# Using mixed methods to build knowledge of refugee mental health

***Stevan Merrill Weine, Aqsa Durrani & Chloe Polutnik***

*Mixed methods research, which combines elements of qualitative and quantitative research approaches, should be well suited to studying refugee mental health. However, this has not yet been adequately discussed nor demonstrated within the existing scientific literature. This paper aims to begin to fill this gap and describes how mixed methods have been used in refugee mental health research. Twenty-nine articles from the health and social sciences literature were systematically reviewed with a focus on study designs and key findings. The studies reviewed were mostly conducted in high income countries in Europe, Australia, and North America. The mixed methods studies largely involved surveys and interviews, and the designs were mostly sequential and explanatory. The key mixed methods findings were in the domains of loss of connection, loss of status, lack of adequate services and resilience. One mixed methods research example, which studied protective resources among adolescent refugees in US resettlement, is offered to illustrate some advantages of mixed methods data collection and analysis. There is, however, a need for further research on refugee mental health which takes advantage of the full spectrum of mixed methods designs to address priority needs and questions, especially involving resilience and resilience focused interventions.*

**Keywords:** mixed methods, refugee mental health, research, resilience

## Introduction

### Background

In recent years, as a result of disasters, persecution, and armed conflict, more people have fled their countries of origin than ever before. In 2010, there were over 200 million international migrants worldwide, with 7.6% of them considered refugees (UNHCR, 2010), and in 2012, reaching a record of 1 million new refugees. Approximately 35 million refugees are of concern to UNHCR, which operates in 123 countries worldwide (UNHCR Global Appeal, 2014–15).

As the numbers of refugees grow, so does the body of scientific literature on refugee mental health. Many of the published studies focus on trauma exposure leading to post-traumatic stress disorder (PTSD), or other mental health consequences (Ellis et al., 2008; Finklestein & Solomon, 2009; Hooberman et al., 2010; Lindencrona, Ekblad, & Hauff, 2008; Momartin et al., 2004; Silove et al., 2007). However, a wide range of other adverse consequences among refugees have also been investigated, including: marital discord; inadequate parenting; disrupted education; substance abuse; criminality; human trafficking; and violent extremism (Lewig, Arney & Salveron, 2010; McBrien, 2005; Morrison & Crosland, 2000; Spasojević, Heffer, & Snyder, 2000; Weine et al., 2009). The methodologies utilised have primarily included either quantitative or qualitative studies, with more mixed method studies emerging in recent years.

Indeed, it can be said that mixed method research has entered the scientific mainstream within public health research, including global health research (Davis & Baulch, 2011). Mixed methods research is '*research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration*' (Johnson, Onwuegbuzie, & Turner, 2007, p. 123). Nowadays, the mixed methods

approach is the focus of journals (e.g. the *Journal of Mixed Methods Research*), textbooks (e.g. Creswell & Plano Clark, 2007; Hesse-Biber, 2010; Morse & Niehas, 2009; Padgett, 2012; Tashakkori & Teddlie, 2003), and professional meetings (e.g. International Congress of Qualitative Inquiry and the Mixed Methods International Research Association).

Researchers have pointed out that there is a deficiency of adequate evidence that actually shows whether and how mixed methods contributed to stronger findings that could not have been achieved with single method approaches (Bazeley & Kemp, 2012; Breitmayer, Ayres, & Knafl, 1993). Mixed methods scholars are also debating different approaches to incorporating and integrating not just multiple methods, but multiple data sources, theories, and investigators (Weine et al., 2014). These issues have not yet been considered in relation to refugee mental health studies. In 2009, a special issue in *Intervention* focused on mixed methods research in humanitarian emergencies (Bolton, Tol & Bass, 2009).

The investigation conducted was based on a comprehensive review of the scientific literature that used mixed methods to investigate refugee mental health. It sought to address these two questions: 1) how have mixed methods been applied in refugee mental health research; and 2) how could future mixed methods studies best contribute to building knowledge of refugee mental health? This article addresses these questions by first summarising prior empirical studies with a focus on study designs and key findings. Then, one detailed research example of a mixed methods study of adolescent refugees in US resettlement is presented that illustrates some advantages of mixed methods data collection and analysis. Lastly, discussion and recommendations for further research are provided.

## Methods

### Search Methods

To assess the relevant literature, PubMed, EBSCO, and PsycINFO were searched for English language articles using the following key words in various combinations: refugee mental health; refugee AND mental health AND mixed methods; refugee AND health; refugee AND mental health AND multiple methods; psychosocial AND refugee AND mixed methods; psychosocial AND refugees. The reference sections of these reviewed articles were also examined to identify additional articles. Additionally, given the first author's extensive prior work on this topic, files from past searches were examined and relevant articles included. The authors acknowledge that despite extensive literature searches, some relevant articles may have been omitted. A total of 323 articles or chapters were reviewed for possible inclusion.

### Inclusion/exclusion criteria

Only articles directly examining refugee mental health and mixed methods, as defined above, were included. Articles from both high and low income countries were included. The articles were published in peer reviewed journals or books, from 2003 to 2013, and were limited to original empirical research, excluding reviews of literature, editorials, newsprint, proposals and conference abstracts. Using these criteria, two independent reviewers validated the selection of articles. Any disagreement was resolved by consensus. The two most common reasons for rejecting articles were that, despite their inclusion in the search results, they either did not utilise mixed methods, or they did not actually collect data on refugees, but rather immigrants or migrants. Ultimately, 29 articles were identified. The years of publication were: 2003 (n = 1), 2005 (n = 1), 2007 (n = 3), 2009 (n = 4), 2010 (n = 4), 2011 (n = 3), 2012 (n = 6), and 2013 (n = 7). Comparatively, using the same search strategy a total of 691 research articles were found on refugee mental health that included single methods, as well as mixed methods. Of these, 505 had been published

after 2003. This means that mixed methods research articles constitute 5.7% of refugee mental health research articles published since 2003, and 4.1% overall.

## Results

### Mixed method designs

The mixed methods study characteristics are summarised in Tables 1 and 2. The studies reviewed were conducted in Europe (n = 9, 31%), Australia (n = 8, 28%), North America (n = 7, 24%), Asia (n = 1, 3%), Africa (n = 1, 3%), Middle East/North Africa (n = 2, 7%) and multiple continents (n = 1, 4%). Twenty-six studies were conducted in resettlement countries, and three in refugee camps. Most studies (n = 14) focused either on refugees from one country, or more than two countries (n = 11). Twenty-one studies focused on adults, five on children, and three on both. Three studies focused only on females, no studies only on males, and 26 studies on both. Only four studies assessed interventions.

Regarding the types of data collected, the qualitative data included: individual interviews: 19/29 (66%); focus groups: 10/29 (34%); observations: 4/29 (14%), and other qualitative: 2/29 (7%). The quantitative data included: survey questionnaires: 25/29 (86%) and other quantitative methods 4/29 (14%). For example, Ekblad et al. (2013) combined survey questionnaires and individual interviews in a study of refugee mental health care providers in Massachusetts. Two studies used focus groups with survey questionnaires (Afifi et al., 2011; Warfa et al., 2012). One example was a study of Palestinian refugees in Beirut (Afifi et al, 2011) in which a household survey was administered and followed by focus groups. Themes discovered in data collection were ranked by the community, ultimately leading to the development of an intervention addressing their top ranked concerns, school drop-out and the mental health of adolescents. Some studies used more than one method of obtaining qualitative data. Johnson et al. (2009) utilised focus groups and individual interviews (as well as surveys) to study the perceptions and health seeking behaviours of Somali refugees and their providers. In another study, aimed at increasing knowledge of the mental health needs of Somali refugees in the USA, Ellis et al. (2007) used surveys, focus groups and individual interviews.

One key design characteristic is whether qualitative and quantitative data were collected concurrently or sequentially (Creswell et al., 2003). Most of the studies collected data sequentially (n = 21, 72%), with fewer collecting data concurrently (n = 8, 28%). Rees et al. (2013) conducted a two-phase study, which aimed to increase knowledge of traumatic events experienced by West Papuan refugees in Australia, and how those events impacted the mental health of the refugees. Survey and focus group data was first collected, and then used to inform individual interviews. Using qualitative interviews, following a survey, to explain findings is a typical mixed methods design (Creswell et al., 2003).

Another way of characterising mixed methods studies is by different design types, which are defined in Table 3 (Creswell & Plano Clark, 2007). Several mixed methods study designs were used in the refugee mental health studies: explanatory 13/29 (45%); exploratory 9/29 (31%); embedded 6/29 (21%); multiphase 3/29 (10%); and transformative 1/29 (3%). For example, a study on the influence of policies and asylum status on refugee health among Iraqi refugees residing in Melbourne employed an explanatory design (Johnston et al., 2009). Explanatory studies conduct quantitative data collection and analysis prior to a subsequent collection and analysis of qualitative data to explain why a certain event occurred (Ivankova, 2006). Alternatively, Sulaiman-Hill & Thompson, (2013) used an exploratory design, first conducting individual interviews followed by administration of a

***Table 1. Characteristics of mixed methods studies of refugee mental health***

| Study site | Qualitative data components | Quantitative data components | Study designs | Temporality of data collection |
|---|---|---|---|---|
| Europe: 9/29 (31%) | Individual interviews: 19/29 (66%) | Survey/ questionnaire: 25/29 (86%) | Explanatory: 13/29 (45%) | Sequential: 21/29 (72%) |
| Australia: 8/29 (28%) | Focus groups: 10/29 (34%) | Other quantitative: 4/29 (14%) | Exploratory: 9/29 (31%) | Concurrent: 8/29 (28% |
| North America: 7/29 (24%) | Ethnography/ observations: 4/29 (14%) | | Embedded: 6/29 (21%) | Sequential & concurrent: 1/29 (3%) |
| Asia: 1/29 (3%) | Other Qualitative: 2/29 (7%) | | Multiphase: 3/29 (10%) | |
| Africa: 1/29 (3%) | | | Transformative: 1/29 (3%) | |
| Middle East/North Africa: 2/29 (7%) | | | | |
| Multiple continents: 1/29 (3%) | | | | |

***Table 2. Characteristics of mixed methods studies of refugee mental health***

| | | |
|---|---|---|
| **Temporal** | Sequential (n = 21) | Bernardes et al., 2011; Boateng, 2009; de Anstiss & Ziaian, 2010; Ekblad & Asplund, 2013; Ekblad et al., 2013; Ellis et al., 2010; Hollins et al., 2007; Johnson et al, 2009; Johnston et al, 2009; O'Shaughnessy et al., 2012; Quosh, 2013; Rees et al., 2013; Sleijpen et al., 2013; Strijk et al., 2011; Teodorescu et al., 2012; Tol et al., 2011; Wahoush, 2009; Warfa et al., 2012; Weine et al., 2005, 2013; Wren, 2003 |
| | Simultaneous (n = 8) | Afifi et al., 2011; Ellis et al., 2007; Nathan et al., 2010; Rees et al., 2013; Sulaiman-Hill & Thompson, 2012, 2013; Zepinic et al., 2012 |
| | Sequential and simultaneous (n = 1) | Rees et al., 2013 |
| **Qualitative** | Interviews (n = 19) | Bernaderes et al., 2011; Boateng, 2009; Ekblad & Asplund, 2013, Ekblad et al., 2013; Ellis et al., 2007; Gifford et al., 2007; Hollins et al., 2007; Ellis et al., 2010; Johnson et al., 2009; Johnston et al., 2009; Nathan et al., 2010; Rees et al., 2013; Sleijpen et al., 2013; Sulaiman-Hill & Thompson, 2012a, 2012b, 2013; Wahoush, 2009; Wren, 2003; Zepinic et al., 2012 |
| | Focus groups (n = 10) | Afifi et al., 2011; Boateng, 2009; de Anstiss & Ziaian, 2010; Ellis et al., 2007, 2010; Johnston et al., 2009; O'Shaughnessy et al., 2012; Quosh, 2013; Tol et al., 2011; Warfa et al., 2012 |
| | Ethnography/ observations (n = 4) | Nathan et al., 2010; Quosh, 2013; Tol et al., 2011; Weine et al., 2013 |
| | Other qualitative (n = 2) | Gifford et al., 2007 |
| **Quantitative** | Survey/questionnaire (n = 25) | Afifi et al., 2011; Bernaderes et al., 2011; Boateng, 2009; de Anstiss & Ziaian, 2010; Ekblad & Asplund, 2013; Ekblad, 2013; Ellis et al., 2010; Gifford et al., 2007; Hollins et al., 2007; Johnson et al., 2009; Johnston et al., 2009; Nathan et al., 2010; Quosh, 2013; Rees et al., 2013; Sleijpen et al., 2013; Strijk et al., 2011; Sulaiman-Hill & Thompson, 2012a, 2012b, 2013; Teodorescu et al., 2012; Tol et al., 2011; Wahoush, 2009; Warfa et al., 2012; Weine et al., 2013; Zepinic et al., 2012 |
| | Other quantitative data (n = 4) | Ellis et al., 2007; O'Shaughnessy et al., 2012; Sleijpen et al., 2013; Wren, 2003 |

***Table 3. Characteristics of mixed methods design types of refugee mental health studies***

| Design type | Analysis | No. of studies | Studies |
|---|---|---|---|
| Explanatory | Connected data analysis to explain results | 13 | Bernardes et al., 2011; Boateng, 2009; de Anstiss & Ziaian, 2010; Ekblad & Asplund, 2013, Ekblad et al., 2013, Hollins et al., 2007; Johnston et al., 2009; Rees et al., 2013; Strijk et al., 2011; Wahoush, 2009; Weine et al., 2005; Wren, 2003; Zepinic et al., 2012 |
| Exploratory | Connected data analysis to generalise findings | 9 | Afifi et al., 2011; Johnson et al., 2009; Sleijpen et al., 2013; Sulaiman-Hill & Thompson, 2012a, 2012b, 2013; Teodorescu et al., 2012; Warfa et al., 2012; Weine et al., 2013 |
| Embedded | Merged or connected data analysis depending on whether design is concurrent or sequential | 6 | Ellis et al., 2007, 2013; Nathan et al., 2010; O'Shaughnessy et al., 2012; Quosh, 2013; Sleijpen et al., 2013 |
| Multi-phase | Merged or connected data analysis for each phase of project | 3 | Afifi et al., 2011; Rees et al., 2013; Warfa et al., 2012 |
| Transformative | Merged or connected data analysis depending on whether design is concurrent or sequential | 1 | Tol et al., 2011 |

psychometric rating scale to study stressors and coping strategies of Afghan and Kurdish refugees in New Zealand and Australia. Some mixed methods studies also utilised a community based, participatory research approach (Ellis et al., 2007, 2010; Johnson et al., 2009; Quosh, 2013). Community based participatory research (CBPR) has been described as an approach which, *'equitably involves all partners. . .with a research topic of importance to the community with the aim of combining knowledge and action for social change to improve community health and eliminate health disparities*' (Kellog, 2013). In their study of Somali refugees in Michigan, Johnson et al. (2009) began first with community meetings that led to the creation of a partnership. Community leaders facilitated recruitment for the study and assisted with the development of the survey tool to be used in the study. Ellis et al. (2007) convened community meetings, formed a community advisory board, hired community members as project staff, and solicited feedback from board members throughout the study on Somali refugees in the USA. They reported that involving community members in decision making helped to mitigate against potential ethical weaknesses given that refugees were considered a vulnerable population.

## Mixed methods findings

Multiple mixed methods studies addressed the loss of connections experienced by refugees (Table 4). Some identified family separation (n = 6) and a lack of social support (n = 5) (Boateng, 2009; de Antiss & Zianian, 2010; Rees et al., 2013; Sulaiman-Hill & Thompson, 2012a, 2012b; Warfa et al., 2012). Quantitative data in a study conducted by Rees et al. (2013) found that 98% of West Papuan refugees reported family separation, whereas qualitative data described how this separation was a cause of major grief and worry. Several studies highlighted the post migration difficulties of isolation (n = 5) and loneliness (n = 3) (Boateng, 2009; Johnston et al., 2009; Rees et al., 2013; Strijk, Meijel, & Gamel, 2011). In a study of health needs of refugees in the Netherlands hailing from diverse countries of origin, survey data showed that 87% of refugees experienced psychological distress and had unmet needs relating to this distress (Strijk et al., 2011). Qualitative data provided insight regarding their distress; refugees felt lonely in this new setting away from home and this loneliness was often accompanied by fear of meeting new people, thereby perpetuating a cycle of loneliness and isolation. Sulaiman-Hill and Thompson's (2012a) study of Afghan and Kurdish refugees in New Zealand and Australia, described how the refugees felt *'they would never fit in.*'

Multiple mixed methods studies addressed the loss of status experienced by refugees (Table 4). Some studies found that refugees experienced a loss of control and feelings of disempowerment (n = 3), while others found difficulties with changing social roles and norms (n = 2) (Johnston et al., 2009; Warfa et al., 2012). For example, in addition to surveys documenting rates of psychiatric diagnoses and symptoms (including unemployment as a predictor of mental illness), a multi-national study of Somali refugees (Warfa et al., 2012) reported focus group data which showed that obstacles to masculine social norms and *'devalued refugee identity*' contributed to poor mental health. Employment status was found to have a significant impact on refugee mental health in six studies. For instance, Zepinic, Bogic and Priebe, (2012), demonstrated via qualitative and quantitative findings that most refugees from former Yugoslavia, regardless of their resettlement country in Europe (Germany, Italy, or UK), desired support for obtaining employment and further education/training. Other studies described refugees finding difficulty coping with the lack of purposeful activities (n = 3) and deviation from normal routines and jobs (Rees et al., 2013; Strijk et al., 2011; Sulaiman-Hill & Thompson,

***Table 4. Mixed methods findings of factors influencing refugee mental health***

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|---|---|
| **Loss of connections (n = 23)** | |
| Separation from family (n = 6) | de Anstiss & Ziaian, 2012; Rees et al., 2013; Sulaiman-Hill & Thompson, 2012a, 2012b; Warfa et al., 2012; Zepinic et al., 2012 |
| Isolation (n = 5) | Johnston et al., 2009; Rees et al., 2013; Sulaiman-Hill & Thompson, 2012a, 2012b; Wren et al., 2003 |
| Fragile social networks/lack of social support (n = 5) | Boateng, 2009; Hollins et al., 2007; Johnston et al., 2009; Teodorescu et al., 2012; Zepinic et al., 2012 |
| Lack of trust in host community (n = 4) | Boateng, 2009; de Anstiss & Ziaian, 2012; Johnston et al., 2009; Sulaiman-Hill &Thompson, 2012 |
| Loneliness (n = 3) | Boateng, 2009; Rees et al., 2013; Strijk et al., 2011 |
| **Loss of status (n = 22)** | |
| Perception of injustice/discrimination (n = 8) | de Anstiss & Ziaian, 2012; Johnston et al., 2009; Rees et al., 2013; Strijk et al., 2011; Sulaiman-Hill & Thompson, 2012a, 2012b; Warfa et al., 2012; Zepinic et al., 2012 |
| Employment status (n = 6) | Sulaiman-Hill & Thompson, 2012b; Rees et al., 2013; Teodorescu et al., 2012; Warfa et al., 2012; Weine et al., 2013; Zepinic et al., 2012 |
| Disempowerment/lack of control (n = 3) | Johnston et al., 2009; Sulaiman-Hill & Thompson, 2012b; Warfa et al., 2012 |
| Lack of purpose or purposeful activity (n = 3) | Rees et al., 2013; Strijk et al., 2011; Sulaiman-Hill & Thompson, 2012b |
| Altered social norms (n = 2) | Johnston et al., 2009; Warfa et al., 2012 |
| **Lack of services (n = 15)** | |
| Lack of trust in host community (n = 4) | Boateng, 2009; de Anstiss and Ziaian, 2012de Anstiss & Ziaian, 2012; Johnston et al., 2009; Sulaiman-Hill & Thompson, 2012a |
| Difficulty accessing services (n = 4) | de Anstiss & Ziaian, 2012; Ekblad et al., 2013; Ellis et al., 2010; Johnston et al., 2009 |
| Legal issues/Visa status (n = 3) | Johnston et al., 2009; Rees et al., 2013; Warfa et al., 2012 |
| Need for culturally sensitive resources (n = 4) | de Anstiss & Ziaian, 2012; Ekblad & Asplund, 2013; Ellis et al., 2010; O'Shaughnessy et al., 2012 |
| **Resilience and positive coping** (n = 9) | |
| Positive developments or resilience following resettlement (n = 9) | Afifi et al., 2011; Nathan et al., 2010; O'Shaughnessy et al., 2012; Quosh, 2012; Sleijpen et al., 2013; Sulaiman-Hill & Thompson, 2012a; Teodorescu et al., 2012; Weine et al., 2005, 2013 |

2012b). Strijk et al. (2011) found in a study of refugees in a psychiatric institution in the Netherlands that 57% of survey respondents cited lack of daytime activities as among their most significant problems. In semi-structured interviews, the refugees reported that their limited options for daytime activities were due to their legal status. Almost all said that they wanted their daytime activities to involve employment or job training. Eight studies found that perception of injustice and discrimination affected the mental health of refugees, as well as their access to services (de Antiss & Ziaian, 2010; Johston et al., 2009; Rees et al., 2013; Strijk et al., 2011; Zepinic et al., 2012).

Multiple mixed methods studies identified the lack of adequate services (Table 4). Survey data among Liberian refugees in Ghana revealed a lack of trust in the host community experienced by many of the refugees surveyed, as well as few interactions between refugees and host community members (Boateng, 2009). When refugees were interviewed, it became clear that the reason for the lack of trust was poor interactions with the host community, and that the poor interactions were primarily due to language barriers and lack of host community members within the camp setting. Some studies found associations between access to services with a lack of trust in the host community (n = 4) (Boateng, 2009; De Antiss and Ziaian, 2010De Antiss & Ziaian, 2010; Johnston et al., 2009; Sulaiman-Hill & Thompson 2012a). Legal issues were also significant stressors and impediments to care, as found by three studies. In one study of Iraqi refugees in Melbourne, Australia, 46% of refugees with a Temporary Protection Visa, as compared to 25% with a Permanent Humanitarian Visa, reported clinical depression on a survey of psychosocial stressors, and semi-structured interviews revealed that their temporary legal status increased their feelings of social isolation and lack of control over their life circumstances (Johnston et al., 2009). Further exploration of these issues showed a need for culturally sensitive programming and resources (n = 2) (de Antiss & Ziaian, 2010; Ekblad & Asplund, 2013). In Ekblad & Asplund's (2013) study of perceptions of health education by Arabic speaking refugees in Sweden, quantitative data showed that approximately 62% experienced sadness or depression. Qualitative data further revealed that the refugees were grappling with ways to deal with cultural differences and wanted more education about the culture of the resettlement country.

In assessing perceptions of services and resources available for refugees, Boateng (2009) found in a study of Liberian refugees in Ghana that most received resources from UNHCR and had high trust in organisations. However, qualitative data further elucidated that most still had unmet needs, despite the receipt of resources, and some had resorted to trading amongst themselves, while others depended on assistance from relatives abroad. In a study of refugee mental health providers, Ekblad et al (2013a) developed a training module to help providers better understand the needs of refugees and ways to understand the social, spiritual, and cultural aspects of their lives. Quantitative data via pre/post analysis showed providers had a positive response to the training module, and were more motivated to use a virtual patient system for traumatised patients. Qualitative data showed the importance of identifying emotional and body language cues, especially those that were associated with traumatisation (Ekblad et al., 2013).

Refugee mental health researchers have shifted towards greater focus on refugees' resilience and positive developments, despite adversities (Weine, in press). Seven studies focused on resilience (Table 4). In Afifi et al.'s (2011) study of Palestinian refugees in Lebanon, young refugees were found to have *'constant hope and access to high levels of social capital,'* equipping them with skills to cope with difficult situations and stress. This was in spite of the survey results showing

*'restrictions on their opportunities for education, healthcare, and employment.'* The same study by Afifi et al. (2011) also found that the community was more amenable to research studies that focussed on positive topics, as opposed to trauma and deficits. Weine et al. (2005) conducted a mixed methods assessment of engagement in the Coffee and Family Education and Support (CAFES) intervention, with Bosnian refugees in Chicago, and demonstrated that engagement patterns were associated with family togetherness, communication and work/life balance.

## Research example

Based on this review, and prior and current attempts to conduct mixed methods studies, we wanted to demonstrate in greater detail some advantages of using mixed methods studies in refugee mental health (Weine, Bahromov, Loue, & Owens, 2012). To do so we conducted a methodological inquiry, examining the contribution of multiple data sources and mixed methods of data collection and analysis to obtain knowledge useful for building resilience focused interventions for refugees. This was approached through the concept of triangulation, which has been defined as a deliberate strategy to strengthen the quality of research in multiple and mixed methods research (Denzin, 1978; Patton, 1990). More specifically, data triangulation uses a variety of sources of information related to person, space and time (Oppermann, 2000; Thurmond, 2001), whereas method triangulation involves using more than one data collection and analysis method (Denzin, 1978; Mathison, 1988; Shih, 1998; Thurmond, 2001).

## Purpose and aims

This study characterised the patterns of psychosocial adjustment among adolescent African refugees in US resettlement. A purposive sample of 73 recently resettled refugee adolescents from Burundi and Liberia, living in either Chicago or Boston, were followed for two years and qualitative and quantitative data was analysed using a mixed methods exploratory design. The specific aims of this methodological study were to address: 1) multiple data (persons): how did what was learned from parents and providers add to, or modify, what was learned from the adolescents; 2) multiple data (spaces): how did what was learned in one city add to, or modify, what was learned in the other city; 3) multiple data (times): how did what was learned after one year add to, or modify, what was learned in the initial year; and 4) multiple methods (data collection and analysis): how did what was learned from multiple methods of data collection and analysis add to, or modify, what was learned from one method alone?

To address these questions, we: 1) reviewed the prior mixed methods research reports and publications generated based upon this data; and 2) reviewed the project's Atlas.ti database[1] with further pattern coding focused on addressing the above four questions. As a result of this process, answers emerged in response to each question. The results section summarises these answers and provides illustrative examples.

**Multiple data (persons)** This study gathered data from adolescents, their parents and their providers. Drawing on data from these different types of people helped researchers to better understand the multiple players, their roles and perspectives regarding adolescent's psychosocial adjustment. One example was that refugee families and providers were in conflict with one another regarding family finances and expectations of support. Parents stated that they were struggling financially and that the resettlement agency was not providing them with enough money for basic necessities. However, the agency caseworkers explained that the families were provided financial assistance, but were choosing to save money or send money back to relatives in their home country, instead of using it towards basic necessities. This information

shed light on the perceptions of possible intervention partners towards one another, and towards possible sites for resilience focused interventions.

**Multiple data (spaces)** Data collected from Chicago and Boston enabled researchers to comparatively study the refugee adolescent's psychosocial adjustment in two different geographic locations. The quantitative data did not indicate any significant differences regarding adolescent thriving, managing or struggling, or rates of secondary migration between Chicago and Boston (Weine et al., 2013). However, researchers did find differences in key community based resources in each setting. For example, in Worcester, MA, the New Citizen Center used a small school approach focused on refugees. While in Chicago, the Burundian Church provided a range of support for teens and their families. Each made unique contributions to their communities, for which there was no equivalent in the other city. This information helped to identify existing community resources that could possibly become models for developing new resources in other locations.

**Multiple data (time)** Data was collected from the adolescent, their parents and service providers across different points in time in their resettlement. The researchers examined the experiences of refugees at the first year of resettlement, the second year of resettlement, and at two years or more after resettlement. Themes were identified that showed how the needs of the refugee families changed over time. In the first year, there was an emphasis on survival concerns. Interviews with adolescents and parents focused on their needs and basic necessities, like food and clothing, and learning how to use transportation system and appliances, including how to turn on the stove, oven and use the washer and dryer. After one year, the focus had shifted to adjustment, such as related to the children's school experiences, changes in parenting and marital difficulties. Participants who were interviewed two or more years after resettlement discussed planning for the future. For example, parents discussed issues regarding new employment opportunities and adolescents talked about making plans for college or work. This information helped to clarify the need for the strategic timing of resilience focused interventions, because interventions would have to address the refugee families' priorities and needs which change greatly from year to year.

**Multiple methods (data collection)** Multiple data collection methods, including minimally structured interviews, shadowing observations and focused field observations were used. Interviews provided one perspective from adolescents and other perspectives from their parents and providers, whereas observations revealed a social interactionist perspective between the adolescents with their peers, families and providers (Flick, 2011). By using observations in addition to interviews, the researchers gained a better understanding of the daily experiences of the adolescent refugees, as well as the different sites where potential interventions could be implemented. Additionally, the informality of observations showed how people spoke within the context of everyday life. For example, when adolescents were *'goofing around'* the researchers saw how they used *'street'* and *'gang'* talk, signs of the youth's acculturation. Researchers also witnessed first hand key challenges, including struggling at school because of incorrect grade placement and not being accepted by peers. The frequent presence of the researchers within the community and social settings also allowed trust to be established, leading to more open communication. Through these informal encounters, topics were revealed that participants feared or were ashamed to discuss in interviews, including family secrets, such as domestic violence and child protection issues. This information helped to better elucidate both family and community contexts of resilience focused interventions.

**Multiple methods (data analysis)**
Using both a grounded theory approach to qualitative analysis with Atlas.ti (Muhr, 2007), and statistical analysis with Statistical Analysis System (SAS) (SAS, 2000–2004), the researchers characterised both the patterns of psychosocial adjustment and the protective agents, resources and mechanisms (Weine et al., in press). Regarding psychosocial adjustment, the researchers described three trajectories (thriving, managing and struggling), indicated significant associations with country of origin, parental education and parental employment, and qualitatively described how these factors were proxy indicators for protective resources in families and communities. Regarding protection, the researchers characterised how adolescent refugees' psychosocial adjustment was shaped by identifiable family and community protective agents and resources that were linked to protective mechanisms. Nine protective mechanisms were identified, which were grouped into three categories (relational, informational, and developmental). Overall, the relational protective mechanisms were cited as being the most prevalent among the participants, followed by informational and developmental. The protective agents most actively involved with protective mechanisms were, from most to least active: school and agency; followed by family and church; youth; health and mental health. This information helped to clarify the underlying processes of fostering resilience within a social context, which helped to more fully understand the potential target for enhancing resilience through interventions.

## Discussion

The vast majority of studies pertaining to refugee mental health use either qualitative or quantitative data as the sole source. This article identified 29 original research articles that utilised mixed methods to investigate refugee mental health. These mixed methods studies largely involved surveys and interviews, and the designs were mostly sequential and explanatory. Most of the mixed methods findings described the challenges and burdens for refugees, especially in the domains of loss of connection, loss of status and lack of adequate services. Fewer studies focused on characterising refugee's resilience.

The studies reviewed were mostly conducted in high resource countries in Europe, Australia and North America. However, in 2013, Pakistan, Jordan, Turkey, Kenya and Chad were amongst those countries hosting the largest numbers of refugees in the world (UNHCR, 2014). Our review elucidates the need for further mixed methods research in these countries, especially given the current state of affairs in the Middle East. In countries like Pakistan, Lebanon and Jordan, many refugees are not living in camps and, as such, have different complexities in their social situations and access to various types of services than their counterparts, who are living in camps, or who are hosted by high income countries. These complexities could best be understood using mixed methods.

Specifically, there is a need for more mixed methods research concerning refugee mental health. Studies are needed that further describe not only their challenging social contexts, but which also characterise the processes by which social determinants impact mental health, behavioural health and family dynamics. No less important is better characterising processes of resilience among refugees, which exist within the context of individual, families and communities, and which mitigate against negative outcomes. Mixed methods studies that utilise exploratory or transformative designs would be well suited to achieving these research goals. Mixed methods studies on refugee mental health are also needed in low and middle income countries, with a focus on youth, and on developing new interventions. An embedded mixed method study design is well suited to intervention studies with refugees (Creswell & Plano Clark, 2007).

For example, qualitative interviews with intervention participants could be embedded within an overall survey assessment of the intervention effectiveness.

This article also presented one detailed research example of a mixed methods study of adolescent refugees in US resettlement. This example illustrated how priority needs and questions were addressed through an exploratory design that combined multiple study elements (e.g. data and methods). It demonstrated the advantages of mixed methods research designs, which draw on multiple data with respect to persons, times and spaces, as well as multiple methods of data collection and analysis. This type of approach to exploratory design can build new knowledge needed for developing resilience focused interventions for youth and families.

The potential strength of using mixed methods in studying refugee mental health is to strategically utilise multiple study elements (data and methods), responsive to the central research problems and questions, through existing and new synergies. This makes it important for researchers to come up with the right research questions. Therefore, researchers should articulate refugee mental health research problems and questions which embrace multiplicity and thereby necessitate mixed methods. Multiplicity refers to research problems and questions that are multi-level, multi-perspective, multi-temporal and/or multidimensional. Generating these research problems or questions is needed due to the complexity of refugee mental health.

Refugee mental health research requires underlying theories that are able to explain the multiple problems or questions at hand, such as theories that focus on behaviour change and those that focus on ecological or social context (McAlister, Perry, & Parcel, 2008), cultural transitions (Baumann, 1999), migration (Greenwood, 1985) and gender (Hesse-Biber, 2007).

This complexity also means that more than one discipline is often needed to understand refugee mental health. Mindful of that need, researchers should establish and build capacities for transdisciplinary refugee mental health research teams to conduct mixed methods research. Transdisciplinary means that researchers work jointly, using a shared conceptual framework, drawing together disciplinary specific theories, concepts and approaches to address common problems (Rosenfield, 1992, p. 1351).

When refugees themselves are involved in the research process, there is much to be gained in terms of building trust, gaining access, improving accuracy and translating findings into practical results. This would lead to incorporating participatory research approaches into mixed methods approaches for refugee mental health research. Regarding intervention studies with refugees, a participatory research approach could involve studying not only how an intervention works, but also how it is experienced and perceived by community members, and how to enhance the processes that determine its usefulness for communities, including implementation and dissemination.

In conclusion, there is a need for further research on refugee mental health, including in low and middle income countries, which takes advantage of the full spectrum of mixed methods designs to address priority needs and questions in refugee mental health, especially involving resilience and resilience focused interventions.

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*Stevan Weine M.D. is a Professor of Psychiatry at the University of Illinois at Chicago. He conducts a programme of research concerning migration and refugees with a focus on mental health, HIV prevention and countering violent extremism.*
*email: smweine@uic.edu*
*Aqsa Durria M.P.H. is a medical student at the University of Illinois at Chicago.*
*Chloe Polutnik M.P.H. is a research coordinator at the University of Illinois at Chicago.*