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The Mental Health Burden of Immigration Detention: An Updated Systematic Review and Meta-Analysis

This study provides up-to-date meta-analytic estimates of anxiety, depression, and post-traumatic stress disorder (PTSD) of people in immigration detention. The meta-analysis pools nine studies among adults, yielding high prevalence rates of anxiety (64.7 %), depression (73.5 %), and PTSD (46.4 %). Only three studies focused on minors. Even if immigration detention has been extensively criticized, this research area has been nonetheless neglected, especially regarding children and adolescents. Our findings call for an urgent improvement of preventive measures such as screening for mental disorders, access to psychiatric care, and psychiatric care in immigration detention settings to promote early identification and access to treatment.

Keywords: asylum seeker, detention, immigration, mental health, migrants, refugee

Die psychische Gesundheit von Migrant*innen in Abschiebehaft: Eine aktualisierte systematische Übersicht und Meta-Analyse

Basierend auf einer Metaanalyse stellte diese Studie aktuelle Schätzungen der Häufigkeiten von Angst, Depression und posttraumatischer Belastungsstörung (PTBS) während der Abschiebehaft bei Migrant*innen. Die Meta-Analyse umfasst neun Studien, die bei Erwachsenen durchgeführt wurden und findet hohe Prävalenzraten für Angst (64,7 %), Depression (73,5 %) und PTBS (46,4 %). Nur drei Studien beziehen sich auf Minderjährige. Auch wenn die Abschiebehaft weitläufig kritisiert wurde, wird dieser Forschungsbereich dennoch vernachlässigt, insbesondere im Hinblick auf Kinder und Jugendliche. Es besteht ein dringender Bedarf an der Verbesserung von Präventivmaßnahmen wie dem Screening von psychische Störungen, Zugang zu psychiatrischer Versorgung sowie psychiatrische Betreuung in Haftanstalten für Migrant*innen, um die frühe Erkennung, sowie Therapie zu ermöglichen.

Schlagwörter: Asylsuchende, Inhaftierung, Einwanderung, Psychische Gesundheit, Migrant*innen, Geflüchtete

1. Introduction

In the last decades, conflicts and poverty have yielded a dramatic increase in the number of displaced persons and refugees across the globe (UNHCR, 2019). Migrants are not always welcome in their host country and stringent measures often apply to asylum seekers, refugees, and undocumented migrants, including confinement in detention centers. The use of immigration detention has increased worldwide over the last ten years (Filges, Montgomery, & Kastrop, 2018; UNHCR, 2014).

At the same time, there is growing empirical evidence that immigration detention is associated with adverse health consequences (Filges et al., 2018; Juarez et al., 2019; Kellezi & Bosworth, 2016) and especially worsening of mental health problems (anxiety, depression, and post-traumatic stress disorder [PTSD]; (Filges et al., 2018; von Werthern et al., 2018) and high levels of distress (Bosworth & Gerlach, 2020). Undocumented migrants, who are particularly vulnerable because of pre- and post-migration factors (e. g., past exposure to adversity, lack of access to adequate health care, poverty), are often detained for too long periods and might not have access to sufficient health care during immigration detention (Harris & Pickles, 2018). Thus, immigration detention can appear as a distressing experience for this population that already bears a heavy burden of psychological distress (von Werthern et al., 2018). This situation has led to severe disapprovals vis-a-vis immigration detention (Harris & Pickles, 2018; Juarez et al., 2019; McKenzie, 2019); UNHCR, 2014).

The European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) has repeatedly raised serious concerns about immigration detention. A recent report recalled that immigration detention should not apply strict prison rules to undocumented migrants (e. g., limited access to mobile phones, limited Internet services, limited access to activities and outdoor exercise; (CPT, 2020). Insufficient access to psychiatric care has also been consistently observed in several European countries (e. g., CPT, 2019a, 2019b, 2019c, 2020). Immigration detention should be exceptional, not discriminatory, non-punitive, and limited in time (International Review of the Red Cross, 2017). Moreover, the detention of vulnerable groups (children, elderly people, people with mental health/health conditions) should be avoided (International Review of the Red Cross, 2017).

To date, only one meta-analysis focused on mental health among migrants in immigration detention (M. Fazel, Wheeler, & Danesh, 2005). It reported modest prevalence rates of depression (5 %) and PTSD (9 %). A more recent systematic review suggested high prevalence rates of two psychiatric disorders: 53 %-88 % for depression and 17 %-76 % for PTSD (von Werthern et al., 2018). However, although the current extent of the migration crisis is beyond dispute around the world, an up-to-date meta-analysis of the prevalence rates of psychiatric disorders in immigration detention is lacking. To fill in this knowledge gap, we performed a meta-analysis of recent empirical studies (October 2015-January 2020) to provide up-to-date prevalence estimates of the most common psychiatric disorders, namely anxiety, depression, and PTSD among immigrants in detention. We also investigated differences between regions (Australia, Europe, and North America).

2. Methods

To ensure a transparent and consistent reporting of methods and results, the present systematic review and meta-analysis was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati et al., 2009) and the Meta-analysis of Observational Studies in Epidemiology (MOOSE) checklist (Stroup et al., 2000). The review protocol was registered on PROSPERO (no. 167331).

2.1. Eligibility criteria and systematic search

All studies focusing on immigration detention were eligible for this systematic review. Articles were included if they 1) reported results of an empirical quantitative study, 2) were published

in international peer-reviewed journal, 3) provided prevalence rates of anxiety, depression, or PTSD, and 4) written in English. Exclusion criteria included: 1) qualitative studies; 2) comments, letters, and reviews that did not include data; and 3) reports or theses not published in peer-reviewed journals. Studies in different jurisdictions were included.

We searched Pubmed/Medline and PsycINFO between May 2018 and January 2020, using the combinations of the terms: “asylum seeker” or “refugee” or “migrant” or “immigrant” and “detention” or “detained” or “incarceration” or “prison” or “jail”. We also hand-searched for other relevant studies using reference lists. For the previous period (October 2015 to May 2018), we selected studies from the 26 publications identified in the previous systematic review using the same inclusion criteria (von Werthern et al., 2018).

We first removed article duplicates. Then, we excluded non-eligible studies by screening titles, abstracts, and full text when needed. Two reviewers (first and second authors) independently screened all articles. In case of disagreement, a consensus was achieved by discussion, and if required, by a third-party arbitration (last author).

2.2. Data extraction

Data were extracted by the first author using Excel. It included: 1) publication year; 2) country; 3) sample size; 4) population (adults or minors [<18]), 5) diagnostic tool (self-report or clinical diagnosis); 6) prevalence rate of anxiety; 7) prevalence rate of depression; and 8) prevalence rate of PTSD.

2.3. Risk of bias assessment

Articles included in the systematic review were assessed for the risk of bias using an adaptation of the Quality in Prognosis Studies including the following items: sample selection (convenient or probabilistic/opportunistic sampling strategy and response rate), outcome measurement (self-report or diagnosis), and presence of exclusion criteria (e. g., participants able to communicate in the language of the country) or focus on a specific subpopulation (Hayden, van der Windt, Cartwright, Côté, & Bombardier, 2013). Each study was rated as low or high quality by the first author (see *Supplementary Table 1*).

2.4. Statistical analyses

We estimated the meta-analytic prevalence rates of anxiety, depression, and PTSD along with 95 % confidence intervals (CI) for adults (not enough studies among minors). We tested potential influence of the following covariates in separate meta-regressions: country (pairwise comparisons with Bonferroni correction), type of assessment, and risk of bias. We used random-effects models with restricted maximum-likelihood estimator (Viechtbauer, 2016) and a logit transformation. I^2 were calculated to assess heterogeneity between studies. We also used funnel plots with regression tests for funnel plot asymmetry to assess publication bias. Analyses were performed using R 3.6.2 and the packages ‘meta’ version 4.11-0 for prevalence estimates (Schwarzer, 2020) and ‘metafor’ version 2.1-0 for meta-regressions (Viechtbauer, 2010).

3. Results

3.1. Study selection

The flow diagram appears in *Figure 1*. We identified 127 records from the period ranging from May 2018 to January 2020. After removing 15 duplicates, 112 publications remained. We excluded 111 publications after review because studies 1) did not report empirical quantitative data, 2) did not focus exclusively on migrants in administrative detention or 3) did not report prevalence rates of mental health problems. Thus, one publication was included in the meta-analysis for this time period. In the previous systematic review, 26 publications were included (von Werthern et al., 2018). Of these, nine publications met eligibility criteria to be included in our meta-analysis, leading to a total of ten publications. Among them, nine reported data on adults and three on minors. Two studies included data on both adults (parents) and minors. Information on the studies included in the meta-analysis is reported in *Table 1*. Data for adults and minors are reported separately.

3.2. Description of the studies

The meta-analysis pooled ten original studies including 714 participants (534 adults and 180 minors). Data came from six countries, mostly Australia (50 % of the studies included in the meta-analysis). Three studies were conducted in North America (USA and Canada) and four in Europe (Switzerland and the UK) and Israel. The sample sizes were rather small, ranging from 14 to 122 among adults and 10 to 150 among minors. Most studies (60 %) focused exclusively on asylum seekers. Self-reports were commonly used to assess mental health (60 %). All studies provided prevalence rates of PTSD, nine studies provided prevalence rates of depression (all studies conducted among adults), and six studies assessed anxiety. Among minors, PTSD was systematically assessed. Anxiety and depression were assessed in two studies, with one study focusing on separation anxiety. Six studies could be classified as having an important risk of bias (see detail in *Supplementary Table 1*).

3.3. Prevalence estimates of anxiety, depression, and PTSD

Among adults, the meta-analytic prevalence estimate of anxiety was 64.7 % (95 % CI: 47.4 %-78.9 %), of depression was 73.5 % (95 % CI: 59.6 %-83.9 %), and of PTSD was 46.4 % (95 % CI: 29.1 %-64.5 %). The corresponding forest plots are reported in *Figures 2 to 4*. The between-studies heterogeneity was high (anxiety: $I^2=86.7\%$, depression: $I^2=88.3\%$, and PTSD: $I^2=92.6\%$).

As there were a limited number of studies conducted among minors, we only computed meta-analytic prevalence estimates for adults. For minors, prevalence rates ranged between 50 % (separation anxiety) and 70 % for anxiety (two studies), 95 % and 100 % for depression (two studies), and 17 % and 100 % for PTSD (three studies).

3.4. Factors related to prevalence rates of mental health problems

The region of origin (Australia, Europe, and North America) was not significantly associated with the meta-analytic prevalence estimates (pairwise comparisons with Bonferroni corrections: $.084 \leq p \leq 1$).

There were no significant associations between the type of assessment (self-report or diagnosis) and the meta-analytic prevalence estimates for depression ($b=-0.74$, $p=.200$) and PTSD ($b=-0.27$, $p=.737$). For anxiety, diagnoses led to reduced prevalence rates in comparison with self-reports ($b=-1.09$, $p<.001$).

Finally, there was no significant effect of the risk of bias on the meta-analytic prevalence estimates for anxiety ($b=2.92$, $p=.069$), depression ($b=0.84$, $p=.197$), and PTSD ($b=0.42$, $p=.604$).

3.5. Publication bias

The three funnel plots were significantly or marginally asymmetric (anxiety: $p=.064$, depression: $p=.003$, and PTSD: $p=.030$). In all cases, the sample size explained the asymmetry, with the prevalence rates being higher for small samples and smaller for large samples.

4. Discussion

4.1. Main findings

Our meta-analysis displayed high prevalence estimates of psychiatric disorders among people in immigration detention: 64.7 % had anxiety, 73.5 % depression, and 46.4 % PTSD. These prevalence estimates were higher than those reported in the previous meta-analysis conducted 15 years ago (depression: 5 %, PTSD: 9 %; M. Fazel et al., 2005) and confirmed the increasing evidence of severe mental health problems among people in immigration detention (Filges et al., 2018; Robjant, Robbins, & Senior, 2009; von Werthern et al., 2018). These estimates were also higher than those reported in meta-analyses on the general prison population, who already display higher prevalence rates of psychiatric disorders compared to the general population with prevalence estimates of 11.4 % for depression (S. Fazel & Seewald, 2012) and 9.7 % for PTSD (Baranyi, Cassidy, Fazel, Priebe, & Mundt, 2018). No meta-analysis has focused on the prevalence rate of anxiety in the general prison population. Therefore, people in immigration detention appear as a vulnerable subgroup of people in detention, displaying high prevalence rates of internalizing disorders.

Empirical investigations of mental health among migrants held in immigration detention centers have been scarce during the previous five years. Indeed, we only identified ten studies in our meta-analysis. All of them relied on modest sample sizes and half of them did not have a robust methodology. Therefore, even if immigration detention has been extensively criticized (Harris & Pickles, 2018; McKenzie, 2019), this research area has been nonetheless neglected. Consequently, mental health issues of people in immigration detention are not well understood and not adequately addressed. For minors, our meta-analysis identified only three studies conducted since 2015, including two studies with very small sample sizes. As detention of minors is still practiced in more than one hundred countries, research on this population is

crucially needed and constitutes a critical step to guide policy makers and stakeholders to promote health care and recovery in this population (Wood, 2018). The lack of studies among minors might be because they have no access to medical screening and health care (Sriraman, 2019). Therefore, routine data cannot be extracted for children. Another reason is that minors in some countries are not in administrative detention, but rather in non-custodial community-based settings.

Half of the studies included in the meta-analysis were conducted in Australia. Australia has a history of mandatory detention for undocumented migrants that allowed indefinite detention in offshore detention centers (Sanggaran & Zion, 2016). It seemed that this criticized policy stimulated research on the mental health of undocumented migrants, as well as migrants not in detention settings (Chen, Hall, Ling, & Renzaho, 2017; Cooper, Enticott, Shawyer, & Meadows, 2019; Procter, Kenny, Eaton, & Grech, 2018). In our meta-analysis, prevalence estimates of psychiatric disorders were similar in the different regions (Australia, Europe, and USA). It might also be due to changes and variability in policies in the different countries, not captured with the three regions identified in this meta-analysis.

4.2. Implications

From a health care perspective, prospective and interventional studies are needed among this vulnerable population. It would help to achieve a better understanding of the burden of mental health disease in immigration detention and to develop effective health care intervention to improve access to psychiatric care and psychiatric care (Harris & Pickles, 2018; McKenzie, 2019). This is particularly true among minors. Immigration detention has been described as an “invalidating setting” for psychiatric care (Brooker, Albert, Young, & Steel, 2017). It means that expressions of emotional experiences such as distress are negatively responded to or ignored, a situation that can lead to increased emotional or behavioral problems. Therefore, there is a crucial need of developing relevant intervention programs for this setting.

From a human rights perspective, detention does not appear as a suitable solution to illegal immigration, and we recommend developing alternatives to immigration detention (Spreng & Gothuey, 2019). As the prevalence rate of psychiatric disorders appears to be much higher than previously reported, policy should focus more resources on preventable measures as well as providing health care treatment for this vulnerable population. These high prevalence rates of psychiatric disorders may have additive negative medium- and long-term effects on the integration of this population.

4.3. Limitations

A first shortcoming was that important heterogeneity was identified in the prevalence rates reported between studies. Several reasons might explain these differences such as the reliability and validity of the mental health assessment tools, especially because these tools were used to assess disorders in a population that did not come from Western countries, where these tools are usually developed and validated. Another reason might be the heterogeneity of the samples, including different host countries with varying policies (that might change over time) and opportunistic sampling strategies sometimes with exclusion criteria. Conditions of immigration detention can differ between countries and over time, and this heterogeneity was not captured in our meta-analysis. Further studies should focus more specifically on the condition

of immigration detention. A second shortcoming was the potential publication bias. Indeed, the funnel plots were asymmetric, with smaller samples leading to higher prevalence rates of psychiatric disorders. Therefore, caution is needed when interpreting the pooled prevalence estimates. In addition, as our meta-analysis relied on a small number of studies having small sample sizes, caution is also needed to interpret prevalence estimates and differences according to moderators. A third shortcoming was that in some studies, psychiatric disorders were not clearly defined. It prevented us from giving a precise definition of the disorders (e. g., major depressive disorder). Future studies should rely on DSM-5 or ICD-11 definitions. Another limitation was that studies included in the meta-analysis did not investigate comorbidity between psychiatric disorders and psychiatric history. However, people in immigration detention probably display high rates of comorbid psychiatric disorders. Future studies should also focus on this important aspect, as comorbidity is associated with detrimental outcomes, such as more severe symptomatology and worsening of treatment outcomes (Katzman, Bilkey, Chokka, Fallu, & Klassen, 2017; Priester et al., 2016; Sringeri, Rajkumar, Muralidharan, Chandrashekar, & Benegal, 2008). Finally, the lack of studies among children in immigration detention might be due to the absence of children in immigration detention in some countries, in which they are in non-custodial community-based settings.

5. Conclusion

Our meta-analysis builds upon recent findings showing that people in immigration detention face major mental health problems, with about half and three quarters of this population reporting symptoms of anxiety, depression, and PTSD. There is an urgent need for improving preventive measures such as screening for mental disorders, access to psychiatric care, and psychiatric care in immigration detention settings.

References

- Baranyi, G., Cassidy, M., Fazel, S., Priebe, S., & Mundt, A. P. (2018). Prevalence of posttraumatic stress disorder in prisoners. *Epidemiologic Reviews*, 40(1), 134-145. <https://doi.org/10.1093/epirev/mxx015>
- Bosworth, M., & Gerlach, A. (2020). *Quality of life in detention*. Retrieved from UK, Oxford: https://www.law.ox.ac.uk/sites/files/oxlaw/mqld_2019_report_for_publication_16.03.20.pdf (2020, June 29).
- Brooker, S., Albert, S., Young, P., & Steel, Z. (2017). Mental Health Care in an Invalidating Environment: the Case of Immigration Detention in Australia. In *Challenging Immigration Detention* (pp. 195-221). Cheltenham, UK - Northampton, MA, USA: Edward Elgar Publishing.
- Chen, W., Hall, B. J., Ling, L., & Renzaho, A. M. N. (2017). Pre-migration and Post-migration Factors Associated with Mental Health in Humanitarian Migrants in Australia and the Moderation Effect of Post-Migration Stressors: Findings from the First Wave Data of the BNLA cohort study. *The Lancet Psychiatry*, 4(3), 218-229. [https://doi.org/10.1016/S2215-0366\(17\)30032-9](https://doi.org/10.1016/S2215-0366(17)30032-9)
- Cleveland, J., & Rousseau, C. (2013). Psychiatric Symptoms Associated with Brief Detention of Adult Asylum Seekers in Canada. *Canadian Journal of Psychiatry. Revue Canadienne De Psychiatrie*, 58(7), 409-416. <https://doi.org/10.1177/070674371305800706>
- 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*, 70(12), 2070-2079. <https://doi.org/10.1016/j.socscimed.2010.02.042>

- Cooper, S., Enticott, J. C., Shawyer, F., & Meadows, G. (2019). Determinants of Mental Illness Among Humanitarian Migrants: Longitudinal Analysis of Findings From the First Three Waves of a Large Cohort study. *Frontiers in Psychiatry*, 10. <https://doi.org/10.3389/fpsyt.2019.00545>
- CPT. (2019a). *Report to the Bulgarian Government on the Visit to Bulgaria Carried Out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 10 to 17 December 2018* (CPT/Inf (2019) 24).
- CPT. (2019b). *Report to the Greek Government on the Visit to Greece Carried Out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 10 to 19 April 2018* (CPT/Inf (2019) 4).
- CPT. (2019c). *Report to the Norwegian Government on the Visit to Norway Carried Out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 28 May to 5 June 2018* (CPT/Inf (2019) 1).
- CPT. (2020). *Report to the Danish Government on the Visit to Denmark Carried Out by the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) from 3 to 12 April 2019* (CPT/Inf (2019) 35).
- Cwikel, J., Chudakov, B., Paikin, M., Agmon, K., & Belmaker, R. H. (2004). Trafficked Female Sex Workers Awaiting Deportation: Comparison with Brothel Workers. *Archives of Women's Mental Health*, 7(4), 243-249. <https://doi.org/10.1007/s00737-004-0062-8>
- Fazel, M., Wheeler, J., & Danesh, J. (2005). Prevalence of Serious Mental Disorder in 7000 Refugees Resettled in Western Countries: a Systematic Review. *Lancet (London, England)*, 365(9467), 1309-1314. [https://doi.org/10.1016/S0140-6736\(05\)61027-6](https://doi.org/10.1016/S0140-6736(05)61027-6)
- Fazel, S., & Seewald, K. (2012). Severe Mental Illness in 33,588 Prisoners Worldwide: Systematic Review and Meta-regression Analysis. *The British Journal of Psychiatry: The Journal of Mental Science*, 200(5), 364-373. <https://doi.org/10.1192/bjp.bp.111.096370>
- 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. <https://doi.org/10.1177/1049731516630384>
- 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. <https://doi.org/10.1016/j.ijlp.2013.04.009>
- Harris, K., & Pickles, H. (2018). Immigration Detention in the UK Damages Health and Frustrates Healthcare. *BMJ (Clinical research ed.)*, 361, k2104. <https://doi.org/10.1136/bmj.k2104>
- Hayden, J. A., van der Windt, D. A., Cartwright, J. L., Côté, P., & Bombardier, C. (2013). Assessing Bias in Studies of Prognostic Factors. *Annals of Internal Medicine*, 158(4), 280-286. <https://doi.org/10.7326/0003-4819-158-4-201302190-00009>
- International Review of the Red Cross. (2017). *ICRC Policy Paper on Immigration Detention* (99 (1)). Retrieved from Geneva, Switzerland https://international-review.icrc.org/sites/default/files/irrc_99_19.pdf (2020, June 29)
- Juarez, S. P., Honkaniemi, H., Dunlavy, A. C., Aldridge, R. W., Barreto, M. L., Katikireddi, S. V., & Rostila, M. (2019). Effects of Non-health-Targeted Policies on Migrant Health: a Systematic Review and Meta-analysis. *The Lancet. Global health*, 7(4), e420-e435. [https://doi.org/10.1016/S2214-109X\(18\)30560-6](https://doi.org/10.1016/S2214-109X(18)30560-6)
- Katzman, M., Bilkey, T., Chokka, P., Fallu, A., & Klassen, L. (2017). Adult ADHD and Comorbid Disorders: Clinical Implications of a Dimensional Approach. *BMC Psychiatry*, 17(1), 302. <https://doi.org/10.1186/s12888-017-1463-3>
- Keller, A. S., Rosenfeld, B., Trinh-Shevrin, C., Meserve, C., Sachs, E., Leviss, J. A., . . . Ford, D. (2003). Mental Health of Detained Asylum Seekers. *Lancet (London, England)*, 362(9397), 1721-1723. [https://doi.org/10.1016/S0140-6736\(03\)14846-5](https://doi.org/10.1016/S0140-6736(03)14846-5)
- Kellezi, B., & Bosworth, M. (2016). *Mental Health, Suicidal Thoughts and Self-Harm Inside Immigration detention* (ID 2867358). Retrieved from Rochester, NY: <https://papers.ssrn.com/abstract=2867358> (2020, June 29).

- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., . . . Moher, D. (2009). The PRISMA Statement for Reporting Systematic Reviews and Meta-analyses of Studies that Evaluate Health Care Interventions: Explanation and Elaboration. *PLOS Medicine*, 6(7), e1000100. <https://doi.org/10.1371/journal.pmed.1000100>
- MacLean, S. A., Agyeman, P. O., Walther, J., Singer, E. K., Baranowski, K. A., & Katz, C. L. (2019). Mental Health of Children Held at a United States Immigration Detention Center. *Social science & medicine (1982)*, 230, 303-308. <https://doi.org/10.1016/j.socscimed.2019.04.013>
- 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. <https://doi.org/10.1111/j.1467-842x.2004.tb00041.x>
- McKenzie, K. C. (2019). Loud, Gray, and Arbitrary - The Compounding Trauma of Detention for Asylum Seekers. *The New England journal of medicine*, 380(9), 807-809. <https://doi.org/10.1056/NEJMp1816400>
- Priester, M., Browne, T., Iachini, A., Clone, S., DeHart, D., & Seay, K. (2016). Treatment Access Barriers and Disparities Among Individuals with Co-occurring Mental Health and Substance use Disorders: An Integrative Literature Review. *Journal of Substance Abuse Treatment*, 61, 47-59. <https://doi.org/10.1016/j.jsat.2015.09.006>
- Procter, N. G., Kenny, M. A., Eaton, H., & Grech, C. (2018). Lethal Hopelessness: Understanding and Responding to Asylum Seeker Distress and Mental Deterioration. *International Journal of Mental Health Nursing*, 27(1), 448-454. <https://doi.org/10.1111/inm.12325>
- Robjant, K., Robbins, I., & Senior, V. (2009). Psychological Distress Amongst Immigration Detainees: a Cross-Sectional Questionnaire Study. *The British Journal of Clinical Psychology*, 48(Pt 3), 275-286. <https://doi.org/10.1348/014466508X397007>
- Sanggaran, J. P., & Zion, D. (2016). Is Australia Engaged in Torturing Asylum Seekers? A Cautionary tale for Europe. *J Med Ethics*, 42(7), 420-423. <https://doi.org/10.1136/medethics-2015-103326>
- Schwarzer, G. (2020). *Package "meta": General Package for Meta-Analysis*.
- 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. <https://doi.org/10.1017/S2045796017000269>
- Spreng, S., & Gothuey, I. (2019). Détention administrative suisse : Comment améliorer la santé psychique des personnes en attente d'expulsion ? In H. Wolff & G. Niveau (eds.), *Santé en prison* (pp. 423-439). Geneva: Switzerland: Hygiène & Médecine.
- Sringeri, S., Rajkumar, R., Muralidharan, K., Chandrashekar, C., & Benegal, V. (2008). The Association Between Attention-deficit/Hyperactivity Disorder and Early-onset Alcohol Dependence: A Retrospective study. *Indian Journal of Psychiatry*, 50(4), 262-265. Retrieved from <http://nimhans.ac.in/cam/sites/default/files/Publications/38.PDF> (2020, June 29).
- Sriraman, N. K. (2019). Detention of Immigrant Children - A Growing Crisis. What is the Pediatrician's Role? *Current Problems in Pediatric and Adolescent Health Care*, 49(2), 50-53. <https://doi.org/10.1016/j.cppeds.2019.01.005>
- 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. <https://doi.org/10.1111/j.1467-842x.2004.tb00042.x>
- Stroup, D. F., Berlin, J. A., Morton, S. C., Olkin, I., Williamson, G. D., Rennie, D., . . . Thacker, S. B. (2000). Meta-Analysis of Observational Studies in Epidemiology: a Proposal for Reporting. Meta-analysis Of Observational Studies in Epidemiology (MOOSE) group. *JAMA*, 283(15), 2008-2012. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10789670> (2020, June 29).
- UNHCR. (2014). *Beyond Detention: A Global Strategy to Support Governments to End the Detention of Asylum-Seekers and Refugees*. Geneva, Switzerland.
- UNHCR. (2019). *Global trends: Forced displacement in 2018*. Geneva: Switzerland.
- Viechtbauer, W. (2010). Conducting Meta-Analyses in R with the Metafor Package. *Journal of Statistical Software*, 36(1), 1-48. <https://doi.org/10.18637/jss.v036.i03>

- Viechtbauer, W. (2016). Bias and Efficiency of Meta-Analytic Variance Estimators in the Random-Effects Model. *Journal of Educational and Behavioral Statistics*. <https://doi.org/10.3102/10769986030003261>
- von Werthern, M., 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. <https://doi.org/10.1186/s12888-018-1945-y>
- Wood, L. C. N. (2018). Impact of Punitive Immigration Policies, Parent-Child Separation and Child Detention on the Mental Health and Development of Children. *BMJ Paediatr Open*, 2(1), e000338. <https://doi.org/10.1136/bmjpo-2018-000338>

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Figure 1: Flow diagram of studies included in the meta-analysis

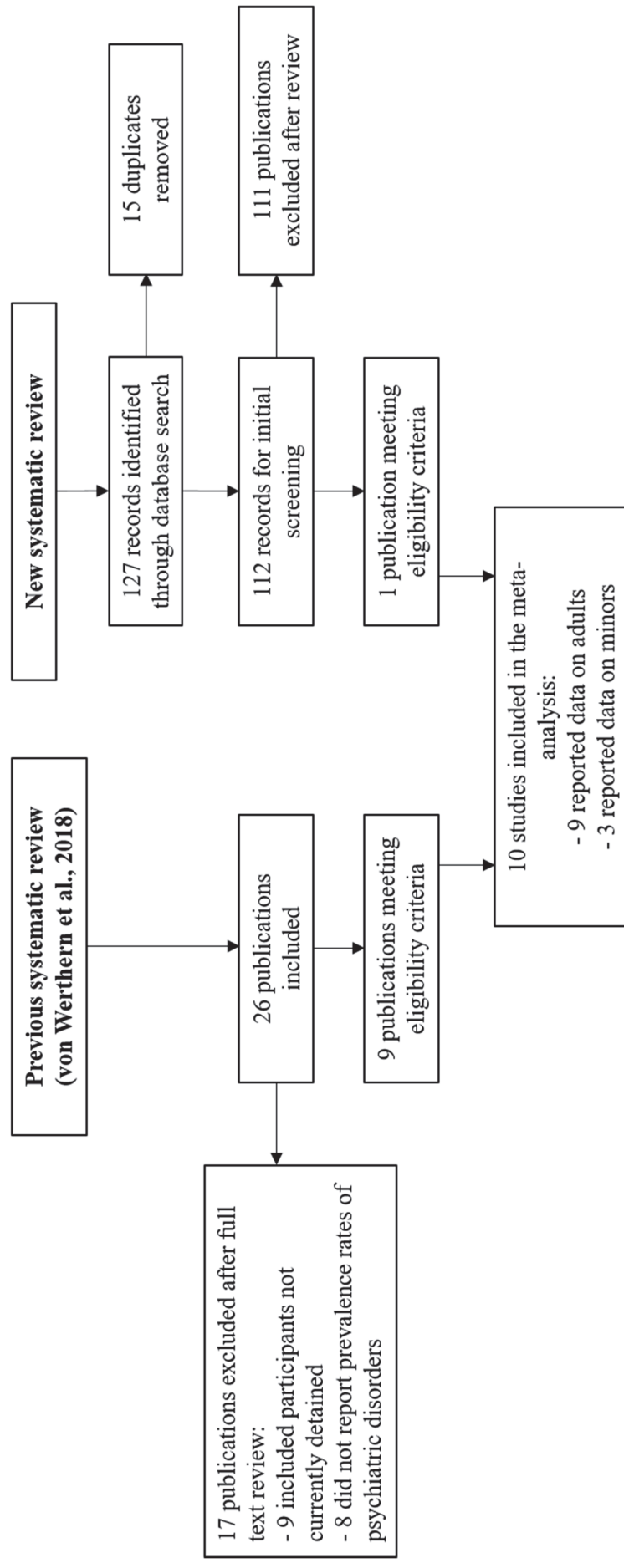
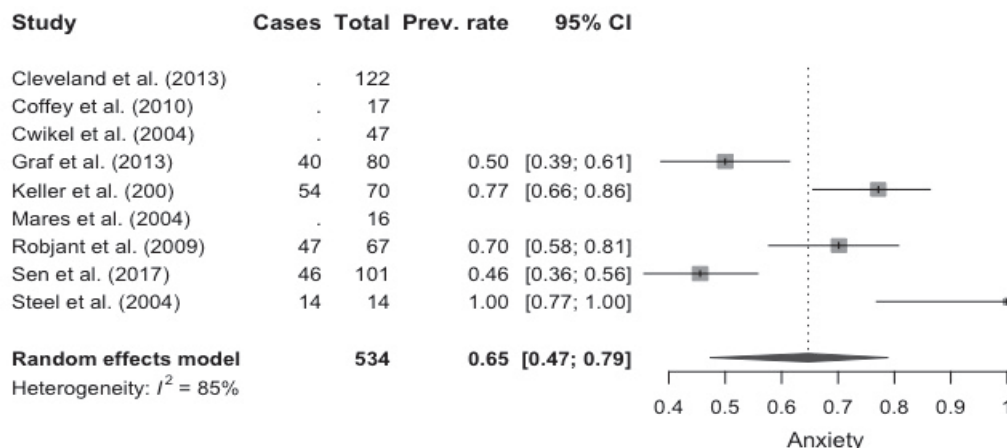
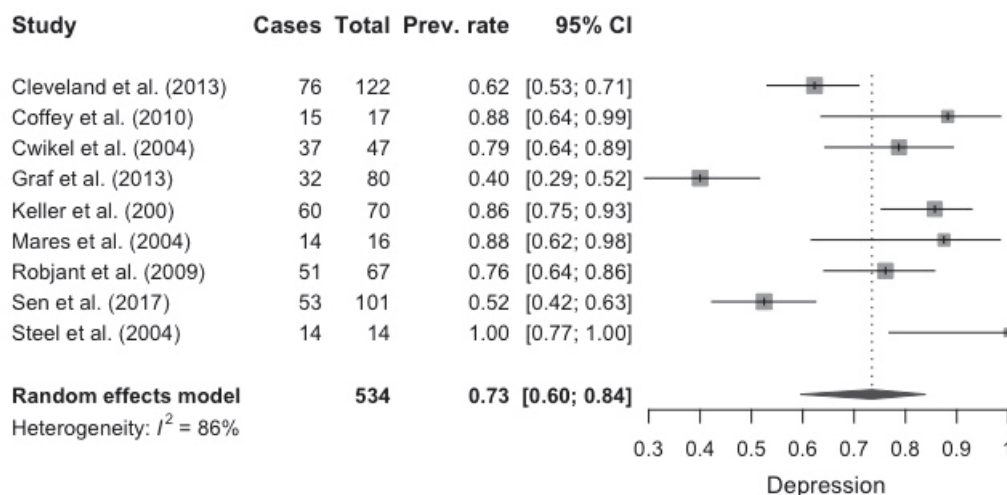


Figure 2: Forest plot for prevalence estimate of anxiety among adults (five studies)



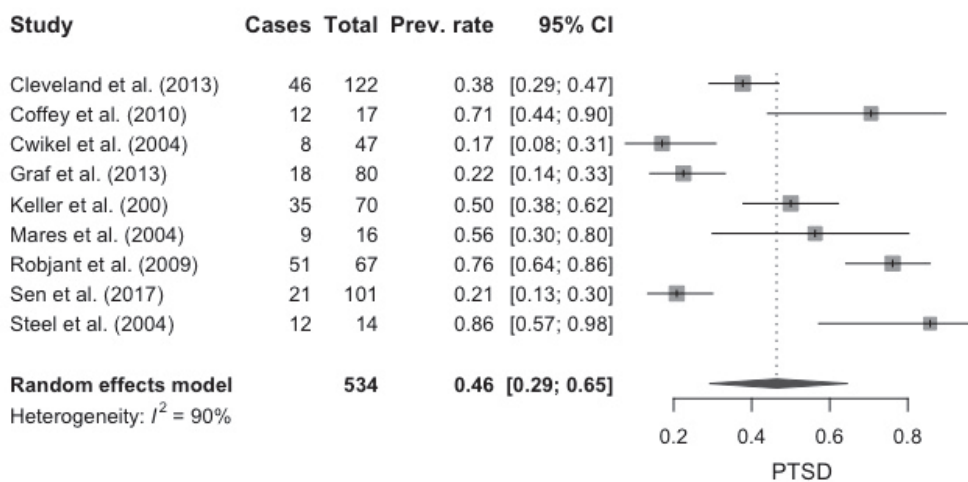
CI: confidence intervals.

Figure 3: Forest plot for prevalence estimate of depression among adults (nine studies)



CI: confidence intervals.

Figure 4: Forest plot for prevalence estimate of PTSD among adults (nine studies)



CI: confidence intervals; PTSD: post-traumatic stress disorder.

Table 1: Description of studies included in the meta-analysis

Authors	Year of publication	Country	Sample size	Population	Inclusion criteria	Assessment type	Tools	Anxiety (%)	Depression (%)	PTSD (%)	Risk of bias
(Cleveland & Rousseau)	2013	Canada	122	Adult asylum seekers	Being detained for ≥7 days, refugee claim not rejected	Self-report	Hopkins Symptoms Checklist and Harvard Trauma Questionnaire (DSM-IV)	No prevalence rate	62.3	37.7	High
(Coffey, Kaplan, Sampson, & Tucci)	2010	Australia	17	Adults who made protection visa applications	Being detained for ≥2 years, being from Middle-Eastern countries, and had (imminent) permanent residency status	Self-report	Hopkins Symptoms Checklist and Harvard Trauma Questionnaire (DSM-IV)	No prevalence rate	88.2	70.6	High
(Cwikel, Chudakov, Paikin, Agmon, & Belmaker)	2004	Israel	47	Adult female sex workers awaiting deportation	-	Self-report	Center for Epidemiologic Studies Depression Scale, PTSD checklist (DSM-III-IV)	Not assessed	79	17	High
(Graf et al.)	2013	Switzerland	80	Male adults	-	Diagnosis	ICD-10	50	40	22.5	Low
(Keller et al.)	2003	USA	70	Adult asylum seekers	-	Self-report	Hopkins Symptoms Checklist and Harvard Trauma Questionnaire (DSM-IV)	77.1	85.7	50	Low
(MacLean et al.)	2019	USA	150	Minors	Age ≥9, mothers spoke English or Spanish	Self-report	Post-Traumatic Stress Disorder Reaction Index (DSM-5)	Not assessed	Not assessed	17	High
(Mares & Jureidini)	2004	Australia	16	Adult asylum seekers	Referred clinical population	Diagnosis	Comprehensive clinical assessment	Not assessed	87.5	56.3	High
(Mares & Jureidini)	2004	Australia	10	Minor asylum seekers	Referred clinical population (minors aged 6-17)	Diagnosis	Comprehensive clinical assessment	70	100	100	High

(Robjant et al.)	2009	UK	67	Adult asylum seekers		Self-report	Hospital Anxiety and Depression scale, Post-Traumatic Scale	70.8	75.8	76	Low
(Sen et al.)	2017	UK	101	Male adults	Working knowledge of English, being ≥18, being born outside the European Union	Diagnosis	MINI (DSM-IV, ICD-10)	45.6	52.5	20.7	Low
(Steel et al.)	2004	Australia	14	Adult asylum seekers	Being detained for ≥2 years	Diagnosis	Structured Clinical Interview for DSM-IV Axis I Disorders	100	100	85.7	High
(Steel et al.)	2004	Australia	20	Minor asylum seekers	Being detained for ≥2 years	Diagnosis	Schedule for Affective Disorders and Schizophrenia for School-Age Children (DSM-IV)	50 (separation anxiety)	95	50	High

DSM: Diagnostic and Statistical Manual of Mental Disorders; ICD: International Classification of Diseases; PTSD: post-traumatic stress disorder

Supplementary Table 1: Risk of bias assessment

Authors	Sampling strategy 0=convenient or unclear 1=probabilistic or opportunistic	Response rate 0= <70 % or not reported 1= ≥70 %	Outcome 0=Self-report 1= Diagnosis	Exclusion criteria 0= Yes 1= No	Subsample of the whole population in immigration detention 0= Yes 1= No	Total score	Risk of bias
Cleveland et al.	1	1	0	0	0	2	High
Coffey et al.	1	0	0	0	0	1	High
Cwikel et al.	0	0	0	1	0	1	High
Graf et al.	1	0	1	1	1	4	Low
Keller et al.	1	1	0	1	0	3	Low
MacLean et al.	0	0	0	0	1	1	High
Mares et al.	0	0	1	1	0	2	High
Robjant et al.	1	1	0	1	0	3	Low
Sen et al.	1	0	1	0	1	3	Low
Stell et al.	0	0	1	0	0	1	High