Prevalence of Psychiatric Disorders Among Refugees in Immigration Detention: A Systematic Review with Meta-Analysis

Verhülsdonk, Irina

Prevalence of Psychiatric Disorders Among Refugees in Immigration Detention: A Systematic Review with Meta-Analysis

I. Verhülsdonk
s2658445
Master Thesis Clinical Psychology
Supervisor: Dr. M. Molendijk
Institute of Psychology
Universiteit Leiden
04-01-2021

Abstract

Background: The number of refugees and asylum seekers is constantly increasing world-wide. Some of the forced migrants are detained in immigration detention centers, which is believed to be associated with adverse mental health outcomes. Estimated prevalence data on mental disorders among detained migrants compared to non-detained migrants are not yet available.

Objectives: We conducted a meta-analysis to evaluate the estimated prevalence rates of mental disorders, such as depression, anxiety and PTSD among refugees being held in immigration detention.

Search methods: A systematic search in Medline, Embase and Web of Science was conducted (final search date October 1st, 2020). Prevalence rates were pooled and reported with 95% confidence intervals. Moderator analyses were conducted. The study protocol was pre-registered at PROSPERO (ID CRD42020196078).

Results: The search yielded 9 eligible studies (total sample N = 686). Prevalence rates for depression were 71% (95% CI 0.59, 0.84), for anxiety 55% (95% CI 0.40, 0.70), and for PTSD 44% (95% CI 0.28, 0.62). Comparison studies revealed that prevalence rates are higher for detained migrants compared to non-detained migrants concerning depression (77% vs. 41%, OR 1.78, 95% CI 1.03, 2.53, $p < .001$) and not significantly different for non-detained relative to detained migrants concerning anxiety (59% vs. 45%, OR 1.03, 95% CI -0.31, 2.38, $p = .131$).

Conclusions: The estimated prevalence rates for detained migrants are higher compared with those for non-detained migrants. Immigration detention is likely to independently and adversely affect mental health. Countries implementing immigration detention should reconsider and use alternative solutions instead.

Keywords: refugees, immigration detention, mental health, depression, anxiety, PTSD

In the past two decades, forced migration and the displacement of people have reached a new high (United Nations High Commissioner for Refugees [UNHCR], 2018a). Forced by war, civil conflicts, (natural) disasters, persecution, or other violations of human rights, by the end of 2019, more than 79.5 million people worldwide have been forced to flee their homes (UNHCR, 2020a). Among them are internally displaced people, refugees, and asylum seekers. Internally displaced people, representing the majority of forced migrants (around 41.3 million people), can be defined as forced migrants seeking refuge in their home country (UNHCR, 2006; UNHCR, 2020a). Refugees are the second largest group among those forcefully displaced (UNHCR, 2020a). This group is characterized by an inability or fear to return to their home country due to a fear of persecution (UN General Assembly, 1951). The third and smallest group (around 3.5 million people) among forced migrants are asylum seekers (UNHCR, 2020a). While refugees already are under a form of protection, asylum seekers are still awaiting a decision whether or not they will be granted protection- (UNHCR, 2006).

Forced Migration and Mental Health

Forced migration is associated with adverse mental health outcomes due to different pre-, peri- and post-migration factors, which will be discussed in the following. Internally displaced people, refugees, and asylum seekers often are forced by traumatic events to leave their country of origin. Among those pre-migration traumatic events are war, (political) persecution, natural disasters, political violence or incarceration, forced labor, physical abuse, the loss of close relatives, or other life-threatening events (Norris, Aroian, & Nickerson, 2011; Yun, Mohamad, Kiss, Annamalai, & Zimmermann, 2016; Iversen & Morken, 2004; Jakobsen, Meyer DeMott, Wentzel-Larsen, Heir, 2017; Schweitzer, Brough, Vromans, & Asic-Kobe, 2011). As a result, the majority of forced migrants suffer from premigration trauma, and they experience symptoms of depression, anxiety, posttraumatic stress disorder (PTSD), or somatization (Schweitzer et al., 2011; Vervliet et al., 2014; Yun et al., 2016).

Premigration trauma is likely to be reinforced by peri-migration factors. That is, on their journey, forced migrants often are confronted with life-threatening conditions (Vogt, 2013). Many of them witness or experience violence, such as gang rape, robbery, extortion, or threats or conditions such as thirst, hunger, abandonment, heat, and captivity (Goodman, Vesely, Letiecq, & Cleveland, 2017; Idemudia, Williams, & Wyatt, 2013). On their route, forced migrants often witness the death of other migrants (Escobio, Etiennoul, & Spindola, 2017).

The forced migrants' psychiatric morbidity for psychiatric disorders, such as depression and PTSD, triggered by pre-migration factors, is likely to be reinforced by those life-threatening peri-migration experiences (Kraemer, Schumacher, Winkel, Imboden, & Wittmann, 2016).

Upon arrival, forced migrants are often confronted with negative experiences in the receiving country, and their vulnerability for psychiatric disorders or their existing symptoms are likely to be reinforced by post-migration factors. Daily experiences of isolation, discrimination, or conflict are associated with increased PTSD, depression, and anxiety (Hou et al., 2020; Fazel, Reed, Panter-Brick, & Stein, 2012). Difficulties concerning housing, accommodation, and access to health services go together with distress, symptoms of PTSD, depression, and anxiety (Hou et al., 2020; Nickerson, Steel, Bryant, Brooks, & Silove, 2011). Additionally, insecurity and uncertainty about the visa application are associated with adverse mental health outcomes (Newnham, Pearman, Olinga-Shannon, & Nickerson, 2019; Iversen & Morken, 2004; Nickerson et al., 2011). For instance, refugees who were still awaiting their decision or who were holding temporary visas experienced increased symptoms of PTSD compared to refugees who have been granted asylum (Nickerson et al., 2011; Iversen & Morken, 2004). Next to the uncertainty that an awaiting visa application entails, the visa status also often determines the living conditions that impact refugees' mental health. Asylum seekers are often separated from society (Broeders, 2010; Iversen & Morken, 2004). However, those refugees who are better integrated into society encounter fewer living difficulties that mediate the relationship between visa insecurity and depression and PTSD (Nickerson et al., 2011). The length of stay in asylum centers has been associated with mental health, too. The longer asylum seekers stay in asylum centers, the higher the prevalence of mental disorders, such as PTSD, depression, and schizophrenia (Hallas, Hansen, Stæhr, Munk-Andersen, & Jorgensen, 2007). Forced migrants who get counseling, have access to education, and are supported in their integration efforts experience lower levels of psychological distress compared to those in low-level support environments (Jakobsen et al., 2017). Those findings all point to the importance of a supportive postmigration environment for forced migrants who are particularly vulnerable to psychiatric problems.

In sum, refugees and asylum seekers are exposed to traumatic events that force migration, the traumatic journey itself, and the challenges of successful resettlement in the receiving country. As a result, forced migrants are particularly vulnerable to psychiatric problems, such as symptoms of depression, PTSD, or anxiety (Fazel, Wheeler, & Danesh, 2005; Fazel et al.,

2012; Hou et al., 2020). The traumatic nature of pre-, peri-, and post-migration adversities gives rise to an immense need for mental health support to the refugees and asylum seekers affected (Fazel et al., 2012; Tol et al., 2011).

Immigration Detention

Even though pre-, and peri-migration traumatic events make forced migrants particularly vulnerable and previous research proved the need for a supportive post-migration environment in a hosting country, this need is often not met. On the contrary, upon arrival or seeking help from immigration officials, many countries regularly detain refugees, stateless people, and asylum seekers (Council of Europe, 2017; UNCHR, 2014). Immigration detention is mostly used as a tool to manage migration by facilitating the asylum application process. To ensure compliance with the migration process decision or to efficiently execute deportation after illegal entry, illegal residence, or after the commitment of a criminal offense can be easier executed (Council of Europe, 2017; Filges, Montgomery, & Kastrup, 2018). Detention is implemented in prisons and jails, immigration holding centers, or closed camps (UNHCR, 2020b). Those places qualify as a detention center, as they deprive their inhabitants of their liberty of movement (Council of Europe, 2017). Even though immigration detention centers do not have a punitive purpose as prisons do, detainees perceive them as punishing and even worse than prisons. Immigration detention centers resemble high-security prisons, and they are rarely equipped to hold forced migrants in need of mental health care (UNHCR, 2020b). Due to inhumane conditions, segregation from society, criminalization, and physical and verbal abuse by the officers, detainees fear their safety, experience a loss of control, suffer from uncertainty concerning their future, and remain isolated the majority of their time in detention (Broeders, 2010; Khosravi, 2009; Coffey, Kaplan, Sampson, & Tucci, 2010; Puthoopparambil, Ahlberg, & Bjerneld, 2015).

Reliable statistics on how many individuals are currently in detention on a worldwide scale are not available (Stefanelli, 2020; UNHCR, 2020b). In the United States in 2019, 143,099 forced migrants were arrested, and the average population in detention centers per day amounted to 50,165. On average, detainees spent 34.3 days in detention centers in so-called U.S. Immigration and Customs Enforcement (ICE) detention facilities (U.S. Immigration and Customs Enforcement, 2020). In Canada, in the fiscal year between 2019 and 2020, 8,825 people were detained in total and spend on average 13.9 days in so-called Immigration

Holding Centers (Canada Border Services Agency, 2020b). For Australia, no average numbers are available (UNHCR, 2020b). On October 31st, 2020, 1,533 people were detained in immigration detention centers in Australia; the majority of them (94%) have been detained for more than 31 days at that point, a quarter of them for more than two years (Australian Government Department of Home Affairs, 2020). In Greece, a total of 18,204 asylum seekers was detained in 2018; they spent, on average, three months in detention (Greek Council for Refugees, 2018). In the United Kingdom, between April 2019 and March 2020, 23,075 people were detained (Home Office, 2020). Other countries, such as Belgium, Israel, Japan, or South Africa, implement immigration detention and do not transparently collect statistics on detention and its conditions. Over the past years, efforts to reduce the implementation of and improve immigration detention conditions have not yet been sufficient to significantly decrease the number of detainees worldwide (UNHCR, 2020b).

The Impact of Immigration Detention on Mental Health

The confinement of refugees, asylum seekers, and other migrants has been repeatedly associated with adverse mental health effects (Cleveland & Rousseau, 2013; Ichikawa, Nakahara, & Wakai, 2006; Robjant, Hassan, & Katona, 2009; Steel et al., 2006). Health care providers working at ICE detention centers in the United States report a deterioration in mental health of the detained migrants. Fearing deportation, their emotional health decreases, and they experience stress, and anxiety (Hacker, Chu, Arsenault, & Marlin, 2012). In detention, forced migrants often witness others' misfortune, such as other detainees' removal or suicide and attempted suicide (Coffey et al., 2010; Dudley, 2003). Individuals who are separated from their family and receive little social support experience increased mental distress during detention (Steel et al., 2006; Hacker et al., 2012). Upon release from detention, a substantial part of the forced migrants suffers from severe and lasting consequences. They report symptoms of depression, anxiety, and PTSD. They often withdraw themselves from others, fearing rejection or exclusion (Steel et al., 2006; Coffey et al., 2010; Ehntholt et al., 2018; Steel et al., 2011).

Immigration detention affects not only those detained but also family members of detainees and forced migrants fearing deportation. Children whose parents are or were held in immigration detention centers, experience higher levels of trauma and PTSD than children of parents who were granted legal residence or who are not in contact with detention authorities

(Rojas-Flores, Clements, Hwang Koo, & London, 2016). Spouses who are suddenly left behind as single parents face difficulties meeting their financial responsibilities and taking care of their children (Gonzalez & Patler, 2020). Migrants who fear deportation due to anti-immigration policies experience high stress and anxiety (Arbona et al., 2010). Fear of deportation has been associated with difficulties finding and keeping a job and a lower quality of life relative to migrants who are not at risk of being deported (Becerra, Quijano, Wagaman, Cimino, & Blanchard, 2015). Because of its adverse effects, the implementation of immigration detention centers has been repeatedly criticized (Broeders, 2010; Khosravi, 2009; UNHCR, 2014). Even though the UNHCR (2014, 2020b) has urged countries to apply alternative solutions, immigration detention continues to be a widely used method (UNHCR, 2019; UNHCR, 2020b; Stefanelli, 2020).

The Current Meta-Analysis

Von Werthern and colleagues (2018) performed a systematic review of the impact of immigration detention on mental health. They concluded that detained migrants experience more severe anxiety symptoms, depression, PTSD, and a lower quality of life than non-detained migrants. Furthermore, detainees experience more severe symptoms of depression, anxiety, and PTSD when they are isolated. Filges and colleagues (2018) applied meta-analytical methods to compare detained and non-detained migrants and found preliminary evidence that immigration detention has an independent role in deteriorating mental health. The authors also conclude that the more time forced migrants spend in immigration detention, the more accentuated the symptoms become (Filges et al., 2018). However, this evidence derives from only two studies that head-to-head compared the mental health status of detained and non-detained migrants and should, therefore, be interpreted with caution. Both reviews propose that immigration detention aggravates mental health burdens, and the experience of being detained can be considered a traumatizing event itself (von Werthern et al., 2018; Filges et al., 2018). In the past years, there have been calls for further research on the topic (Filges et al., 2018; Sen et al., 2018). Due to its ethical considerations, controlled studies on mental health in detained samples are scarce if not non-existing (Storm & Engberg, 2013; Filges et al., 2018). Few observational comparison studies exist since it remains challenging to find a suitable control group (Filges et al., 2018).

To draw more definite conclusions on the prevalence of psychiatric disorders among detained migrants, the current meta-analysis aims to provide an updated systematic review of the existing body of literature and add upon the previously conducted meta-analytical methods by including single group studies into the analysis. The current study thereby addresses the following research question: are forced migrants under detention at increased risk for psychiatric disorders, such as anxiety, depression, and PTSD, compared with refuges in community settings or other non-confining environments? An up-to-date and broader meta-analysis on prevalence rates of psychiatric disorders among detained migrants is needed to shed light on the etiology of psychiatric disorders. Through a more in-depth understanding, the migrants' risks and needs can be better assessed, policies can be developed, and efforts to reduce immigration detention can be further substantiated. The literature on refugees' and asylum seekers' mental health robustly indicates that prevalence rates of anxiety disorders, depression, and PTSD are higher in refugees compared to non-refugee populations, including populations living in war settings (Henkelmann et al., 2020). Both systematic reviews that have been conducted on immigration detention by von Werthern and colleagues (2018) and Filges and colleagues (2018) suggest that forced migrants under confinement in immigration detention centers experience more severe symptoms of mental health disorders relative to non-detained migrants. That is why it is hypothesized that prevalence rates of anxiety disorders, depression, and PTSD are higher in detained relative to non-detained forced migrants.

Methods

The execution and reporting of this meta-analysis followed the guideline as defined in the PRISMA statement (Moher et al., 2015). A drafted protocol for this meta-analysis was pre-registered in the International Prospective Register of Systematic Reviews (PROSPERO), registration number: CRD42020196078.

Search and Selection Strategy

A computer-based search was performed using Embase, Medline, Web of Science, and Google Scholar, as recommended by Bramer, Rethlefsen, Kleijnen, & Franco (2017). Search strings for literature searches were adopted by the strategy documented by Filges, Lindstrøm, Montgomery, Kastrup, & Jørgensen (2017). The search terms are all related to immigration

detention. The complete search strategy is disclosed in Appendix A. The reference lists of systematic reviews and meta-analyses that were conducted on the topic before, as well as included studies, were additionally reviewed for eligible studies. Only articles that were written in English, German, French, Spanish, or Dutch were considered. The literature search was carried out by the two researchers (I.V. and M.M.).

To decide on inclusion, first, the identified articles' titles and abstracts were screened independently by the two researchers (I.V. and M.M.) to access their eligibility. If it was ambiguous whether a study was eligible, the study was assessed in full. Based on the in- and exclusion criteria, a conclusion was made on the eligibility of the study. If disagreement occurred, it was resolved through discussion and consensus.

Inclusion and Exclusion Criteria

Inclusion was not limited to comparison studies but extended to single-group, prospective and retrospective cohort studies, case-control studies, cross-sectional studies, and multiple case series.

Articles were included when the sample consisted of forced migrants in detention. Refugee and asylum seeker populations were both included. For comparison studies, those were included that contained a not-confined sample as a control group. We did not implement other exclusion criteria for the comparison group, as it is challenging to find a suitable control group, and approaches in doing so differ among studies (Filges et al., 2018). Studies were eligible when migrants were in immigration detention in a country other than their home country and when detention had immigration purposes. Studies that reported prevalence rates or mean scores of depression, anxiety disorder, PTSD, or other psychiatric disorders, assessed through clinical diagnostic interviews or using the validated cut-off score on self-report questionnaires were included.

Articles were excluded when the detention had a punitive purpose solely, and when detention was not depriving the liberty of movement (such as semi-open centers), when they did not report original data or when participants were selected based on the outcome. In case data on the prevalence or the mean severity score of psychiatric disorders was missing in articles where it was expected, such data was gathered, and the corresponding authors of these particular articles were contacted with the request to share relevant data. Only if the data

could not be acquired, the study was excluded. Studies were not excluded due to their methodological quality.

Assessment of Methodological Quality

Included studies were assessed on their methodological quality by one researcher (I.V.). The methodological quality was assessed using the quality assessment tool recommended by the U.S. Department of Health and Human Services (National Institutes of Health, 2014).

Data Extraction and Management

Information on the prevalence of depression, anxiety disorders, PTSD or other psychiatric disorders, participant characteristics, detention characteristics, assessment type, time of assessment (during versus post detention), sample size, and research design were extracted, in duplicate, by the two researchers (I.V. and M.M.).

Statistical Analysis

The analyses were conducted using the software Jamovi and the *metafor* package for meta-analyses (The Jamovi Project, 2020; Viechtbauer, 2010). We used the random-effects model with 95% confidence intervals (CI) for data synthesis, as we did not expect all included studies to share one true effect size (Metelli & Chaimani, 2020).

In one-group designed studies including detained samples only, data of the prevalence of psychiatric disorders in a non-detained refugee sample was extracted from the two most recent meta-analyses on the topic (Blackmore et al., 2020a; Henkelmann et al., 2020) to serve as a group of comparison. For comparison studies, the pooled data on the prevalence of depression, anxiety, PTSD, or other psychiatric disorders were related to the prospective reference sample. Using a random-effects restricted maximum likelihood estimation, odd ratios were computed for comparison studies reporting prevalence rates. For estimating standardized mean differences between detained and non-detained samples, Hedges' *g* was used.

The I^2-measure was used as a measure for statistical heterogeneity. To explore statistical heterogeneity, subgroup analyses on age, child versus adult refugee samples, gender, time of assessment, and assessment type were conducted. Publication-bias was assessed by means of

Kendall's Tau, a rank correlation test for the assessment of funnel plot asymmetry. Statistical significance was set at $p < 0.05$.

Results

Description of Studies

The search was performed between July 2020 and October 1st, 2020. Overall, we identified 3529 citations from searches after the removal of duplicates. After screening these records based on title and abstract, 93 studies were assessed in full text for eligibility. Eight of those studies seemed relevant first but were excluded (see Appendix B). Additionally, three studies reported on the same sample. Of those three, the most informative study has been used for data extraction (Cleveland & Rousseau, 2013); the others were excluded (Cleveland, Kronick, Gros, & Rousseau, 2018; Cleveland, Dionne-Boivin, & Rousseau, 2013). Figure 1 outlines the search and selection process. Nine relevant independent studies, published between 2004 and 2018, were included in the review, reporting on a total of 686 subjects, 552 of them were in immigration detention before or at the time of the study. Key characteristics of all included studies can be found in Table 1.

The predominantly observed disorders assessed among the detained refugee samples were depression, anxiety, and PTSD. For the assessment of depression and anxiety, the hospital anxiety and depression scale (HADS), the Composite International Diagnostic Interview (CIDI), the SCID-IV, the Hopkins Symptom Checklist-25 (HSCL-25), the Birleson Depression Self-Rating Scale for Children (DSRS), the Spence Children's Anxiety Scale (SCAS), the MINIv6.0, and the K-SADS-PL were used. To assess PTSD, the Harvard Trauma Questionnaire (HTQ), the Structured Clinical Interview for DSM- IV Axis I Disorders (SCID-IV), the Composite International Diagnostic Interview (CIDI), the Mini International Neuropsychiatric Interview (MINIv6.0), and the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS-PL) were used. Only in a few cases, studies reported on disorders other than depression, anxiety, and PTSD (see Appendix C). Prevalence rates on those disorders were insufficient to be included in the statistical analysis.

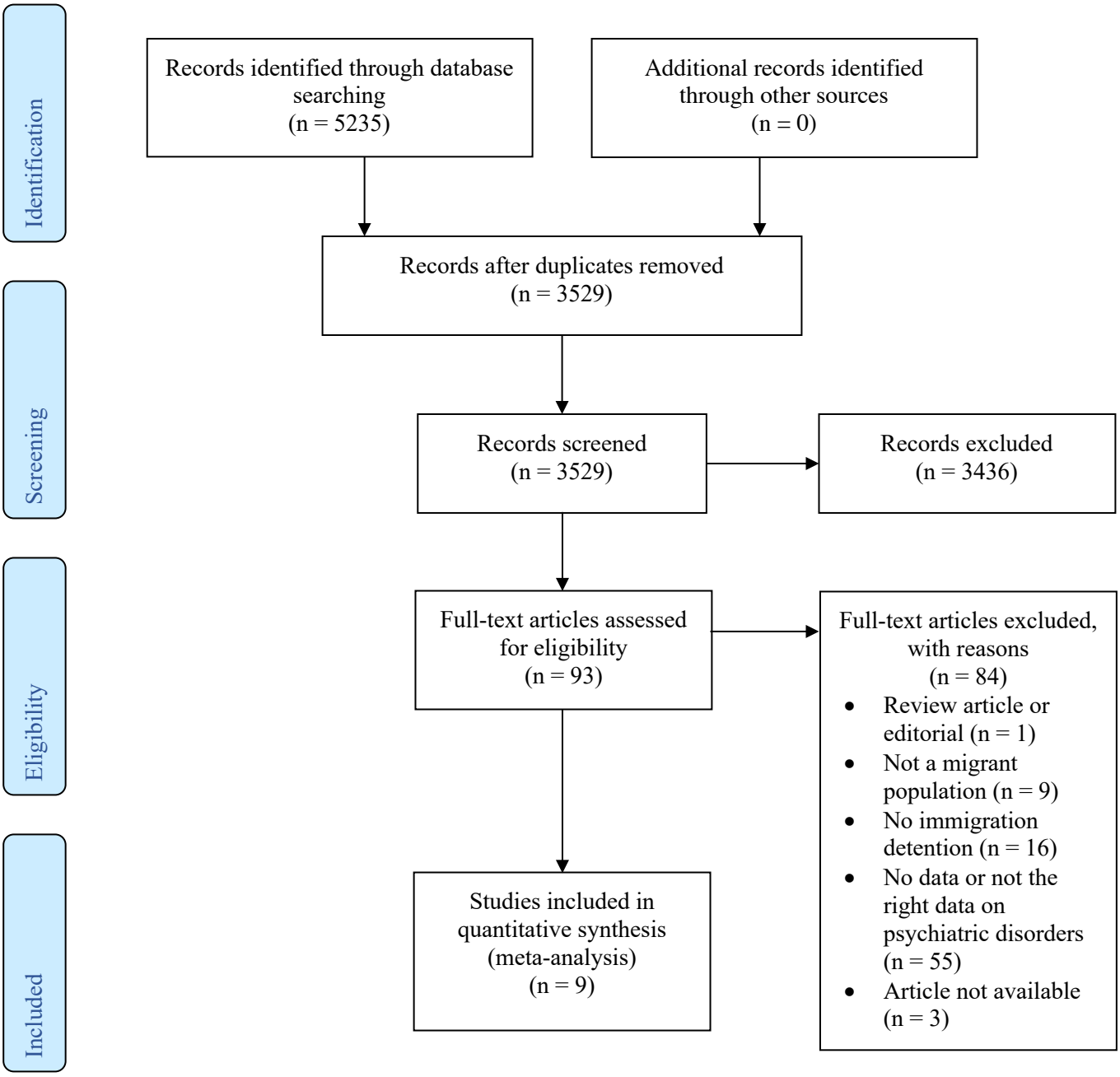

Figure 1. PRISMA Flow Diagram showing the Study Selection Process and Reasons for Exclusion

Table 1

Description of Studies Included in The Meta-Analysis of the Prevalence of Psychiatric Disorders Among Forced Migrants in Immigration Detention

Author and year	Assessment during or post detention	Type of assessment [a]	*N*	Av. age	Percentage Female Subjects	Country of origin	Host country	Year of assessment	Months in detention [b]	Meta-Analysis [c]
Coffey et al. (2010)	Post	Int.	17	42	5.88	Middle East	Australia	2007-2009	x̄: 38	I, V
Cleveland & Rousseau (2013)	During	Int. or Q. [d]	122 (vs. 66) [e]	31.6	40.96	Africa, Asia, Middle East, Latin America, and Europe	Canada	2010-2011	x̄: 1	I, II, III, IV, V, VI, VII, VIII
Ehntholt et al. (2018)	Post	Int.	35	19.1	40	Middle East, Africa, China, East and South Asia	UK	2004 - 2006	x̄: 0,76	I, V,
Graf et al. (2013)	During	Int.	80	29.94	0	31 different countries from Africa and Europe	Switzerland	2007 - 2008	/	I, III, V
Keller et al. (2003)	During	Int.	35	28	20	Africa, Eastern Europe, Asia, Middle East, South America	US	2001 - 2002	x̄: 5	I, II, III, IV, V, VI, VII, VIII

Lorek et al. (2009)	During	Q.	6 [f]	/	50	Africa, Asia, North America	UK	2006	/	I, III, V
Robjant et al. (2009)	During	Q.	66 (vs. 30, vs. 42) [e]	29.5	32.88	43 different countries	UK		$\tilde{x}$: 1	I, II, III, IV, VI, VII, VIII
Sen et al. (2018)	During	Int.	101	31.65	0	27 different countries, majority from Indian subcontinent and Africa	UK	2014 - 2015	/	I, III, V
Steel et al. (2004)	During	Int.	14 20 [f]	/	64.29 40.9	Not disclosed to protect anonymity	Australia	2002 - 2003	$\bar{x}$: 28	I, V

[a] Int. = diagnostic interview, Q. = self-report questionnaire

[b] $\bar{x}$ mean, $\tilde{x}$ = median

[c] I. Depression, prevalence; II. Depression (comparison studies), prevalence; III. Anxiety, prevalence; IV. Anxiety (comparison studies), prevalence; V. PTSD, prevalence; VI. Depression, estimated means; VII. Anxiety, estimated means; VIII. PTSD, estimated means

[d] Psychiatric disorders were assessed using self-report questionnaires; due to literacy problems, clinical interviews were implemented for some of the participants

[e] N of respective comparison groups

[f] children

Quality Assessment

Methodological quality scores for the included studies ranged between 4 and 11 (M = 6.56, SD = 2.83). The methodological score for most studies was good (see Appendix D). All studies were precise and clear in the formulation of the study aim and the population they included. Blinding to participant status was not employed in any of the studies, and almost none of the included studies followed up on their subjects. The majority of the included studies failed to investigate potential confounding variables statistically. Only two studies investigated the potential effect of length of detention on mental health. Two studies did not recruit their sample but were contacted by a legal team representing the subjects to investigate their mental health. One study included participants who responded to an advertisement about free legal assistance. To investigate potential bias from including those studies, the analysis to pool the prevalence rates of depression, anxiety, and PTSD were repeated without those studies (see Appendix E). The exclusion of these studies resulted in a non-significant trend indicating that prevalence rates were somewhat lower for depression, anxiety, and PTSD.

Pooled Prevalence Rates for Depression, Anxiety, and PTSD in Detained Migrants

Prevalence rates, as observed in the included studies, are summarized in Appendix F. Pooled prevalence rates for depression amounted to 0.713 (see Appendix G, Figure 1), for anxiety to 0.552 (see Appendix G, Figure 2), and for PTSD to 0.447 (see Appendix G, Figure 3). Table 2 provides an overview of the random-effects pooled prevalence estimates for depression, anxiety, and PTSD in detained migrants. Heterogeneity was high in all cases. There was no evidence of publication bias for analysis concerning the prevalence of depression, anxiety, or PTSD (see Table 2).

Pooled prevalence rates for depression, anxiety, and PTSD are presented against prevalence rates in non-detained refugee samples in Appendix H (Blackmore et al., 2020a; Henkelmann et al., 2020). Prevalence rates for all three disorders are considerably higher in detained relative to non-detained migrants.

Table 2

Prevalence Rates for One-Group Studies of Depression, Anxiety and PTSD with 95% Confidence Intervals

	k	*N*	95% CI	I^2	Kendall's Tau [a]
Depression	12	552	0.713 (0.591, 0.835)	92.37***	-0.273
Anxiety	8	509	0.552 (0.403, 0.701)	91.71***	0.143
PTSD	10	456	0.447 (0.275, 0.620)	94.4***	0.244

* p < .05, ** p < .01, *** p < .001

[a] Kendall's Tau; rank correlation test for funnel plot asymmetry. A significant correlation is an indication for the presence of publication bias

Pooled Prevalence rates for Depression, Anxiety, and PTSD in Detained Compared to Non-Detained Migrants

For comparison studies, the difference between detained and non-detained migrants concerning the relative risk for depression was significant (OR 1.78; 95% CI 1.03, 2.53; Z = 4.63; p < .001; see Appendix I, Figure 1). Among the detained migrants, 77% compared to 41% of the non-detained migrants met the criteria for depression. The difference between detained and non-detained migrants concerning the relative risk for anxiety was non-significant (OR 1.039; 95% CI -0.31, 2.38; Z = 1.51; p = .131; see Appendix I, Figure 2). Prevalence rates for comparison studies of PTSD were not calculated, as there was insufficient data for analysis.

Heterogeneity was high for anxiety and low for depression. There was no evidence of publication bias for analysis concerning the prevalence of depression or anxiety.

Moderators for Pooled Prevalence Rates in Detained Migrants

There was no significant difference between prevalence rates when obtained through a self-report questionnaire compared to a diagnostic interview or when comparing assessment during and after detention. Pooled prevalence estimates for depression and PTSD did not differ significantly for adults compared to children (for stratified analyses, see Appendix E). The age of the sample and host country did not have a significant moderating effect on the

prevalence rates of depression, anxiety, or PTSD. The percentage of female participants in the sample did not have a significant moderating effect on the prevalence rates of anxiety or PTSD but on the prevalence rates of depression (p = .026). Prevalence rates of depression were higher when the percentage of females in the sample was higher (r = .57).

Estimated Means for Depression, Anxiety and PTSD

The means for depression, anxiety, and PTSD as observed in the included studies for the meta-analysis on the estimated means of depression, anxiety, and PTSD are outlined in Appendix J, Table 1. The estimated mean differences of depression, anxiety, and PTSD between detained and non-detained migrants are summarized in Table 3. Detained migrants had significantly higher depression levels than non-detained control groups (see Appendix J, Figure 1). Detained migrants had an average depression score of M = 6.18 (sd = 1.99) compared to non-detained migrants who had an average depression score of M = 4.28 (sd = 1.69). Levels of anxiety also were significantly higher in detained compared to non-detained migrants (see Appendix J, Figure 2). Detained migrants had an average anxiety score of M = 6.24 (sd = 2.18), non-detained migrants of M = 4.83 (sd = 2.39). Concerning PTSD, there was a non-significant trend indicating that detained migrants had higher levels of PTSD compared to non-detained control groups (see Appendix J, Figure 3).

Table 3

Estimated Mean Differences of Depression, Anxiety, and PTSD Between Detained and Non-Detained Migrants

	k	*N*	*g* [a] (95% CI)	*z*	I^2	Kendall's Tau [b]
Depression	3	357	0.993 (0.356, 1.631)	3.05**	85.6**	1
Anxiety	3	357	0.739 (0.185, 1.294)	2.01**	81.95*	1
PTSD	3	357	0.284 (-0.216, 0.784)	1.11	79.07*	-0.333

* p < .05, ** p < .01, *** p < .001

[a] standardized mean difference between detained and non-detained migrants

[b] Kendall's Tau; rank correlation test for funnel plot asymmetry. A significant correlation is an indication for the presence of publication bias

There was no evidence for publication bias for the analysis concerning depression, anxiety, or PTSD. Between-study heterogeneity was high in all cases (Table 3).

Discussion

Summary of main results

The present meta-analysis investigated the prevalence of depression, anxiety, and PTSD among refugees and asylum seekers in immigration detention. All included studies point towards an adverse effect of immigration detention on mental health (Cleveland & Rousseau, 2013; Coffey et al., 2010; Ehntholt et al., 2018; Graf et al., 2013; Keller et al., 2003; Lorek et al., 2009; Robjant et al., 2009; Sen et al., 2018; Steel et al., 2004). In fact, we show that three out of four detained migrants suffer from depression, more than half of them from anxiety, and almost half of them from PTSD.

When comparing the prevalence rates for depression, anxiety, and PTSD obtained from detained samples in our study to prevalence rates of non-detained samples from other meta-analyses, it can be observed that prevalence rates for all three disorders are higher in detained relative to non-detained migrants (see Appendix H). Blackmore and colleagues (2020a) recently published a meta-analysis in which they reported pooled prevalence data for adult refugees living in community samples. They included studies that used diagnostic interviews as a method for assessment. The meta-analysis by Henkelmann and colleagues (2020) reports the pooled prevalence data for anxiety, depression, and PTSD in non-detained refugee samples living in community settings in high-income countries, categorized by assessment method (Henkelmann et al., 2020). The pooled prevalence rates for depression and anxiety were around twice as high for detained compared to non-detained migrants. The difference was somewhat smaller when prevalence rates were assessed through self-report questionnaires. The prevalence data for PTSD for detained migrants were almost twice as high relative to the studies of the non-detained samples by Henkelmann and colleagues (2020) and Blackmore and colleagues (2020a). In line with this, in our analysis concerning comparison studies, we show that depression and anxiety scores are significantly higher in detained compared to non-detained migrants. These results further underline that immigration detention is a relevant post-migration factor that independently and adversely impacts migrants' mental health.

Estimated prevalence rates for depression were moderated by gender. In line with studies on gender differences and depression (Salk, Hyde, & Abramson, 2017), estimated prevalence rates were higher for samples with a higher percentage of females. Gender did not have a moderating effect on either anxiety or PTSD. Age as a moderating variable had a significant impact on the estimated prevalence rates of anxiety. Consistent with Blackmore and colleagues (2020a, 2020b), younger samples more often met the criteria for anxiety disorders.

In previously conducted systematic reviews, von Werthern and colleagues (2018) and Filges and colleagues (2018) concluded that immigration detention exacerbates and elicits depression, anxiety, and PTSD symptoms. Our current meta-analysis gives further evidence for an independent aversive effect of immigration detention on mental health. Elevated levels of depression, anxiety, and PTSD among detained migrants could result either from an exacerbation of existing an elicitation of new symptoms, or a combination of both (von Werthern et al., 2018; Filges et al., 2018).

Immigration Detention and The Aversive Impact on Mental Health

It is known from previous studies that exposure to trauma, especially torture, is linked with PTSD symptoms in a dose-dependent manner and that the severity of pre-migration war-related traumatic events negatively influences trauma-related mental health, such as depression, anxiety, and PTSD (Carlsson & Sonne, 2018; Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997; Steel et al., 2011). However, trauma as a stressor cannot solely explain the deterioration of refugees' and asylum seekers' mental health. Contextual factors in the hosting country have a significant impact (Porter & Haslam, 2005; Wright et al., 2016). Symptoms of depression, anxiety, and PTSD have been associated with postmigration factors, such as holding a temporary visa, insecurity about visa status, no access to health services, and being separated from society (Hou et al., 2020; Nickerson et al., 2011; Newnham et al., 2019; Iversen & Morken, 2004). Refugees who are integrated into society or hosted in a supportive environment experience fewer symptoms of depression, distress, and PTSD than refugees separated from society (Broeders, 2010; Iversen & Morken, 2004; Jakobsen et al., 2017). Hence, as expected, prevalence rates of depression and PTSD are higher among non-detained migrants than among non-refugee populations (Blackmore et al., 2020a; Koenen et al., 2017; Kessler et al., 2009). Nevertheless, it remains unclear whether immigration

detention as a post-migration factor elicits or exacerbates anxiety, depression, and PTSD symptoms.

Keller and colleagues (2003) published the first study that directly compared symptom scores within-subjects during detention and after being released from detention. They found that depression, anxiety, and PTSD symptoms increased with detention length and decreased upon release (Keller et al., 2003). Contrary to their results, our findings indicate a trend for higher PTSD prevalence rates among migrants released from detention compared to currently detained migrants. These findings might suggest that PTSD symptoms that develop upon release from immigration detention could be a reaction to being detained itself, and that immigration detention can elicit PTSD symptoms, not just exacerbate them. It is possible that the refugees released from detention in the sample of the study by Keller and colleagues (2003) were yet to develop symptoms, as they were interviewed a maximum of three months upon release and PTSD symptoms develop within the first six months of experiencing the trauma (American Psychiatric Association, 2013; World Health Organization, 2018). In a longitudinal study on refugees holding a temporary protection visa, released from immigration detention, Steel and colleagues (2011) found that overall mental health did not improve or even deteriorated further two years upon release compared with after being released from detention. Future research should investigate the development and the content of the PTSD, depression, and anxiety symptoms in detained and released refugees to shed more light on the theoretical explanation of elevated levels of depression, anxiety, and PTSD.

Strengths and Limitations

One strength of our meta-analysis is our broad approach (we included studies focusing on detained samples without a control group and studies using different assessment methods), due to which the current meta-analysis gives new insight on the impact of immigration detention on mental health. Another strength is the comprehensive search strategy that we implemented as proposed by Filges and colleagues (2017). Therefore, we assume that all relevant studies on the effect of immigration detention on migrants' mental health were identified and included in the present meta-analysis. Another strength is that both researchers (M.M., I.V.) screened all articles' titles and abstracts independently; hence, we do not expect any bias in selecting studies.

Potential bias arises because we could not obtain one article in full text (Santos, Soares, Rebelo, & Ferreira, 2018). In their study, Santos and colleagues (2018) assessed 393 detained migrants' mental health in Portugal. Unfortunately, the article was not available in full text, and the authors did not reply to our request for full access. However, in their abstract, they mention high neurotic, stress-related, and somatoform disorders among detained migrants. Perhaps they did not report depression, anxiety, or PTSD scores in their sample.

The methodological score for most studies was good. All included studies were observational; hence, no causal conclusions can be drawn. However, ethical implications rule out the implementation of randomized and controlled comparison studies on the impact of immigration detention on mental health. As the included studies used convenience sampling, opportunity sampling, or snowball sampling, confounding factors are likely to have impacted the results of the included studies.

Several limitations should be taken into account when interpreting the present findings. First, heterogeneity among studies was high, and the source of the high heterogeneity between studies remains mostly unclear. It is possible that differences between countries, detention centers, visa status, or demographic characteristics of the sample accounted for the heterogeneity. Unfortunately, the data reported in the studies was insufficient to specify the impact of those variables, and moderator analyses to investigate their impact were most likely underpowered. Further studies are needed to investigate the effect of moderating variables and possible differences between refugee samples from different backgrounds and residing in different receiving countries and institutions.

For instance, one source of heterogeneity arrived from the difference in sampling methods between studies. Ehntholt and colleagues (2018) reported mental health data obtained from previously detained migrants who were in a legal process to get compensated for being unlawfully detained as minors. Participants were informed that the mental health assessment aimed to support their legal case. In the studies by Lorek and colleagues (2009) and by Steel and colleagues (2011), participants responded to an advertisement for free legal assistance to challenge their detention. Participants in these studies may have exaggerated their symptoms to increase their chances for compensation or being released. It is also possible that the detention's unlawful character increased symptoms of anxiety, depression, and PTSD in the study by Ehntholt and colleagues (2018) and that those who reached out for legal assistance in the samples studied by Lorek and colleagues (2009) and by Steel and colleagues (2011) are

most severely impacted by immigration detention. Although the difference between prevalence rates, including relative to excluding those three differences, was not significant, further research with higher statistical power would be needed to exclude with certainty that symptoms were not higher in those samples.

Second, too few studies reported on psychiatric disorders other than depression, anxiety, or PTSD, for them to be included in the meta-analysis. Previous research shows that disorders such as personality disorders and psychosis are more prevalent among detained than non-detained migrants (Graf et al., 2013; Sen et al., 2018). However, more research on a broader spectrum of psychiatric disorders among detained migrants is needed to further shed light on possible differences compared to non-detained migrants.

Third, among those studies which included a control group (Cleveland & Rousseau, 2013; Keller et al., 2003; Robjant et al., 2009), the samples differed considerably. Keller and colleagues (2003) administered a mixed design; they studied detained migrants and compared between- and within-subjects, including a follow-up, at which part of the sample was released from detention. Cleveland and Rousseau (2013) and Robjant and colleagues (2009) included community asylum seekers who have never been held in detention before as a control group. The heterogeneity among the comparison groups mitigates the comparability between groups.

Finally, the comparability between the prevalence data in our sample and the non-detained refugee sample from the most recent meta-analysis on refugee mental health by Blackmore and colleagues (2020a) and Henkelmann and colleagues (2020) is not ideal. Due to the shortage of studies comparing detained and non-detained migrants, however, adducing external pooled prevalence data can give a first reference for the direction of the impact of immigration detention. Further research is needed to draw more sound conclusions on the mental health of detained compared to non-detained migrants.

Conclusions

We hypothesized that prevalence rates of anxiety disorders, depression, and PTSD are higher for detained than non-detained migrants. The results confirmed this hypothesis and suggest that immigration detention independently adversely affects the mental health of refugees and asylum seekers. Our results strengthen the findings of previous systematic reviews that immigration detention harms the mental health of detained migrants. To the best of our

knowledge, four systematic reviews on the topic exist (Robjant et al., 2009; Storm & Engberg, 2013; von Werthern et al., 2018; Filges et al., 2018).

In their systematic review, Robjant and colleagues (2009) included all studies reporting on the mental health of children, adolescent, or adult refugees being held in immigration detention centers in Australia, the UK, or the USA at the time of or before assessment. Storm and Engberg (2013) included studies investigating the consequences of immigration detention on detained torture survivors' mental health. In both reviews, the authors conclude that the evidence points to an adverse effect of immigration detention on the mental health of the detained migrants, but also remark that research on the topic is still in its infancy and that the conclusions should be understood with caution (Robjant et al., 2009; Storm & Engberg, 2013). Von Werthern and colleagues (2018) and Filges and colleagues (2018) published systematic reviews on immigration detention and its impact on mental health. Von Werthern and colleagues (2018) expand on a systematic review they did before (von Werthern et al., 2009) and conclude that the adverse effect of immigration detention on refugees' mental health can be separated from other post-migration factors and independently impairs refugees' mental health. In their systematic review, Filges and colleagues (2018) include a meta-analysis on two comparison studies that further confirmed that hypothesis. To our knowledge, this current meta-analysis is the only review in which the estimated prevalence data in detained migrants is calculated. Inclusion and exclusion criteria were broader than previously conducted systematic reviews; hence this study generates more robust conclusions based on more included studies. The present meta-analysis also adds to the existing reviews, as it offers a more updated analysis.

Forced migrants are a vulnerable sample due to various pre-, and peri-migration factors (Fazel et al., 2005; Fazel et al., 2012; Hou et al., 2020). Based on our results, it could be argued that immigration detention should no longer be implemented to avoid further mental health deterioration. The aversive effects by far outweigh the reasons for some countries to employ immigration detention. Countries claim to use immigration detention to guarantee that detainees are present at their proceedings, to ensure that they cannot be a flight risk when they are to be departed, to establish their identity, security status, and their health (U.S. Immigration and Customs Enforcement, 2020; Canada Border Services Agency, 2020a; UNHCR, 2014; Silverman, Griffiths, & Walsh, 2020). Receiving countries should use alternative settings to host refugees and asylum seekers. The Council of Europe (2019) and

the UNHCR (2020a) suggest different arrangements, such as community care, residential facilities, or open settings in which forced migrants are required to regularly check-in with authorities. These alternatives are better equipped to host vulnerable populations, such as forced migrants, and offer them an adequate home with access to health care to await the decision on their application for asylum (UNHCR, 2018b). Those arrangements serve the reasons for immigration detention mentioned above without further deteriorating the mental health of forced migrants or even traumatizing them.

References

American Psychiatric Association. 2013. Diagnostic and Statistical Manual of Mental Disorders, Fifth edition. (DSM-5)

Arbona, C., Olvera, N., Rodriguez, N., Hagan, J., Linares, A., & Wiesner, M. (2010). Acculturative stress among documented and undocumented latino immigrants in the united states. *Hispanic Journal of Behavioral Sciences, 32*(3), 362-384. doi: 10.1177/0739986310373210

Australian Government Department of Home Affairs (2020). *Australian Border Force: Immigration Detention and Community Statistics Summary.* Retrieved from: https://www.homeaffairs.gov.au/research-and-stats/files/immigration-detention-statistics-31-october-2020.pdf

Becerra, D., Quijano, L. M, Wagaman, M. A., Cimino, A., & Blanchard, K. N. (2015). How immigration enforcement affects the lives of older latinos in the United States. *Journal of Poverty, 19*(4), 357-376. doi: 10.1080/10875549.2014.999969

Blackmore, R., Boyle, J. A., Fazel, M., Ranasinha, S., Gray, K. M., Fitzgerald, G., ... & Gibson-Helm, M. (2020a). The prevalence of mental illness in refugees and asylum seekers: A systematic review and meta-analysis. *PLoS medicine, 17*(9),1-24. doi: 10.1371/journal.pmed.1003337

Blackmore, R., Gray, K. M., Boyle, J. A., Fazel, M., Ranasinha, S., Fitzgerald, G., . . . & Gibson-Helm, M. (2020b). Systematic review and meta-analysis: The prevalence of mental illness in child and adolescent refugees and asylum seekers. *Journal of the American Academy of Child and Adolescent Psychiatry, 59*(6), 705-714. doi: 10.1016/j.jaac.2019.11.011

Bramer, W. M., Rethlefsen, M. L., Kleijnen, J., & Franco, O. H. (2017). Optimal database combinations for literature searches in systematic reviews: A prospective exploratory study. *Systematic Reviews, 6*(1), 245-257. doi:10.1186/s13643-017-0644-y

Broeders, D. (2010). Return to sender?: Administrative detention of irregular migrants in Germany and the Netherlands. *Punishment & Society, 12*(2), 169-186. doi: 10.1177/1462474509357375

Canada Border Services Agency (2020a, September 8). *Annual detention, fiscal year 2019 to 2020.* Retrieved from: https://www.cbsa-asfc.gc.ca/security-securite/detent/stat-2019-2020-eng.html

Canada Border Services Agency (2020b, December 10). *Arrests, detentions and removals.* Retrieved from: https://www.cbsa-asfc.gc.ca/security-securite/detent/menu-eng.html

Carlsson, J., & Sonne, C. (2018). Mental health, pre-migratory trauma and post-migratory stressors among adult refugees. In *Mental Health of Refugee and Conflict-Affected Populations* (pp. 15-35). Cham: Springer International Publishing.

Cleveland, J., & Rousseau, C. (2013). Psychiatric symptoms associated with brief detention of adult asylum seekers in Canada. *The Canadian Journal of Psychiatry, 58*(7), 409-416. doi:10.1177/070674371305800706

Cleveland, J., Kronick, R., Gros, H., & Rousseau, C. (2018). Symbolic violence and disempowerment as factors in the adverse impact of immigration detention on adult asylum seekers' mental health. *International Journal of Public Health, 63*(8), 1001-1008. doi: 1007/s0003801811217

Cleveland, J., Dionne-Boivin, V., & Rousseau, C. (2013). L'expérience des demandeurs d'asile détenus au Canada. *Criminologie, 46*(1), 107-129. doi: 10.7202/1015295ar

Coffey, G.J., Kaplan, I., Sampson, R.C, & Tucci, M.M. (2010). The meaning and mental health consequences of long-term immigration detention for people seeking asylum. *Social Science & Medicine (1982), 70*(12), 2070-2079. doi: 10.1016/j.socscimed.2010.02.042

Council of Europe (2017). *A study of immigration detention practices and the use of alternative to immigration detention of children.* Retrieved from: https://edoc.coe.int/en/migration/7533-a-study-of-immigration-detention-practices-and-the-use-of-alternatives-to-immigration-detention-of-children.html

Council of Europe (2019). *Alternatives to Immigration Detention: Fostering Effective Results.* Retrieved from: https://rm.coe.int/migration-practical-guide-alternatives-migration/1680990236

Dudley, M. (2003). Contradictory Australian national policies on self-harm and suicide: The case of asylum seekers in mandatory detention. *Australasian Psychiatry, 11*, 102-108. doi: 10.1046/j.1038-5282.2003.02023.x

Ehntholt, K. A., Trickey, D., Hendriks, J. H., Chambers, H., Scott, M., & Yule, W. (2018). Mental health of unaccompanied asylum-seeking adolescents previously held in British detention centres. *Clinical Child Psychology and Psychiatry, 23*(2), 238-257. doi: 10.1177/1359104518758839

Escobio, F., Etiennoul, M. & Spindola, S. (2017). Rescue medical activities in the mediterranean migrant crisis. *Conflict and Health, 11*(1)*,* 3-4. doi: 10.1186/s13031-017-0105-1

Fazel, M., Wheeler, J., & Danesh, J. (2005). Prevalence of serious mental disorder in 7000 refugees resettled in western countries: A systematic review. *The Lancet, 365*(9467), 1309-1314. doi:10.1016/s0140-6736(05)61027-6

Fazel, M., Reed, R. V., Panter-Brick, C., & Stein, A. (2012). Mental health of displaced and refugee children resettled in high-income countries: Risk and protective factors. *The Lancet, 379*(9812), 266-282. doi:10.1016/s0140-6736(11)60051-2

Filges, T., Lindstrøm, M., Montgomery, E., Kastrup, M., & Jørgensen, A. K. (2017). PROTOCOL: The impact of detention on the health of asylum seekers: A protocol for a systematic review. *Campbell Systematic Reviews, 13*(1), 1-51. doi:10.1002/cl2.187

Filges, T., Montgomery, E., & Kastrup, M. (2018). The impact of detention on the health of asylum seekers: A systematic review. *Research on Social Work Practice, 28*(4), 399-414. doi: 10.1177/1049731516630384

Gonzalez, G., & Patler, C. (2020). The educational consequences of parental immigration detention. *Sociological Perspectives*. doi: 10.1177/0731121420937743

Goodman, R. D., Vesely, C. K., Letiecq, B., & Cleveland, C. L. (2017). Trauma and resilience among refugee and undocumented immigrant women. *Journal of Counseling & Development, 95*(3), 309-321. doi: 10.1002/jcad.12145

Graf, M., Wermuth, P., Häfeli, D., Weisert, A., Reagu, S., Pflüger, M., . . . Jones, R. (2013). Prevalence of mental disorders among detained asylum seekers in deportation arrest in Switzerland and validation of the brief jail mental health screen BJMHS. *International Journal of Law and Psychiatry, 36*(3-4), 201-206. doi: 10.1016/j.ijlp.2013.04.009

Greek Council for Refugees (2018). *Country Report: Greece.* Retrieved from: https://www.asylumineurope.org/reports/country/greece

Hacker, K., Chu, J., Arsenault, L., & Marlin, R. P. (2012). Provider's perspectives on the impact of immigration and customs enforcement (ice) activity on immigrant health. *Journal of Health Care for the Poor and Underserved, 23*(2), 651-665. doi: 10.1353/hpu.2012.005

Hallas, P., Hansen, A. R., Staehr, M. A., Munk-Andersen, E., & Jorgensen, H. L. (2007). Length of stay in asylum centres and mental health in asylum seekers: a retrospective study from Denmark. *BMC public health*, *7,* 288-294. doi: 10.1186/1471-2458-7-288

Home Office (2020, May 21). *National Statistics: How many people are detained or returned?* Retrieved from: https://www.gov.uk/government/publications/immigration-statistics-year-ending-march-2020/how-many-people-are-detained-or-returned

Hou, W. K., Liu, H., Liang, L., Ho, J., Kim, H., Seong, E., . . . Hall, B. J. (2020). Everyday life experiences and mental health among conflict-affected forced migrants: A meta-analysis. *Journal of Affective Disorders, 264*, 50-68. doi: 10.1016/j.jad.2019.11.165

Ichikawa, M., Nakahara, S., & Wakai, S. (2006). Effect of post-migration detention on mental health among afghan asylum seekers in Japan. *Australian & New Zealand Journal of Psychiatry, 40*(4), 341-346. doi: 10.01080/j.1440-1614.2006.01800.x

Idemudia, E. S., Williams, J. K., & Wyatt, G. E. (2013). Migration challenges among Zimbabwean refugees before, during and post arrival in South Africa. *Journal of Injury and Violence Research, 5*(1), 17-27. doi: 10.5249/jivr.v5i1.185

Iversen, V. C., & Morken, G. (2004). Differences in acute psychiatric admissions between asylum seekers and refugees. *Nordic Journal of Psychiatry, 58*(6), 465-470. doi: 10.1080/08039480410011696

Jakobsen, M., Meyer DeMott, M. A., Wentzel-Larsen, T., & Heir, T. (2017). The impact of the asylum process on mental health: A longitudinal study of unaccompanied refugee minors in Norway. *BMJ Open, 7*(6), 1-8. doi:10.1136/ bmjopen-2016-015157

Keller, A. S., Rosenfeld, B., Trinh-Shevrin, C., Meserve, C., Sachs, E., Leviss, J. A., . . . Ford, D. (2003*).* Mental health of detained asylum seekers. *The Lancet (British Edition), 362*(9397), 1721-1723. doi: 10.1016/S0140-6736(03)14846-5

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., . . . & Wang, P. S. (2009). The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. Epidemiologia e psichiatria sociale, *18*(1), 23-33. doi: 10.1017/S1121189X00001421

Khosravi, S. (2009). Sweden: Detention and deportation of asylum seekers. *Race & Class, 50*(4), 38-56. doi: 10.1177/0306396809102996

Koenen, K.C., Ratanatharathorn, A., Ng, L., McLaughlin, K. A., Bromet, E. J., Stein, D. J., . . . Atwoli, L. (2017). Posttraumatic stress disorder in the world mental health surveys. *Psychological medicine, 47*(13), 2260-2274. doi: 10.1017/S0033291717000708

Kraemer, B., Schumacher, S., Winkel, B., Imboden, C., & Wittmann, L. (2016). The "building block" effect of prior trauma for psychological outcome in victims of a natural disaster. *European Psychiatry, 33*(1), 214-215. doi: 10.1016/j.eurpsy.2016.01.520

Lorek, A., Ehntholt, K., Nesbitt, A. W., Emmanuel, G., Chipo, R. E., & Wickramasinghe, R. (2009). The mental and physical health difficulties of children held within a British immigration detention center: A pilot study. *Child Abuse & Neglect, 33*(9), 573-585. doi: 10.1016/j.chiabu.2008.10.005

Mares, S., & Jureidini, J. (2004). Psychiatric assessment of children and families in immigration detention – clinical, administrative and ethical issues. *Australian and New Zealand Journal of Public Health, 28*(6), 520-526. doi: 10.1111/j.1467-842X.2004.tb00041.x

Metelli, S., & Chaimani, A. (2020). Challenges in meta-analyses with observational studies. *Evidence Based Mental Health, 23*(2), 83-87. doi:10.1136/ebmental-2019-300129

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., . . . Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews, 4*(1). doi:10.1186/2046-4053-4-1

Momartin, S., Steel, Z., Coello, M., Aroche, J., Silove, D. M., & Brooks, R. (2006). A comparison of the mental health of refugees with temporary versus permanent protection visas. *Medical Journal of Australia, 185*(7), 357-361. doi: 10.5694/j.1326-5377.2006.tb00610.x

National Institutes of Health (2014). Quality assessment tool for observational cohort and cross-sectional studies. Available online at: https://www.nhlbi.nih.gov/health-pro/guidelines/in-develop/cardiovascular-risk-reduction/tools/cohort

Newnham, E. A., Pearman, A., Olinga-Shannon, S., & Nickerson, A. (2019). The mental health effects of visa insecurity for refugees and people seeking asylum: A latent class analysis. *International Journal of Public Health, 64*(5), 763-772. doi:10.1007/s00038-019-01249-6

Nickerson, A., Steel, Z., Bryant, R., Brooks, R., & Silove, D. (2011). Change in visa status amongst Mandaean refugees: Relationship to psychological symptoms and living difficulties. *Psychiatry Research, 187*(1), 267-274. doi: 10.1016/j.psychres.2010.12.015

Norris, A. E., Aroian, K. J., & Nickerson, D. M. (2011). Premigration persecution, postmigration stressors and resources, and postmigration mental health: a study of severely traumatized U.S. Arab immigrant women. *Journal of the American Psychiatric Nurses Association*, *17*(4), 283–296. doi: 10.1177/1078390311408900

Porter, M., & Haslam, N. (2005). Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: A meta-analysis. *JAMA: The Journal of the American Medical Association, 294*(5), 602-612. doi: 10.1001/jama.294.5.602

Puthoopparambil, S. J., Ahlberg, B. M., & Bjerneld, M. (2015). "A prison with extra flavours": Experiences of immigrants in Swedish immigration detention centres. *International Journal of Migration, Health and Social Care, 11*(2), 73-85. doi: 10.1108/IJMHSC-10-2014-0042

Rivas, L., & Bull, M. (2018). Gender and risk: An empirical examination of the experiences of women held in long-term immigration detention in Australia. *Refugee Survey Quarterly, 37*(3), 307-327. doi: 10.1093/rsq/hdy006

Robjant, K., Hassan, R., & Katona, C. (2009). Mental health implications of detaining asylum seekers: Systematic review. *British Journal of Psychiatry, 194*(4), 306-312. doi:10.1192/bjp.bp.108.053223

Rojas-Flores, L., Clements, M. L, Hwang Koo, J., & London, J. (2017). Trauma and psychological distress in Latino citizen children following parental detention and deportation. *Psychological Trauma, 9*(3), 352-361. doi: 10.1037/tra0000177

Salk, R. H., Hyde, J. S., & Abramson, L. Y. (2017). Gender differences in depression in representative national samples: meta-analyses of diagnoses and symptoms. *Psychological bulletin, 143*(8), 783-822. doi: 10.1037/bul0000102

Santos, G., Soares, C., Rebelo, R., & Ferreira, P. (2018). Mental health and undocumented migrants in Portugal. *Journal of Public Mental Health, 17*(11), 200-209. doi: 10.1108/JPMH-11-2017-0039

Schweitzer, R. D., Brough, M., Vromans, L., & Asic-Kobe, M. (2011). Mental health of newly arrived Burmese refugees in Australia: Contributions of pre-migration and post-

migration experience. *The Australian and New Zealand journal of psychiatry*, *45*(4), 299–307. doi: 10.3109/00048674.2010.543412

Sen, P., Arugnanaseelan, J., Connell, E., Katona, C., Khan, A. A., Moran, P., . . . Forrester, A. (2018). Mental health morbidity among people subject to immigration detention in the UK: A feasibility study. *Epidemiology and Psychiatric Sciences, 27*(6), 628-637. doi:10.1017/s2045796017000269

Silove, D., Sinnerbrink, I., Field, A., Manicavasagar, V., & Steel, Z. (1997). Anxiety, depression and PTSD in asylum-seekers: Assocations with pre-migration trauma and post-migration stressors. *British Journal of Psychiatry, 170*(4), 351-357. doi: 10.1192/bjp.170.4.351

Steel, Z., Momartin, S., Bateman, C., Hafshejani, A., Silove, D. M., Everson, N., . . . Mares, S. (2004). Psychiatric status of asylum seeker families held for a protracted period in a remote detention centre in Australia. *Australian and New Zealand journal of public health, 28*(6), 527-536. doi: 10.1111/j.1467-842X.2004.tb00042.x

Steel, Z., Momartin, S., Silove, D., Coello, M., Aroche, J., & Tay, K. W. (2011). Two year psychosocial and mental health outcomes for refugees subjected to restrictive or supportive immigration policies. *Social Science & Medicine, 72*(7), 1149-1156. doi: 10.1016/j.socscimed.2011.02.007

Steel, Z., Silove, D., Brooks, R., Momartin, S., Alzuhairi, B., & Susljik, I. (2006). Impact of immigration detention and temporary protection on the mental health of refugees. *British Journal of Psychiatry, 188*(1), 58-64. doi: 10.1192/bjp.bp.104.007864

Stefanelli, J. N. (2020). *Judicial Review of Immigration Detention in the UK, US and EU: From Principles to Practice*. Bloomsbury Publishing.

Storm, T., & Engberg, M. (2013). The impact of immigration detention on the mental health of torture survivors: A systematic review. *European Psychiatry, 28*, 1. doi:10.1016/s0924-9338(13)76202-3

The jamovi project (2020). *jamovi*. (Version 1.2) [Computer Software]. Retrieved from https://www.jamovi.org.

Silverman, S. J., Griffiths, M., & Walsh, P. W. (2020, May 20). Immigration detention in the UK. *The Migration Observatory.* Retrieved from: https://migrationobservatory.ox.ac.uk/resources/briefings/immigration-detention-in-the-

uk/#:~:text=Policy%20reasons%20for%20detaining%20typically,to%20be%20'conducive%20to%20the

Tol, W. A., Barbui, C., Galappatti, A., Silove, D., Betancourt, T. S., Souza, R., . . . Ommeren, M. V. (2011). Mental health and psychosocial support in humanitarian settings: Linking practice and research. *The Lancet, 378*(9802), 1581-1591. doi:10.1016/s0140-6736(11)61094-5

UN General Assembly (1951). Convention relating to the status of refugees, *United Nations, Treaty Series, 189,* 137. Retrieved from: https://www.refworld.org/docid/3be01b964.html

United Nations High Commissioner for Refugees (2006). *UNHCR Master Glossary of Terms.* Retrieved from: https://www.refworld.org/docid/42ce7d444.html

United Nations High Commissioner for Refugees (2014). *Beyond detention: A global strategy to support governments to end the detention of asylum-seekers and refugees 2014–2019.* Retrieved from: https://www.unhcr.org/protection/detention/53aa929f6/beyond-detention-global-strategy-support-governments-end-detention-asylum.html

United Nations High Commissioner for Refugees (2018a). *Global trends: Forced displacement in 2017.* Retrieved from: https://www.unhcr.org/5d08d7ee7.pdf

United Nations High Commissioner for Refugees (2018b). UNHCR beyond detention toolkit. Guiding questions for the assessment of alternatives to detention. Retrieved from: https://www.refworld.org/docid/5b1e662d4.html

United Nations High Commissioner for Refugees (2019). *Progress report 2018: a global strategy to support governments to end the detention of asylum-seekers & refugees, 2014-2019.* Retrieved from: https://www.unhcr.org/protection/detention/5c934bbd7/unhcr-global-strategy-beyond-detention-progress-report-2018.html

United Nations High Commissioner for Refugees (2020a). *Figures at a glance.* Retrieved from: https://www.unhcr.org/figures-at-a-glance.html

United Nations High Commissioner for Refugees (2020b). *Global Strategy Beyond Detention.* Retrieved from: https://www.unhcr.org/protection/detention/5fa26ed64/unhcr-global-strategy-beyond-detention-final-progress-report-2014-2019.html

U.S. Immigration and Customs Enforcement (2020). *Enforcement and removal operations: U.S. immigration and customs enforcement fiscal year 2019 enforcement and removal operations report.* Retrieved from: https://www.ice.gov/sites/default/files/documents/Document/2019/eroReportFY2019.pdf

Vervliet, M., Meyer Demott, M. A., Jakobsen, M., Broekaert, E., Heir, T., & Derluyn, I. (2014). The mental health of unaccompanied refugee minors on arrival in the host country. *Scandinavian journal of psychology*, *55*(1), 33-37. doi: 10.1111/sjop.12094

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*, 1-48. doi: 10.18637/jss.v036.i03

Vogt, W.A. (2013), Crossing Mexico: Structural violence and the commodification of undocumented Central American migrants. *American Ethnologist, 40,* 764-780. doi: 10.1111/amet.12053

Von Werthern, M. V., Robjant, K., Chui, Z., Schon, R., Ottisova, L., Mason, C., & Katona, C. (2018). The impact of immigration detention on mental health: A systematic review. *BMC Psychiatry, 18*(1), 382-401. doi:10.1186/s12888-018-1945-y

World Health Organization (2018). International classification of diseases for mortality and morbidity statistics (11th Revision). Retrieved from https://icd.who.int/browse11/l-m/en

Wright, A. M., Dhalimi, A., Lumley, M. A., Jamil, H., Pole, N., Arnetz, J. E, & Arnetz, B. B. (2016). Unemployment in Iraqi refugees: The interaction of pre and post-displacement trauma. *Scandinavian Journal of Psychology, 57*(6), 564-570. doi: 10.1111/sjop.12320

Young, P., & Gordon, M. S. (2016). Mental health screening in immigration detention: a fresh look at Australian government data. *Australasian Psychiatry, 24*(1), 19-22. doi: 10.1177/1039856215624247

Yun, K., Mohamad, Z., Kiss, L., Annamalai, & A., Zimmerman, C. (2016). History of persecution and health outcomes among U.S. refugees. *Journal of Immigrant and Minority Health, 18*(1), 263-269. doi: 10.1007/s10903-015-0176-2

Appendix A

Search Strategy

Table A1

Search Strategy Medline, Embase

	Search term
1	(asylum adj1 seek*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
2	(Asylumseeker* or Asylum-seeker*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
3	Asylum applicant*.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
4	(Asylum adj1 claim*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
5	(Refuge* or Migrant* or Immigrant*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
6	Refugees.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
7	1 or 2 or 3 or 4 or 5 or 6
8	Detention.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
9	(Depriv* adj2 liberty).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
10	(Detain or Detained).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
11	Imprison*.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
12	Incarcerat*.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
13	(Reception adj1 cent*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]

14	(Asylum adj1 cent*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
15	(Accomodation adj1 cent*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
16	Temporary protection.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
17	Custod*.mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
18	(Prison* or jail*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kw, nm, kf, px, rx, an, ui, tc, id, tm]
19	8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18
20	7 and 19
21	remove duplicates from 20

Table A2

Search Strategy Web of Science

	Search term
1	TS = (Asylumseeker* or Asylum-seeker* or Asylum applicant* or Refuge* or Migrant* or Immigrant* or Refugees)
2	TI = (Asylumseeker* or Asylum-seeker* or Asylum applicant* or Refuge* or Migrant* or Immigrant* or Refugees)
3	SO = (Asylumseeker* or Asylum-seeker* or Asylum applicant* or Refuge* or Migrant* or Immigrant* or Refugees)
4	AB = (Asylumseeker* or Asylum-seeker* or Asylum applicant* or Refuge* or Migrant* or Immigrant* or Refugees)
5	AK = (Asylumseeker* or Asylum-seeker* or Asylum applicant* or Refuge* or Migrant* or Immigrant* or Refugees)
6	KP = (Asylumseeker* or Asylum-seeker* or Asylum applicant* or Refuge* or Migrant* or Immigrant* or Refugees)
7	#6 OR #5 OR #4 OR #3 OR #2 OR #1
8	TS = (Detention or Detain or Detained or Imprison* or Incarcerat* or Temporary protection or Custod* or Prison* or jail*)

9	TI = (Detention or Detain or Detained or Imprison* or Incarcerat* or Temporary protection or Custod* or Prison* or jail*)
10	SO = (Detention or Detain or Detained or Imprison* or Incarcerat* or Temporary protection or Custod* or Prison* or jail*)
11	AB = (Detention or Detain or Detained or Imprison* or Incarcerat* or Temporary protection or Custod* or Prison* or jail*)
12	AK = (Detention or Detain or Detained or Imprison* or Incarcerat* or Temporary protection or Custod* or Prison* or jail*)
13	KP = (Detention or Detain or Detained or Imprison* or Incarcerat* or Temporary protection or Custod* or Prison* or jail*)
14	#13 OR #12 OR #11 OR #10 OR #9 OR #8
15	#14 AND #7

Appendix B

Overview of the Excluded Studies and the Reason for Exclusion

Table B1

Overview of the Excluded Studies and the Reason for Exclusion

Author	Reason for exclusion
Ichikawa et al. (2006)	The authors did not report SDs, and hence could not be included in the estimated means analysis
Mares & Jureidini (2004)	The authors did not report the instrument used to assess the mental health of the detained migrants.
Momartin et al. (2006)	The authors did not report prevalence data, or mean scores on depression, anxiety or PTSD.
Rivas & Bull (2018)	The authors report on secondary data and therefore did not meet our inclusion criteria.
Schwarz-Nielsen & Elklit (2009)	The authors reported on two camps (Avnstrup and Sandholm) for asylum seekers. In the camp Sandholm, some of the asylum seekers were detained. The authors do not report separate data for those asylum seekers that were detained.
Steel et al. (2006)	The authors did not report prevalence data, or mean scores on depression, anxiety or PTSD.
Steel et al. (2011)	The authors compared holders of temporary protection visas with holders of permanent protection visas. It was not possible to separate the influence of immigration detention from the influence of visa status, hence the study was excluded.
Young & Gordon (2016)	The authors report on secondary data and therefore did not meet our inclusion criteria.

Appendix C

Prevalence Rates for Psychiatric Disorders other than Depression, Anxiety, and PTSD among Detained Migrants

Table C1

Prevalence Rates for Psychiatric Disorders other than Depression, Anxiety, and PTSD among Detained Migrants

Authors	Psychiatric disorder	Prevalence
Graf et al. (2013), N = 80	Schizophrenia,	.0625
	Schizophreniform disorder,	.0125
	Delusional disorder,	.0375
	Acute and transient psychotic disorders,	.0125
	Schizoaffective disorders,	.025
	Hypomania,	.0125
	Dysthymia,	.0375
	OCD,	.0125
	Dissociative amnesia,	.025
	Dissociative anesthesia and sensory loss,	.0125
	Undifferentiated somatoform disorder,	.0375
	Hypochondrial disorder,	.0125
	Persistent somatoform pain disorder	.075
Sen et al. (2018), N = 101	Personality disorder,	.3465
	Autism,	.1485
	ADHD,	.1386
	Manic episode,	.099
	Mood disorder with psychotic symptoms,	.099
	OCD	.0891
	Hypomania,	.0792
	Antisocial personality disorder,	.0792
	Hypomanic symptoms,	.0297
	Psychotic disorder,	.0297
	Eating disorder	.0099

Steel et al. (2004)		
Adults: N = 14	Suicidal ideation,	.9286
	Self-harm	.3571
Children: N = 20	Suicidal ideation,	.55
	Self-harm,	.25
	Separation anxiety disorder,	.5
	Oppositional defiant disorder	.45

Appendix D

Quality Assessment of Included Studies

Table D1

Quality Assessment of Included Studies

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Cleveland & Rousseau (2013)	⊕	⊕	⊕	⊕	⊕	⊕	⊕	∅	⊕	∅	∅	∅	NA[a]	⊕	9
Coffey et al. (2010)	⊕	⊕	⊕	⊕	∅	⊕	⊕	∅	⊕	∅	⊕	∅	NA[a]	⊗	7
Ehntholt et al. (2018)	⊕	⊕	NA[b]	⊗	∅	⊕	⊕	∅	⊕	∅	⊕	∅	NA[a]	⊗	4
Graf et al. (2013)	⊕	⊕	NR[c]	⊕	⊕	⊕	⊕	∅	⊕	∅	⊕	∅	⊗	⊗	6
Keller et al. (2003)	⊕	⊕	⊕	⊕	∅	⊕	⊕	⊕	⊕	⊕	⊕	∅	⊕	⊗	10
Lorek et al. (2009)	⊕	⊕	NA[d]	⊗	∅	⊕	⊕	∅	⊕	∅	⊕	∅	NA[a]	⊗	4
Robjant et al. (2009)	⊕	⊕	⊕	⊕	∅	⊕	⊕	⊕	⊕	⊕	⊕	∅	NA[a]	⊕	11
Sen et al. (2018)	⊕	⊕	⊗	∅	∅	⊕	⊕	∅	⊕	∅	⊕	∅	NA[a]	⊗	4
Steel et al. (2004)	⊕	⊕	NA[b]	⊗	∅	⊕	⊕	∅	⊕	∅	⊕	∅	NA[a]	⊗	4

⊕ = yes; ∅ = neutral / don't know; ⊗ = no

*CD, cannot determine; NA, not applicable; NR, not reported

[a] no follow up measurement was administered

[b] the sample was not recruited by the authors, but the authors were contacted by a legal team representing the sample

[c] response rates were not available to the authors

[d] participants responded to an advertisement by a charity organisation offering free legal assistance to challenge their detention

Appendix E

Stratified Analysis for Pooled Prevalence of Depression, Anxiety and PTSD for Detained Migrants

Table E1.

Pooled Prevalence of Depression, Anxiety and PTSD for Detained Migrants by Time of Assessment (during versus post detention), Assessment Method and without Studies using Convenience Sampling

	k	*N*	95% CI	I^2	Kendall's Tau [a]
Depression	12	552	0.713 (0.591, 0.835)	92.37***	-0.273
During detention	9	474	0.746 (0.610, 0.881)	93.08***	-0.278
Post Detention	3	78	0.607 (0.318, 0.896)	88.72***	-1
Self-Report Questionnaire	4	224	0.762 (0.707, 0.818)	0	-0.333
Diagnostic Interview	8	328	0.691 (0.512, 0.871)	94.83***	-0.429
Adults	9	491	0.693 (0.549, 0.837)	93.56***	-0.222
Children/Adolescents	3	61	0.777 (0.519, 1.035)	85.42***	-0.333
Excluding studies using convenience sampling [b]	8	477	0.658 (0.514, 0.802)	92.27***	-0.143
Anxiety	8	509	0.552 (0.403, 0.701)	91.71***	0.143
During detention	7	474	0.502 (0.367, 0.638)	88.09***	0.143
Post Detention [c]					
Self-Report Questionnaire	3	261	0.626 (0.452, 0.801)	86.56***	0.333
Diagnostic Interview	4	239	0.475 (0.222, 0.728)	94.67***	0.333
Adults	7	503	0.542 (0.381, 0.704)	93.26***	0.143
Children/Adolescents [d]					

Excluding studies using convenience sampling [b]	7	503	0.542 (0.381, 0.704)	93.26***	0.143
PTSD	10	456	0.447 (0.275, 0.620)	94.4***	0.244
During detention	7	378	0.409 (0.224, 0.594)	93.4***	0.333
Post Detention	3	78	0.537 (0.111, 0.963)	95.82***	0.333
Self-Report Questionnaire [e]					
Diagnostic Interview	8	328	0.494 (0.292, 0.696)	94.71***	0.357
Adults	7	395	0.423 (0.215, 0.63)	95.61***	0.524
Children/Adolescents	3	61	0.509 (0.153, 0.864)	88.43***	-1
Excluding studies using convenience sampling [b]	6	381	0.349 (0.171, 0.528)	93.72***	0.333

* $p < .05$, ** $p < .01$, *** $p < .001$

[a] Kendall's Tau; rank correlation test for funnel plot asymmetry. A significant correlation is an indication for the presence of publication bias

[b] Two studies included participants after being contacted by their legal team, one study included participants who responded to an advertisement about free legal aid

[c] Only one of the included studies (Keller et al., 2003) reported on anxiety prevalence data assessed post detention

[d] Only one of the included studies (Lorek et al., 2009) reported on anxiety prevalence data

[e] Only two of the included studies (Cleveland & Rousseau, 2013; Lorek et al., 2009) made use of self-reported questionnaires

Appendix F

Prevalence Rates for Depression, Anxiety and PTSD as reported by the Authors of the Included Studies

Table F1

Prevalence Rates for Depression, Anxiety and PTSD as reported by the Authors of the Included Studies

Study	N	Study design [a]	Measures [b]	Instruments [c]	Time of assessment	Prevalence rates		
						Depression	Anxiety	PTSD
Cleveland & Rousseau (2013)	122 (vs. 66[d])	C.S.C.	D., A., PTSD	HSCL-25, HTQ	During	0.7787 (vs. 0.5151[d])	0.4639 (vs. 0.4697[d])	0.3197 (vs. 0.1818[d])
Coffey et al. (2010)	17	C.S.	D., A., PTSD	HSCL-25, HTQ	Post	0.8824		0.7059
Ehntholt et al. (2018)	35	C.S.	D., PTSD	SCID-IV	Post	0.5429		0.8
Graf et al. (2013)	80	C.S.	D., A., PTSD, S.A., S., S.D.	CIDI	During	0.3625	0.325	0.225
Keller et al. (2003)	35 (vs. 26[e])	C.S.	D., A., PTSD	HSCL-25, HTQ	During	0.8857 (vs. 0.3846[e])	0.3462 (vs. 0.8571)	0.6 (0.1154[e])
Robjant et al. (2009)	66; 30[f] (vs. 42[d])	C.S.C.	D., A.	HADS	During	0.7576; 0.6667 (vs. 0.2619)	0.7333; 0.7066 (vs. 0.4889	0.76; 0.67[f] (vs. 0.26[d])
Sen et al. (2018)	101	C.S.	D., A., PTSD, P.D., P.D., S.R., A.S.D., ADHD	MINI v6.0	During	0.5248	0.3663	0.2079

Lorek et al. (2004)	6	C.S.C.	D., PTSD, Dis.	SCID-IV, K-SADS-PL	During	0.8333	0.6667	0.1667
Steel et al. (2004)	14	C.S.C.	D., A.	SCAS, DSRS	During	1		0.86
	20					0.95		0.5

[a] C.S. = Cross-Sectional Study, C.S.C. = Cross-Sectional Comparison Study

[b] D. = Depression, A. = Anxiety, PTSD = Posttraumatic Stress Disorder, S.A. = Substance Abuse, S. = Schizophrenia, S.D. = Somatoform Disorder, P.D. = Personality Disorder, S.R. = Suicidal Risk, A.S.D. = Autism Spectrum Disorder, ADHD = Attention Deficit Hyperactivity Disorder, Dis. = Mental Health Related Disorder

[c] HSCL-25 = Hopkins Symptom Checklist, HTQ = Harvard Trauma Questionnaire, SCID-IV = Structured Clinical Interview for DSM-IV, CIDI = Composite International Diagnostic Interview, HADS = Hospital Anxiety and Depression Scale, MINI v6.0 = Mini International Neuropsychiatric Interview, K-SADS-PL = Kiddie Schedule for Affective Disorders and Schizophrenia, SCAS = Spence Children's Anxiety Scale, DSRS = Depression Self-Rating Scale

[d] non-detained migrants living in community-based housing provided by community or government agencies

[e] refugees released from immigration detention

[f] refugees in immigration detention who were detained in prison before (not related to immigration)

Appendix G

Forest Plots for One-Group Studies on Detained Migrants

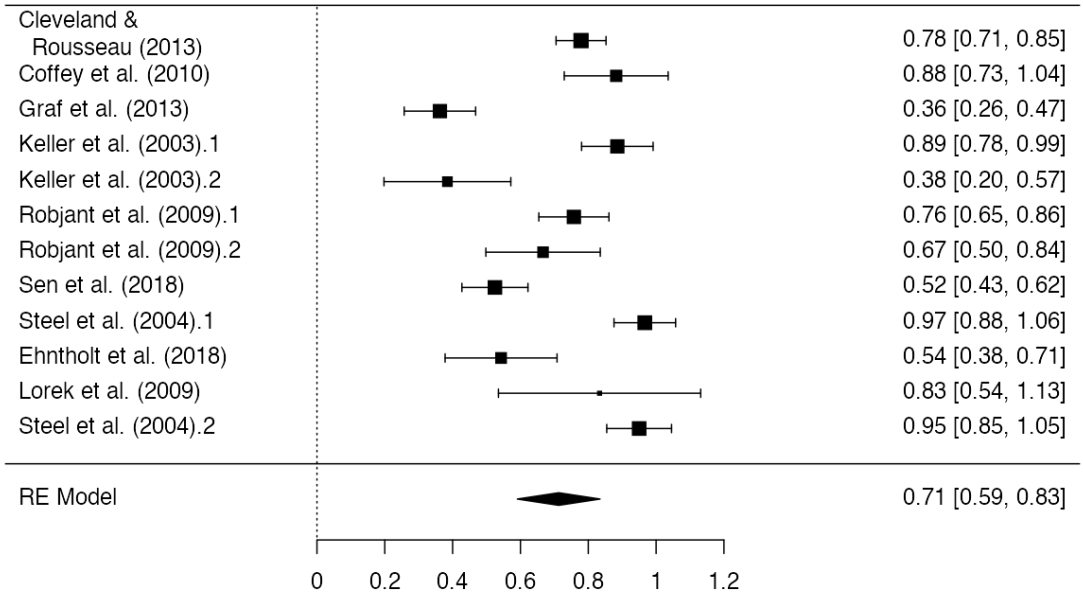

Figure G1. Forest Plot of the Prevalence Rates of Depression for Detained Migrants

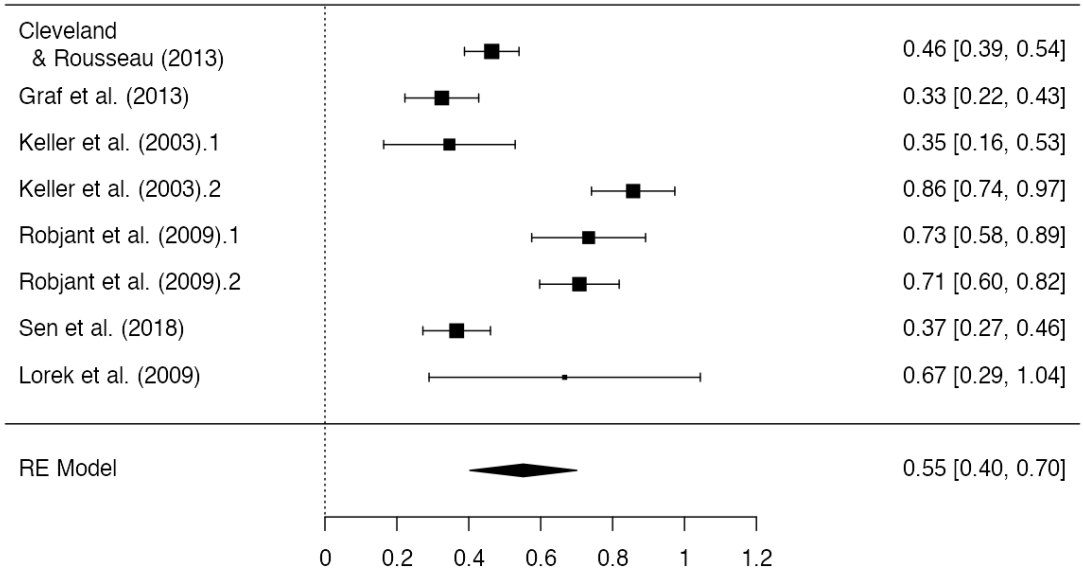

Figure G2. Forest Plot of the Prevalence Rates of Anxiety for Detained Migrants

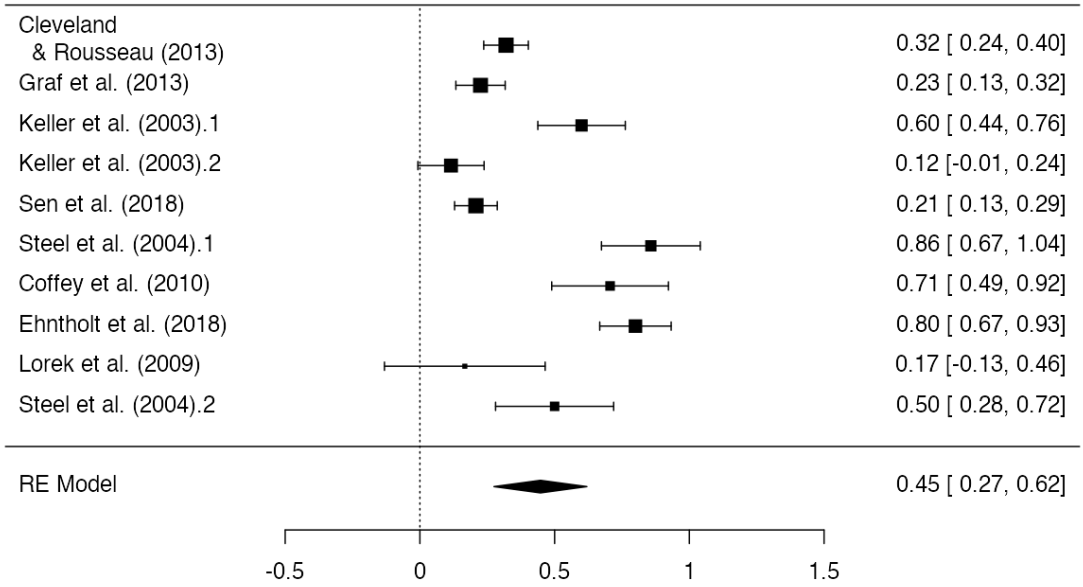

Figure G3. Forest Plot of the Prevalence Rates of PTSD for Detained Migrants

Appendix H

Overview of the Prevalence of Psychiatric Disorders among Detained Migrants compared to Non-Detained Refugee and Asylum Seeker Samples

Table H1

Overview of the Prevalence of Psychiatric Disorders among Detained Migrants compared to Non-Detained Refugee and Asylum Seeker Samples

	Prevalence (95% Confidence Interval)					
Study	Depression		Anxiety		PTSD	
	Int.[a]	Q. [a]	Int. [a]	Q.[a]	Int.[a]	Q. [a]
Current meta-analysis	0.691 (0.512, 0.871)	0.762 (0.707, 0.818)	0.475 (0.222, 0.728)	0.626 (0.452, 0.801)	0.494 (0.292, 0.696)	
Blackmore et al. (2020a)	0.3151 (0.226, 0.404)		0.1109 (0.675, 0.154)		0.3146 (0.244, 0.385)	
Henkelmann et al. (2020)	0.30 (0.23-0.38)	0.40 (0.31-0.48)	0.13 (0.08-0.17)	0.42 (0.31-0.52)	0.29 (0.22-0.37)	0.37 (0.30-0.45)

[a] Int. = clinical, diagnostic interview; Q. = self-report questionnaire

Appendix I

Forest Plots and Table Concerning the Prevalence of Depression, and Anxiety among Detained versus Non-Detained Migrants

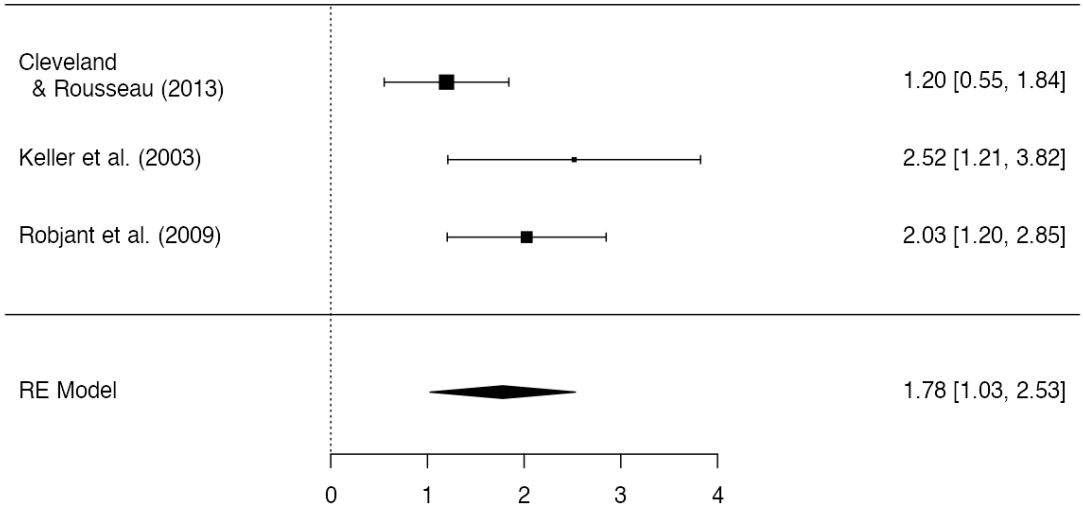

Figure I1. Relative Risk on the Probability of Depression in Detained Migrants Compared to Migrants Currently not in Immigration Detention

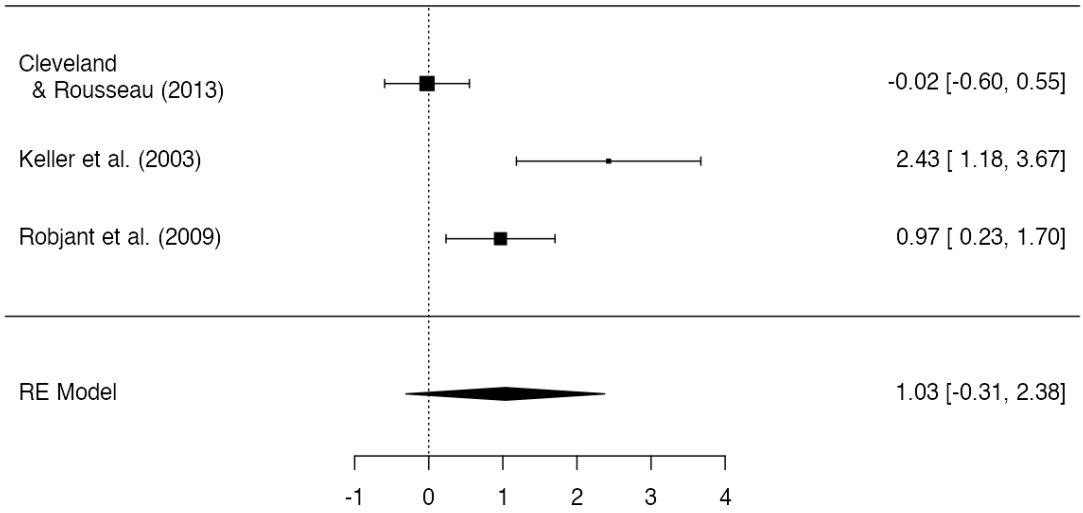

Figure I2. Relative Risk on the Probability of Anxiety in Detained Migrants Compared to Refugees Currently Not In Immigration Detention

Appendix J

Forest Plots and Table concerning Estimated Mean Differences on Depression, Anxiety, and PTSD Scores between Detained and Non-Detained Migrants

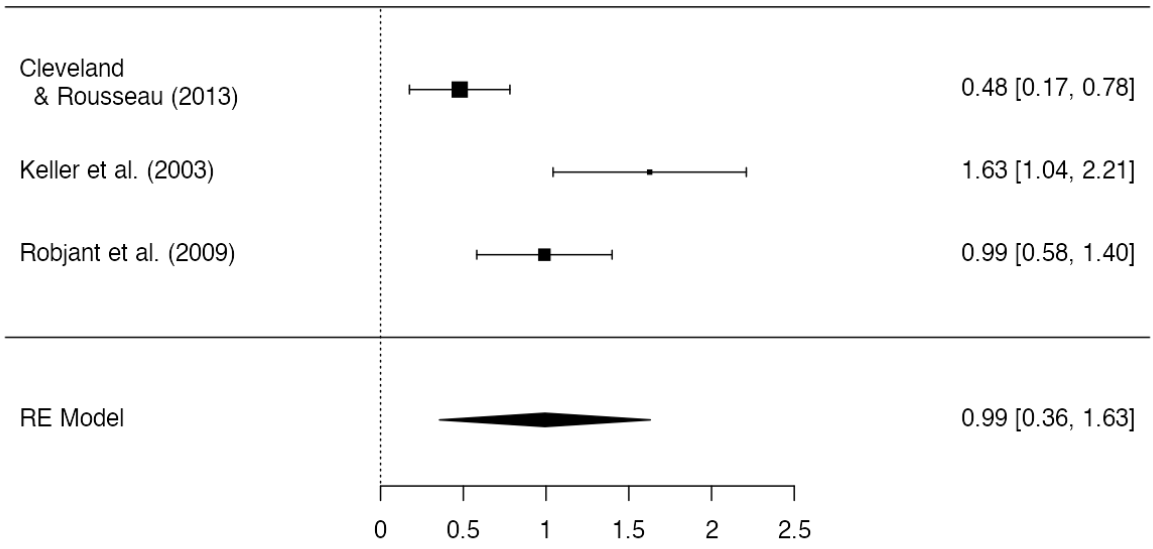

Figure J1. Forest Plot of the Estimated Effect Sizes of the Mean Scores of Depression for Detained Migrants Compared to Refugees Currently not in Immigration Detention

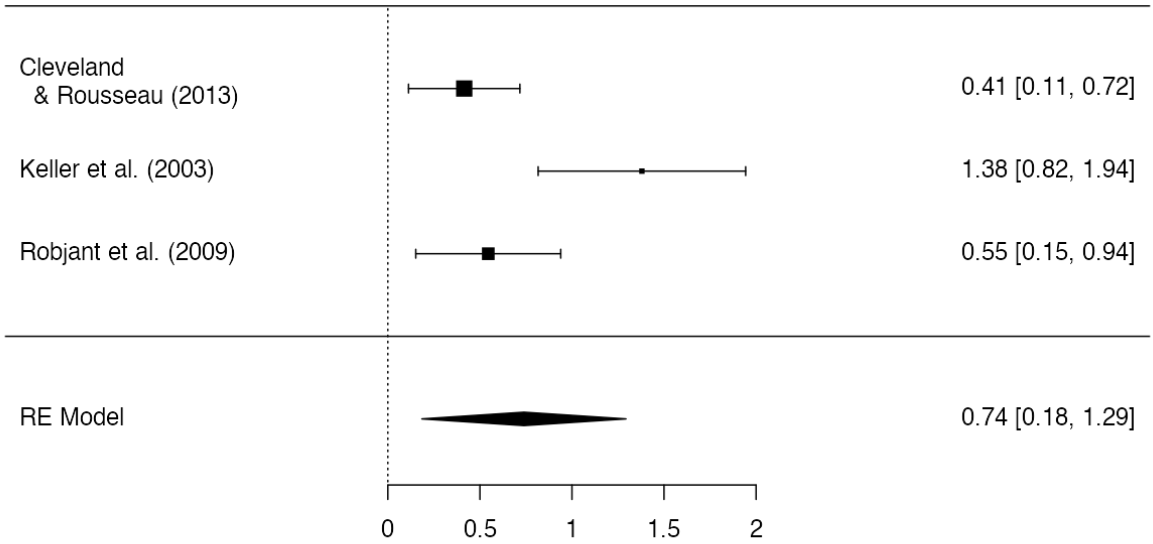

Figure J2. Forest Plot of the Estimated Effect Sizes of the Mean Scores of Anxiety for Detained Migrants Compared to Refugees Currently not in Immigration Detention

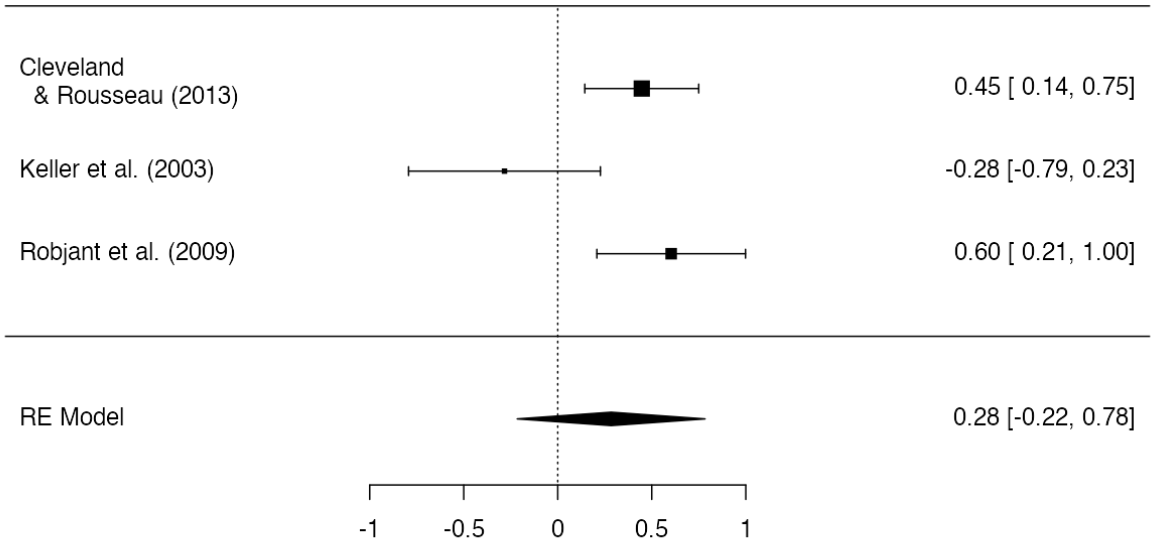

Figure J3. Forest Plot of the Estimated Effect Sizes of the Mean Scores of PTSD for Detained Migrants Compared to Migrants Currently not in Immigration Detention

Table J1

Means (Standard Deviation) of Depression, Anxiety, and PTSD as Reported by the Authors

	Detained migrants			**Non-detained migrants**		
Study	**Depression**	**Anxiety**	**PTSD**	**Depression**	**Anxiety**	**PTSD**
Cleveland & Rousseau (2013)	2.26 (0.69)	2.07 (0.76)	2.21 (0.67)	1.94 (0.62)	1.77 (0.64)	1.92 (0.6)
Keller et al. (2003)	2.73 (0.7)	2.58 (0.8)	2.63 (0.71)	1.65 (0.59)	1.59 (0.56)	1.8 (0.56)
Robjant et al. (2009)	13.54 (4.58)	14.08 (4.98)	68.02 (20.23)	9.24 (3.85) [a]	11.12 (5.98) [a]	54.35 (25.69) [a]

[a] Refugees living in community settings were used as control group; former detained prisoners were not included in the analysis