolitan cities (90.7%). There was little financial stability with high unemployment (90.7%); high dependency on government income support (88.0%) and at least one financial daily hardship (42.3%). Only 9.3% were in paid employment at baseline. Stress caused by not having work, stable housing and language barriers was reported by 33.0, 28.1 and 56.0% of participants, respectively. Having a 'chronic' health condition was reported by 23.0% of participants at baseline. See Table 1.

GLMM results

Table 2 provides the results of generalised linear mixed effect models, with general health as the outcome variable and pre- and post-migration factors as the predictor variables across the three years of follow-up. Individual characteristics, such as being female, older in age, originating from the Middle East and having a university qualification were significant positive predictors of poorer general health. For example, our results show that over the three years of follow up, females have 2.02 the odds of reporting 'Fair-Very Poor' health compared with males. In terms of post-migration stressors, several economic factors were associated with the reporting of 'Fair-Very Poor' health among this refugee population. An increasing number of daily financial stressors was significantly associated with higher odds of reporting poorer health. For example, those with 3–6 daily financial hardships were at increased risk for reporting poorer general health than those without any daily financial stressors. "Other" main income source (ie. spouse/partner/parent's income) was also positively associated with poorer health (OR: 3.25, 95% CI: 0.013).

Not having a chronic disability/injury or condition was associated with reporting 'better' general health (OR: 0.15; 95% CI 0.09–1.04) among this refugee population. That is, those without a chronic health condition have 0.15 the odds of reporting 'Fair-Very Poor' health compared with those with a chronic health condition. Another way to interpret the results is that those who do not have a chronic health condition are 85% less likely to report poorer general health. We found no significant association between the health outcomes and duration of stay in Australia, education, accommodation, social support or discrimination.

Self-rated general health

The mean general health prevalence among humanitarian refugees was calculated in two ways: (1) using BNLA

Table 1 Baseline characteristics of humanitarian refugees in the Building A New Life in Australia project, 2013–14 (weighted data)

Characteristic	Description	Response	Total (*n* = 2399)*
Age, mean (years)	Age	–	35.5 (13.9)
Age category (years)	Age category	14–18	218 (9.1%)
		19–25	523 (21.8%)
		26–35	696 (29.0%)
		36–45	475 (19.8%)
		46–55	272 (11.4%)
		56–65	143 (6.0%)
		65+	69 (2.9%)
Gender	Gender	Male	1295 (54.0%)
		Female	1103 (46.0%)
Married or partnered	Married or has partner	Yes	1375 (61.0%)
		No	879 (39.0%)
Region of birth	Major groups based on the Standard Australian Classification of Countries major groups	Middle East	1073 (45.0%)
		Central Asia	482 (20.2%)
		Southern Asia	332 (14.0%)
		South-East Asia	226 (9.5%)
		Africa	273 (11.4%)
Education level, pre-arrival	Highest level of education achieved prior to arrival in Australia	Never attended school	350 (14.8%)
		< 6 years of school	419 (17.7%)
		6–12 years of school	1171 (49.4%)
		Trade or tech qualification	142 (6.0%)
		University degree	87 (12.1%)
English speaking proficiency	Currently understands spoken English	Very well/well	793 (33.6%)
		Not well/not at all	1571 (66.4%)
No. pre-migration trauma experienced	Number of pre-migration traumas experienced	None	248 (11.2%)
		1–2	1286 (57.9%)
		3 or more	689 (31.0%)
Migration pathway	Arrived in Australia via onshore† or offshore migration pathway††	Onshore pathway	458 (19.1%)
		Offshore pathway	1940 (80.9%)
Spent time in offshore Immigration Detention Centre(s)	Spent time in offshore Immigration Detention Centre(s) prior to resettlement	Yes	202 (8.6%)
		No	2146 (91.4%)
Duration of stay in Australia	Length of time spent in Australia	Less than 1 year	1968 (82.1%)
		1–2 years	271 (11.3%)
		2–3 years	76 (3.2%)
		More than 3 years	84 (3.5%)
Region of settlement in Australia	Region of settlement in Australia	Metropolitan cities	2174 (90.7%)
		Inner regional Australia	184 (7.7%)
		Outer regional Australia	39 (1.7%)
Currently in paid employment	Currently in paid employment in Australia	Yes	143 (9.3%)
		No	1403 (90.7%)
Main income source in Australia	Main source of income in Australia	Own salary/income	180 (7.7%)
		Government support	2059 (88.0%)
		Other	101 (4.3%)
No. daily financial hardships	Number of daily financial hardships	None	1307 (57.8%)

Table 1 Baseline characteristics of humanitarian refugees in the Building A New Life in Australia project, 2013–14 (weighted data) *(Continued)*

Characteristic	Description	Response	Total (*n* = 2399)*
	experienced in Australia	1–2	654 (29.0%)
		3–4	240 (10.7%)
		5–6	59 (2.6%)
Undertaken further study/training in Australia	Undertaken study or job training in Australia, other than English language classes	Yes	410 (17.4%)
		No	1956 (82.6%)
Stress-language barriers	Language barriers as main source of stress in Australia	Yes	1279 (56.0%)
		No	1009 (44.0%)
Stress-work situation	Work situation as main source of stress in Australia (eg unemployment, hours of work, conditions)	Yes	754 (33.0%)
		No	1534 (67.0%)
Stress-housing situation	Work situation as main source of stress in Australia (eg lack of suitable or affordable housing)	Yes	659 (28.1%)
		No	1629 (71.2%)
Stress-loneliness	Loneliness as main source of stress in Australia	Yes	363 (15.9%)
		No	1926 (84.1%)
Received any social support	Received any religious, like ethnic or community support in Australia	Yes	859 (35.8%)
		No	1539 (64.2%)
Has long term disability, injury or health condition	Presence of absence of long-term health condition that has lasted or is likely to last > 12 mths	Yes	859 (35.8%)
		No	1539 (64.2%)

*Data are provided as n (%) or mean (SD)
†Onshore pathway is available to those who wish to apply for asylum after arrival in Australia as an unauthorised maritime arrival or holder of valid visa (eg. tourist)
††Offshore pathway is available to those who may be eligible for resettlement to Australia, such as those identified by the UNHCR or those eligible for sponsorship to Australia

sample data, and (2) using the final model adjusting for model independent variables. Both methods used the provided sample weights. Both methods showed no significant changes in general health over time. See Table 3.

Using BNLA sample data, 35.7% (33.8–37.7%) of participants reported *"Fair-Very Poor"* self-rated health at baseline (see Table 2). At Wave 2, 691 (36.8%) participants' self-reported *'Fair-Very Poor'* general health (95% CI 34.6–39.0%) and 685 (39.7%) had *'Fair-Very Poor'* general health (95% CI 37.4–42.0%) at Wave 3.

Table 3 shows the prevalence estimates of "Fair-Very Poor" self-rated health calculated using the final GLMM model. In Wave 1, the prevalence for *'Fair-Very Poor'* general health was 34.6%. In Waves 2 and 3 the prevalence was 34.0 and 33.4%, respectively. This shows that the prevalence of *'Fair-Very Poor'* general health remained high across the 3 years but did not decrease or increase substantially over time. The significance of change in *'Fair-Very Poor'* general health over time was also examined using the final GLMM model.

Between Waves 1 and 2, there was no significant decrease in the prevalence of "Fair-Very Poor" self-rated health ($p = 0.779$). See Table 3. Waves 1 and 2 saw no significant differences in "Fair-Very Poor" self-rated health ($p = 0.802$). There was also no significant overall decrease between Wave 1 and 3 for "Fair-Very Poor" self-rated health ($p = 0.512$). Therefore, the results indicate that there was no significant change in "Fair-Very Poor" self-rated health over the three years of follow-up. In summary, on a population level, the point prevalence of "Fair-Very Poor" self-rated health remained high, but no overall significant increase (or decrease) in "Fair-Very Poor" self-rated health was seen over time.

Discussion

This study, to our knowledge, is the first to examine the long-term general health status of resettled adult humanitarian refugees in Australia. In doing so, we provide novel insights into the refugee experience of health as they adjust to conditions in a new society, including our revelation of a sustained and high prevalence of poorer general health among refugees over time. In addition, the factors associated with this poorer general health have not previously been reported in a longitudinal study of Australian humanitarian refugees. Consequently, this knowledge has the potential to build an evidence base for development of improved settlement policies and programs, such as targeted health care and health promotion [3].

The high and sustained prevalence of poorer general health suggests that our refugee population bears a

Table 2 Results from generalised linear mixed models using self-rated general health in past 4 weeks with "Excellent-Good" and "Fair-Very Poor" the outcome. OR-odds ratio; p = p-value; CI = confidence interval

Variable	Response	General Health		
		OR	p	95% CI
Gender	Male	–	–	–
	Female	2.02	0.000	(1.51–2.71)
Age Group (years)	18–25	–	–	–
	26–35	1.71	0.032	(1.05–2.78)
	36–45	3.45	0.000	(2.13–5.60)
	46–55	6.91	0.000	(3.83–5.50)
	56–65	9.86	0.000	(5.00–9.41)
	65+	8.32	0.000	(3.31–10.9)
Region of Birth	Middle East	–	–	–
	Africa	0.39	0.000	(0.17–0.56)
	Central Asia	0.39	0.000	(0.26–0.58)
	South-East Asia	0.92	0.802	(0.50–1.70)
	Southern Asia	1.08	0.755	(0.65–1.81)
Pre-arrival education	No schooling	–	–	–
	≤6 years of schooling	1.15	0.545	(0.73–1.82)
	6–12 years of schooling	0.70	0.118	(0.45–1.09)
	Trade or technical qualification	0.70	0.308	(0.36–1.38)
	University degree	0.50	0.021	(0.28–0.90)
Main income source in Australia	Own salary or wage	–	–	–
	Government support	1.50	0.156	(0.86–2.65)
	Other	3.25	0.013	(1.27–8.30)
No. daily financial hardships	0	–	–	–
	1–2	1.75	0.002	(1.23–2.51)
	3–6	3.01	0.001	(1.60–5.70)
Has long term disability, injury or health condition	Yes	–	–	–
	No	0.15	0.000	(0.09–1.04)

substantial health burden compared with the wider Australian population. For example, by comparison, 4% of the Australian population self-report poor general health and 10% of Australians rate their general health as fair [23]. Factors associated with refugee status are plausible explanations for this observed health disparity. For example, there is evidence to suggest that refugees in Australia experience multilevel barriers to the healthcare and this may be affecting their overall health outcomes [24, 25]. Although Australia provides generous support to humanitarian entrants, our results suggest that existing policies on refugee resettlement have been less effective than desired on improving the health of Australian refugees.

Consistent with other research is our finding of an association between post-settlement economic stressors

Table 3 Mean general health prevalence among humanitarian refugees in the BNLA project calculated two ways using: (1) sample data; and (2) final model adjusting for model independent variables. Both methods used the provided sample weights. (n)[1] = Number provided in the sample calculation only

General Health		Wave 1		Wave 2		Wave 3	
Fair-Very Poor	Weights applied	%(n)[1]	95% CI	%(n)[1]	95% CI	%(n)[1]	95% CI
Mean calculated from sample	Yes	35.7% (805)	33.8–37.7%	36.8% (691)	34.6–39.0%	39.7% (685)	37.4–42.0%
Mean calculated for model variables	Yes	34.6		34.0		33.4	

NOTE: No significant differences between waves as suggested by 95% confidence intervals and this was confirmed using z-tests: Waves1–2 difference z statistic = 0.28, $p = 0.779$; Waves 2–3 difference z-statistic = 0.25; $p = 0.802$; and Waves1–3 difference z-statistic = 0.66; $p = 0.51$

and poorer general health [13, 26, 27]. We also confirm a strong dose-response like relationship with daily financial hardships and poorer general health, however, this relationship has only been shown previously in cross-sectional studies of refugee populations [26]. Unemployment was not a significant predictor of poorer general health, which suggests that it is the financial consequences of unemployment which may be more important for the long-term general health among our refugee population. Nowhere in the literature has an association between main income and poorer general health been reported previously and our finding that 'other' main income source (ie. spouse/partner/parent's income) is interesting because humanitarian refugees in Australia can access welfare payments and employment [28].

Although the association found between the presence of chronic health conditions and poorer health among our refugee population is not unexpected [27, 29], we are the first to report this association in a longitudinal study of resettling refugees. Not only do we provide evidence of chronic disease prevalence among newly arrived refugees, but we also demonstrate its impact on long-term health. Our finding also confirms the reports of the reports of the rising prevalence of chronic health conditions in refugees' regions of origin, particularly the Middle East [30]. Resettling refugees are potentially susceptible to the development of chronic disease due to host nation stressors as well as the adoption of a less health western diet and a more sedentary lifestyle and resettlement stressors [31]. A number of refugee studies have reported that resettlement has been found to increase the risk of obesity and non-communicable diseases, including diabetes and hypertension, due to weight gain and resettlement stressors [32–34]. Left unmanaged, the chronic health burden among refugee populations is also likely to impact their resettlement success.

Female gender, older in age, Middle Eastern origin and education level were all found to be risk factor for poorer general health, confirming previous cross-sectional studies of refugee populations [35–37]. Previous research has shown that older refugees are particularly vulnerable to physical deterioration post-settlement [35] and there is solid support that poorer health has a higher prevalence among women [8]. Having a university degree (pre-migration) was significantly and negatively associated with long-term self-rated general health among refugees [35, 37]. Among refugee populations, it has been shown that those with lower levels of education are less likely to seek healthcare, participate in health promoting and disease promoting activities [38]. Therefore, it may be that those with a university qualification possess the skills to achieve a higher level of self-sufficiency with regards to their long-term health. That is, they may know their health needs better and are able to access health services better. Given that many refugees subgroups, such as female Afghanis, have little to no schooling [39], our result highlights the importance of understanding the education needs of resetting refugees as a way of offsetting adverse health outcomes.

Conclusion

Our study provides an insight into the long-term general health of resettling refugees in Australia and its associated risk factors. Our results highlight a pattern of additional health needs existing within this refugee population. The risk-factors for poorer self-rated health give shape to future interventions or policy responses to help in the health and well-being of this highly vulnerable group.

Limitations

There are several methodological limitations in this study. Retrospective reporting and reliance on self-reporting may run a risk of not remembering or misrepresenting the events and non-accurate measurement of symptoms [40], presenting a risk of recall bias, personal interpretations across languages and cultures. Further, the BNLA study collected information that is more comprehensive from principal visa applicants than from secondary applicants, which constrains the depth and breadth of findings of the study. Alternating face-to-face with telephone interviews may have introduced some inconsistencies across waves in that some respondents may have answered some questions differently depending on the interview style. Despite these limitations, this study has contributed to the literature by providing information about the migration experiences of a large and ethnically diverse cohort of refugees during their first three years of resettlement in Australia and the impact of such experiences on general health.

Implications of the findings

Our results show that there is persisting high prevalence of poorer general health among adult refugees across the first three years of their resettlement in Australia. This finding suggests unmet health needs which may be compounded by the challenges of resettlement in a new society. This result highlights the need for increased clinical awareness of this sustained health burden to help inform and prepare refugee health care and settlement service providers. It also underscores the importance for health professionals to consider broad health issues among refugee populations and highlights the potential value of the Australian Medical Benefit Schedule subsidy of refugee health assessments for recent refugee arrivals [41]. The association between poorer general health and settlement economic stressors highlight the importance of understanding and eliminating the barriers, which

lead to the high rates of unemployment among refugees, as a way of preventing negative health consequences. Qualitative research into the barriers to employment, using the perspectives of refugees themselves; would be a valuable addition to the current knowledge gap. This study also highlighted that attention should be given to assessing the specific needs of groups of refugees based on their demographic characteristics; for example, older, Middle Eastern females. Given the vulnerabilities of these groups, sustained targeted interventions upon entry to Australia would be beneficial to offset any further decline in health.

Additional file

Additional file 1: Monash University Human Research Ethics Committee exemption letter regarding the use of the 'Building A New Life in Australia' data sets. (DOCX 27 kb)

Abbreviations
AIHW: Australian Institute of Health and Wellbeing; BNLA: Building A New Life In Australia; CI: confidence interval; DSS: Department of Social Services; GLMM: Generalized linear mixed modelling; MU: Migrating Units; OR: odds ratio; PA: Principal applicants; SA: Secondary applicants; SF-36: 36-Item Short Form Health Survey; SRGH: Self-rated general health; UNHCR: United Nations High Commissioner for Refugees

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Authors' contributions
AD, JE and GR obtained access to the first three waves of data from the 'Building a New Life in Australia' project. AD and JE developed the analytical strategy. AD and MK designed the social determinants of health model to guide the variable selection process. GR reviewed all aspects of the study design. AD did statistical analysis and drafted the manuscript. All authors contributed to the data interpretation, manuscript writing, and final approval of the manuscript.

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Availability of data and materials
All datasets used in this study are available from the Australian Government's Department of Social Services at the website: https://www.dss.gov.au/national-centre-for-longitudinal-data-ncld/access-to-dss-longitudinal-datasets.

Ethics approval and consent to participate
Ethics exemption to use the BNLA data was granted by the Monash University Research Ethics Committee.

Consent for publication
Not required as data used in this study was de-identified.

Competing interests
The authors declare that they have no competing interests.

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Appendix 4: Monash University Human Research Ethics Committee exemption letter

Monash University Human Research Ethics Committee (MUHREC)

26 April 2018

Dear Alison,

RE: USING THE BUILDING A NEW LIFE IN AUSTRALIA DATA

Thank you for your email dated 23 April 2018 in regards to using the above data for research.

This is to advise that ethics approval is not required to use the above data as this was collected for use in research and is available by request only.

Please contact me if you require further information.

Sincerely

[redacted]

Executive Officer

Human Research Ethics

Cc: Professor Grant Russell, Dr Joanne Enticott

Human Ethics Office
Monash University
Room 116, Chancellery Building D
24 Sports Walk, Clayton Campus, Wellington Rd, Clayton VIC 3800, Australia
T: +61 3 9905 2052 Facsimile +61 3 9905 3831 E:
muhrec@monash.edu
http://www.intranet.monash/researchadmin/start/ethics/human
ABN 12 377 614 012 CRICOS Provider 00008C

Appendix 5: Monash University Human Research Ethics Committee approval letter for qualitative study

Monash University Human Research Ethics Committee
Approval Certificate

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposed study meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number: 12616
Project Title: The impact of migration on the health of resettled adult refugees living in Australia.
Chief Investigator: Professor Grant Russell
Approval Date: 03/05/2018
Expiry Date: 03/05/2023

MONASH University

Terms of approval – failure to comply with the terms below is in breach of your approval and the *Australian Code for the Responsible Conduct of Research.*

1. The Chief Investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash letterhead and the Monash University complaints clause must include your project number.
6. Amendments to approved projects including changes to personnel must not commence without written approval from MUHREC.
7. Annual Report – continued approval of this project is dependent on the submission of an Annual Report.
8. Final Report – should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected completion data.
9. Monitoring – project may be subject to an audit or any other form of monitoring by MUHREC at any time.
10. Retention and storage of data – The Chief Investigator is responsible for the storage and retention of the original data pertaining for a minimum of five years.

Thank you for your assistance.

Professor Nip Thomson
Chair, MUHREC
CC: Professor Grant Russell, Dr Marina Kunin, Ms Alison Dowling

List of approved documents:

Document type	File Name	Date	Version
Consent Form	PARTICIPANT CONSENT FORM v1.0_01.04.2018	1/04/2018	1.0
Supporting Documentation	ORAL PRESENTATION GUIDE_v1.0_01.04.2018	1/04/2018	1.0
Supporting Documentation	WITHDRAWAL OF PARTICIPATION_v1.0_01.04.2018	1/04/2018	1.0
Supporting Documentation	PARTICIPANT INTERVIEW SCHEDULE_v1.0_01.04.2018	1/04/2018	1.0
Supporting Documentation	EXPLANATORY STATEMENT_v1.0_01.04.2018	1/04/2018	1.0
Supporting Documentation	STUDY PROTOCOL_v1.0_06.04.2018	6/04/2018	1.0
Supporting Documentation	STUDY PROTOCOL_v2.0_27.04.2018	27/04/2018	1.0
Supporting Documentation	Response to MUHREC comments 27.04.29018	27/04/2018	1.0

Appendix 6: Participant interview schedule and general information

MONASH University

PARTICIPANT INTERVIEW SCHEDULE

Interview Date: _____
Interviewer name: _____
Interpreter name: _____
Location: _____
Participant ID: _____

Participant Name: _____
Telephone number: _____
Best time(s) to contact (if required): _____ AM _____ PM
Best days(s) to contact (if required): _____
Email (if applicable): _____
Address (if required): _____

The purpose of this project is to learn more about the things that determine the health of people with refugee backgrounds once they resettle in Australia.

Could you tell me the story of your journey to Australia?

(I want you to tell me about your journey as if it is a story, with a beginning and a middle, and then how things are for you now. There is no right or wrong way to tell your story; you can tell me your story in a way that is most comfortable to you.)

Prompts

- What made you leave your home country?
  - What sort of things helped you during this time?
    - Can you tell me more about this?
- What made it hard for you?
    - Can you tell me more about this?
- How did leaving your home country make you feel? [sad/angry]
- Do you think this time changed your health?
  - Was your health better or worse before you left your home country? Why is that?

        - If worse, when did you first experience these health concerns (repeat health concerns mentioned by participant)?
    - How was the journey to Australia from your home country?
        - What sort of things helped you during this time?
            - Can you tell me more about this?
        - What made it hard for you?
            - Can you tell me more about this?
    - How did you feel during this time? [sad/angry]
    - Do you think this time changed your health?
    - How has your life been in Australia?
    - How do you feel? [sad/angry/happy]
        - What has helped you in Australia?
            - Can you tell me more about this?
        - What has made it hard for you in Australia?
            - Can you tell me more about this?
    - Do you think living in Australia has changed your health?
        - Is your health better or worse since coming to Australia? Why is that?
        - If worse, when did you first experience these health concerns (repeat health concerns mentioned by participant)?
        - Does your current health stop you doing what you want to do? In what way?
    - Can you tell me about any support that you have received since arriving in Australia?
    - How has this support helped you?
    - Have you found it lonely in Australia? Why/why not?
    - What kinds of services or programs would be useful to help you during resettlement?

We are at the end of our interview. Is there anything you would like to tell or ask me?

PARTICIPANT GENERAL INFORMATION

All questions contained in this questionnaire are strictly confidential. Please complete the following questions so that we can learn some general information about you.

1. What is your age (in years)?
2.What is your country of birth?
3.What level of education did you complete before coming to Australia? □ Never attended school □ Less than 6 years of school □ 6-12 years of school □ Trade or technical qualification □ University degree
4.What is your current marital status? □ Single □ Married □ Partnered □ Divorced □Separated □ Widowed
5.When did you arrive in Australia? (Year)
6. Are you currently employed in Australia? □ Yes □ No

Appendix 7: Participant explanatory statement and consent form (standard English)

MONASH University

PARTICIPANT INFORMATION SHEET

Project title:	The impact of migration on the health of resettled adult refugees living in Australia.
Approval Project Number:	12616
Chief Investigator:	Grant Russell, School of Primary & Allied Health Care
Student researcher	Alison Dowling, School of Primary & Allied Health Care Email: [redacted] Telephone: [redacted]

You are invited to take part in this research project. Please read this Information Sheet in full before deciding whether or not to take part in this project. If you would like any information about this project, please contact the student researcher using the telephone or email listed above.

What does the project involve?

The aim of this project is to learn more about the health of people with refugee backgrounds once they resettle in Australia. Health is important as a person's health can determine how quickly a person settles into their new life. Knowing about what affects a person's health will help us understand if they are receiving the support that they need to live a good life in Australia.

If you would like to take part, it will involve an interview. This is where you will speak with the research student about how your health has been since coming to live in Australia.

If you comfortable with it, what you say to the student researcher will be tape recorded. The interview will take place at a time and place that you choose, such as at < site name> or at your local library. Interviews will take place between 9am and 5pm and will take 30-45 minutes. If you need to stop the interview earlier, you are able to do so.

Why were you chosen for this research project?

You are invited to take part in this research because you:

- are from a refugee background
- have recently resettled in Australia
- are an adult

We believe that you will be able to help us understand how migrating to Australia can change the health of people from refugee backgrounds.

Consenting to take part in the project

Taking part in this project is your decision. If you do not wish to take part, you do not have to. If you decide to take part and later change your mind, you are free to withdraw from the project within four (4) weeks of signing the Consent Form.

Possible benefits and risks to taking part in the project

We cannot promise that you will receive any benefits from taking part in this research project. However, the information you give us may help to improve the services and programs available to resettling refugees in the future.

Taking part in this project should not cause you any further harm or distress as we will not be asking you any questions that are likely to cause you any distress or harm.

If you feel any distress or discomfort, the interview can be stopped at any time. We can make sure that you are given access to appropriate counselling and support services. For interviews conducted at <insert site name>, there should be counsellors and case managers nearby who are able to assist. Other counselling and medical services available include Lifeline (13 11 14) and the Refugee Nurse Liaison service from Monash Health (9554 9776 or 0420 301634). For emergencies, Ambulance Victoria may be contacted via 000.

Payment

As a thank you for your time in taking part in this project, you will be given a gift voucher to the value of $30. This gift card will be given to you following your interview.

What will happen to your information?

All information that can identify you, including names and contact details, will be removed during the transcription of the interviews so that you will not be able to be identified. What you tell us may be used in a report, but any information that can identify you will not be used in these reports.

The information you provide will be stored securely at Monash University. Only the people listed at the top of this document will have access to your information. The information will be kept for up to 5 years and then will be carefully destroyed.

Results of this project

If you take part in this research, you will be asked whether you would like to be research results. You may also contact the student researcher to request a copy of the research results for up to one year after the project. The results will be provided as a short report in English.

Who has reviewed the research project?

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the HREC of Monash University.

Complaints

If you have any concerns or complaints about how this project is being conducted, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):

The Executive Officer (Dr Souheir Houssami)
Monash University Human Research Ethics (MUHREC
Telephone: 03 9905 2052
Email: muhrec@monash.edu

CONSENT FORM

Project title: The impact of migration on the health of resettled adult refugees living in Australia.
Protocol Number: 12616
Chief Investigator: Grant Russell, School of Primary & Allied Health Care
Student Researcher : Alison Dowling, School of Primary & Allied Health Care
Email: [redacted]
Telephone: [redacted]

☐ I understand that I have been asked to take part in the above research project.

☐ I have read the Information Sheet or someone has read it to me in a language that I understand.

☐ I have been able to ask questions about the project and I am happy with the answers that I have been given.

☐ I understand the aim of the project and what participation involves.

☐ I understand that I have to sign this Consent Form to take part in the Project.

☐ I consent to the following:

- ☐ Taking part in the project.
- ☐ Being interviewed by the student researcher.
- ☐ The interview being audio recorded.

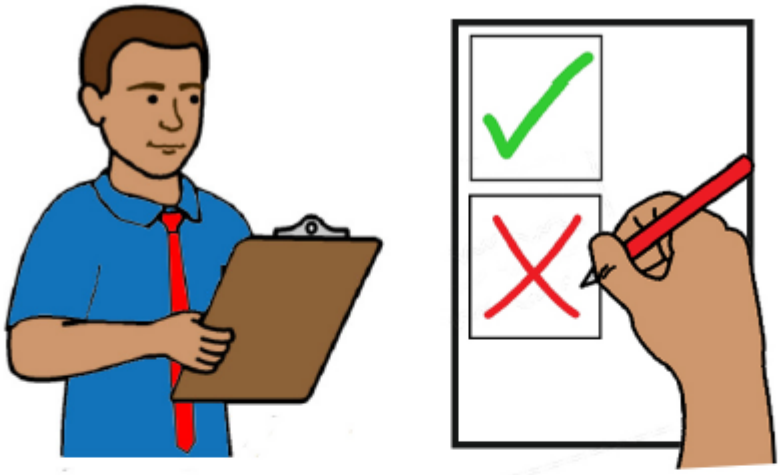
Name of participant:

Participant signature:

Date:

Appendix 8: Participant explanatory statement and consent form (basic English)

MONASH University



Study information and consent form

Monash University

Easy English

This form has some hard words.
The first time we write a hard word it is **blue.**
We write what the hard word means.

Information about the study

This form is about a **study** by Monash University. Study means to learn more about something.

You need to read this form and understand what it is about.

You can ask someone you trust to help you.

This study is about how **migrating** to Australia may have changed your health.

Migrating means to move from one country to another country.

This study will help us know more about what helps you to build a new life in Australia.

A research group of people will do the study for Monash University.

You can help with the study because:

- You are an adult
- You are from a refugee background
- You have migrated to Australia

This study is an **interview.**

An **interview** is when someone asks you questions. The interview will:

- Be with someone from Monash University

- Happen between 9am-5pm
- Take 30-45 minutes

- Be **recorded.** Recorded means that what you say will be on tape.

We need your **consent** before we can do this study. **Consent** means you say yes.

Your consent:

I understand that:

- I do **not** have to do the study

- I can stop at any time
- If I want to stop, it will **not** change the services I get from <insert name of centre>

I also understand that:

- My information will be **confidential.** Confidential means that Monash University will not tell anyone my name when they write or talk about the study.
- Monash University can keep my information for up to 5 years.

- I can ask to learn more about the results of the study.

If you feel upset or uncomfortable during the study, you can stop and ask for help from someone you trust or from a doctor.
You can also contact:
Lifeline: 13 11 14
BeyondBlue: 1300 22 4636
Refugee Nurse Liaison service (Monash Health): 9554 9776 or 0420 301634
Ambulance Victoria: 000

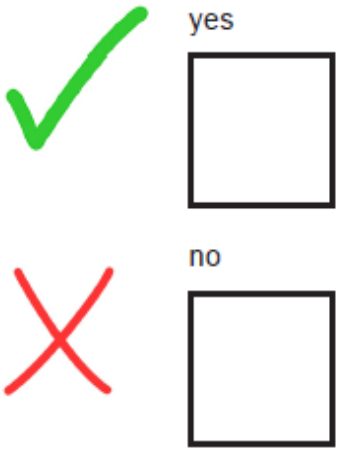
After the interview:

- You will be given a $30 gift voucher for the time you spend talking with us.

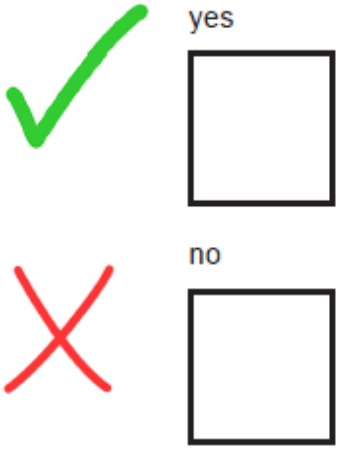
To say yes you need to tick the boxes in this form. Each box looks like this:

☐

I understand what consent means



I have read this form and understand it



I agree to do the interview with a person from Monash University

yes ☐

no ☐

I agree that what I say in the interview will be recorded.

yes ☐

no ☐

I understand how my information will be used.

yes ☐

no ☐

I understand that I can stop at any time

yes

no

My contact information

My contact information

name

_____

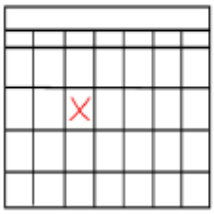
phone

_____

email

_____

Sign your name



The date today is

More information

If you want more information, contact:

Alison Dowling

By phone: [redacted]

By email:

[redacted]

If you have any problems, you can contact Monash University:

The Executive Officer

Monash University Human Research Ethics Committee (MUHREC)

Phone: 03 9905 2052

Email: **muhrec@monash.edu**