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Medication use for depression, anxiety and PTSD among migrants and ethnic minorities: a systematic review

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Le plagiat

Je déclare sur l'honneur que ce mémoire a été écrit de ma plume, sans avoir sollicité d'aide extérieure illicite, qu'il n'est pas la reprise d'un travail présenté dans une autre institution pour évaluation, et qu'il n'a jamais été publié, en tout ou en partie.

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Abstract

Objective: Mental health has a heavy weight in public health. Depression and anxiety are worldwide present, and have been aggravated since the covid-19 crisis. Migrants and refugees are among the most vulnerable populations for these mental conditions. The goal of this dissertation is to identify disparities in access and use of appropriate mental health pharmacological treatment.

Methods: A systematic review has been done for this purpose. Four main databases have been used. Only quantitative studies, referring to adults and talking about pharmacological treatment have been included.

Results: Fifty-nine articles were included at the end of the selection process. This review shows poor access to mental health care for immigrants and minorities in most of the countries. Moreover, when accessing care, the quality of care is not always adhering to guidelines. Ethnic minorities had usually less probabilities to have psychotropic medication prescriptions

Conclusion: Disparities in mental health treatment for immigrants or ethnic minority groups remain. Different barriers have also been identified as an explanation. Therefore, new strategies should be adopted by governments to improve mental health of the most disadvantaged populations.

Keywords: Immigrants, refugees, ethnic minorities, natives ; psychotropic drug prescription ; depression, anxiety, post-traumatic stress disorder

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Introduction

"Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community. Mental health is a basic human right. And it is crucial to personal, community and socio-economic development" (1). Following the International Classification of Diseases (ICD), a mental disorder is characterized by a clinically significant disturbance in an individual's cognition, emotional regulation, or behaviour. It is usually associated with distress or impairment in personal, family, social, educational, occupational or other important areas of functioning (2). As said in The Lancet, mental disorders still are among most important causes of burden of disease worldwide (4). In 2019, around 970 millions of people were living with a mental disorder. About 4% of the global population had depressive or anxiety disorders (3). This condition has been aggravated by the covid-19 crisis, which has shown the poor mental health conditions of people and the need of the problem to be tackled by governments (5). There are many different types of mental disorders. Anxiety, depression and post-traumatic stress disorder (PTSD) are among the most common mental health disorders when talking of migrants and ethnic minorities (17).

Being exposed to adverse circumstances increases people's risk of experiencing mental health conditions or mental disorders, that can occur at any one time. The experience of migration is a key determinant of health and well-being. Migrants and refugees often face difficulties and stressful situations before and during the migration journey. Even once arrived in host countries, where they suddenly become an ethnic minority, getting settled is not an easy task. Poor living, housing or working conditions, racism and discrimination, lack of support networks, unemployment and language barriers are factors that have negative influence in their mental health and well-being (12). Therefore, refugees, migrants and ethnic minorities tend to have higher prevalence of the mental disorders listed above and remain among the most vulnerable members of society. But higher prevalence of mental health problems does not mean higher use of mental health services. Ethnic minority populations are usually less likely to use mental healthcare services than the majority native population. Refugees, migrants and minorities need to be in good health to successfully integrate in and enrich the host-country social engine. As said in the 25th article of the United Nations Human Right declaration, "everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack

of livelihood in circumstances beyond his control" (16), and countries have an obligation to provide sensitive health care services. An equal access to therapy and/or pharmaceutical treatment is key to promote the welfare and integration of minorities and immigrants; it is therefore essential to assess inequalities in the access and the use of mental health treatment.

The aim of this study is to identify disparities in access and use of optimal pharmacological treatment between ethnic minorities/migrants and ethnic majorities/natives, based on the hypothesis that there are differences between both groups. The summary of the literature will highlight the importance of the cultural, structural and environmental dimensions that influence the mental health of ethnic minorities. To our knowledge, this is the first systematic on this specific topic.

Anxiety disorders are characterized by excessive fear and worry and related behavioural disturbances. Symptoms are severe enough to result in significant distress or significant impairment in functioning. There are different types of anxiety disorders (2). Depression is different from usual mood fluctuations and short-lived emotional responses to challenges in everyday life. During a depressive episode, the person experiences depressed mood (feeling sad, irritable, empty) or a loss of pleasure or interest in activities, for most of the day, nearly every day, for at least two weeks. Several other symptoms are also present, which may include poor concentration, feelings of excessive guilt or low self-worth, hopelessness about the future, thoughts about dying or suicide, disrupted sleep, changes in appetite or weight, and feeling especially tired or low in energy. People with depression are at an increased risk of suicide (2). PTSD may develop following exposure to an extremely threatening or horrific event or series of events. It is characterized by re-experiencing the traumatic event or events in the present (intrusive memories, flashbacks, or nightmares); avoidance of thoughts and memories of the event(s), or avoidance of activities, situations, or people reminiscent of the event(s); and persistent perceptions of heightened current threat. These symptoms persist for at least several weeks and cause significant impairment in functioning (2).

Although effective psychological and medication treatment exists, access and use of pharmaceutical treatments for depression, anxiety and PTSD may be different between migrants/refugees/ethnic minorities and natives/ethnic majorities. Guidelines for anxiety and depression management suggest to combine psychotherapeutic interventions and

pharmacological treatment, depending on several patient characteristics and gravity of the episode (13, 14). Antidepressants help relieve the symptoms of depression and anxiety, and a large number of them are available. In general, selective serotonin reuptake inhibitors (SSRIs) are considered a first-line treatment option due to its side effect and safety profile. Other group of medication are: serotonin–norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), monoamine oxidase inhibitors (MAOIs), Noradrenaline and specific serotoninergic antidepressants (NaSSAs) or benzodiazepines (especially in the treatment of anxiety for people who have had no good response to antidepressants) (13, 15).

Methods

The research was carried out through a systematic review of existing literature. The standard scientific search engines PubMed, Embase, Scopus, APA PsycINFO and Google Scholar were used to identify published articles of interest. Keywords were adapted for each of the databases and have been combined to produce the search questions. These are presented in *Table 1*. Once the search in the listed databases was done, we used the software "rayyan" to complete the process of inclusion and exclusion of publications. Duplicates were first removed. The co-supervisor (LB) and myself (JM) then screened independently all the publications for inclusion, using only titles and abstracts. Where there was disagreement, the full text manuscript was consulted by the two reviewers to reach agreement using the inclusion and exclusion criteria stated below. We could then screen the full text of all the selected publications. No additional papers were identified from citations of included papers.

The inclusion criteria were :

- Adults (men and women above 18 years of age) treated with medications for depression, anxiety and/or PTSD.
- Clear information about migration background and/or ethnicity.
- Definition of type and/or quantity of drugs prescribed by doctors.
- Studies conducted in English.
- Quantitative studies.

The exclusion criteria were:

- Individuals below 18 years of age.
- Individuals with no migration background or ethnicity reported.
- No information on the type and/or quantity of drugs prescribed by doctors.
- Studies conducted in other languages than English.
- Other than quantitative studies.
- Previous systematic reviews.

We included quantitative studies on the inequalities in access and use of medication for anxiety, depression and PTSD between migrants/ethnic minorities and natives-born/ethnic majorities. To study prescription trends across countries, we included quantitative studies investigating

disparities in both the probability to get a medication for anxiety, depression and PTSD and treatment levels between migrants/ethnic minorities and natives-born/ethnic majorities.

There was no country or publication period restrictions.

A protocol was registered in PROSPERO (CRD42023425943).

Data extraction

A Microsoft Excel spreadsheet was used to extract and record data. Extracted data included year of the publication, authors, country(ies) of study, publication title, research question or study purpose, study design, dataset, outcomes, subjects/participants, type of treatment, identified barrier/disparity, and relevant results.

Quality assessment

The choice of articles was independently (blind) made by two researchers (JM and LB). Discussions were conducted between both reviewers to reach a non-significant discrepancy (<10%). The first reviewer (JM), supervised by the second one (LB), completed the data extraction form and any discrepancy was discussed between both reviewers and resolved by consensus.

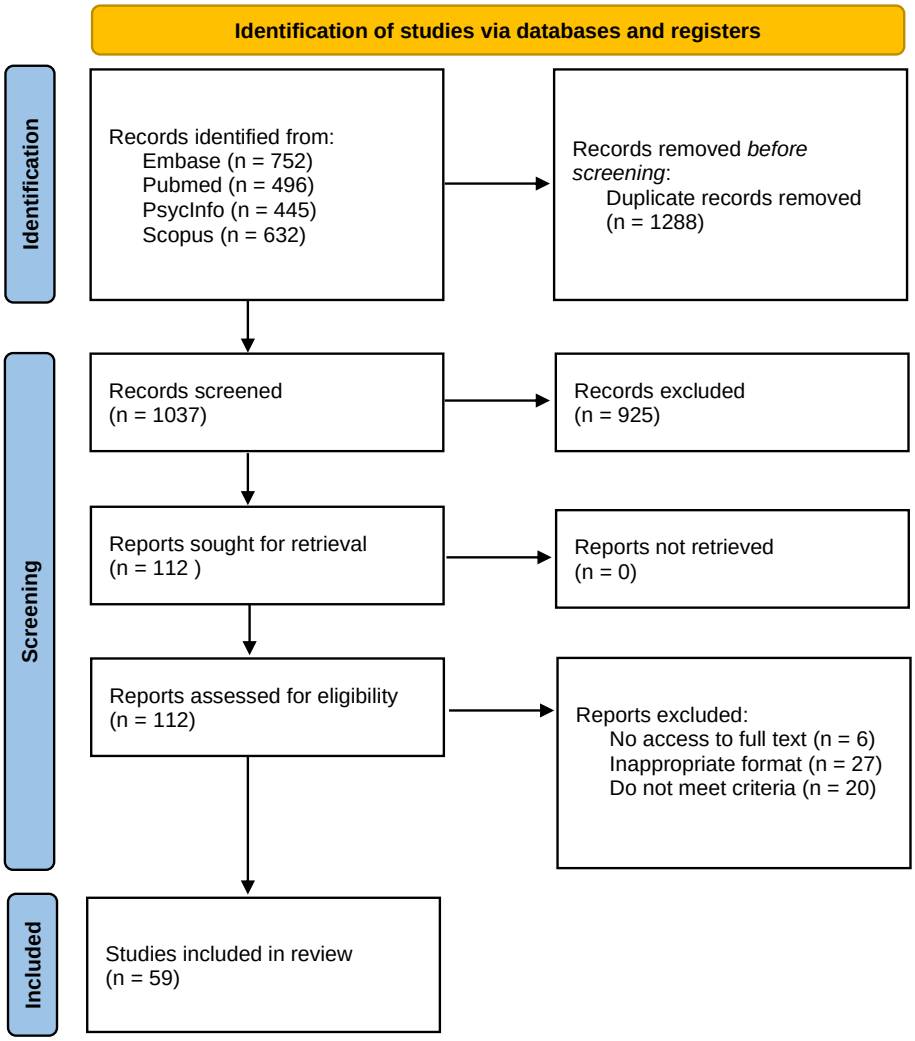
The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for Reporting Observational Studies (19) for quality assessment of selected studies was used to assess the quality of included studies. The STROBE statement guidelines (*Appendix 3*) contain 22 criteria which was used to assess the quality of included studies. Studies were assessed on a three-level scale: 0 if the "criterion was not met", 1 if the "criterion was partially met" and 2 if the "criterion was fully met". When the criterion was not applicable to the article, it was marked as "NA".

For the development of this review I took into account the PRISMA-P 2015 checklist (*Appendix 4*) about the recommended items to include in a systematic review protocol.

Results

The research resulted in 2,325 papers. A sample of 1,288 duplicates were detected by the software RAYYAN and were removed one by one by the first reviewer (JM). The remaining 1,037 articles were independently screened by title and abstract by both reviewers (JM and LB) and, after discussion, the two reviewers agreed to include 112 articles for full-text review. Free access to full text was not available for 5 articles and 1 article was not found. After full texts screening, 27 articles were excluded because of inappropriate format (e.g. conference abstract) and 20 articles did not meet the inclusion criteria or were too unspecific about mental health treatments. No article was removed due to STROBE criteria not being met. Finally, a sample of 59 articles were included. An overview of the article selection process is presented in the PRISMA flow diagram (*Figure 1*).

Figure 1. *Study flow diagram for included and excluded studies (PRISMA 2020)* (18)

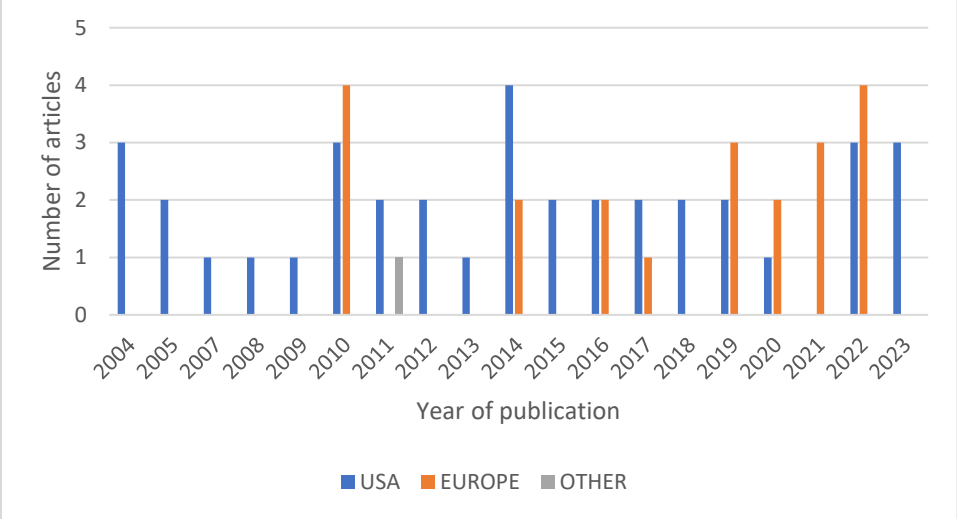


A summary of the included articles is presented in *Appendix 1*.

All the included studies were conducted in high-income countries (following the World Bank classification). Most of them (37/59 ~ 63%) took place in the United States of America (USA), the rest were carried out in Ireland, The Netherlands, Sweden, the United Kingdom (UK), Spain, Norway, Finland, Israel and Italy. No studies in middle-income and low-income countries were found.

Among the studies carried out in Europe, only 28% (6/21) [10, 33, 45, 55, 13, 50] were published before 2015. This might be explained by 2015 being the year from which there was an increased movement of refugees and migrants into Europe. While the USA has a long history of immigration, the time span of papers from the US is larger than the time span of the articles published in Europe. In the *figure 1*, Israel is shown in the other category.

Figure 1: *Publication dates overview*



Across the included studies, data of population and health care utilization were generally extracted from national surveys as MEPS[1] and national, regional or specific registries and databases. One article [58] collected quantitative data on drug dispensation from a Non-Governmental Organization, and another one [26] straight from an epidemiological cohort study. Data were not always adjusted to fit the setting of interest. The designs of the selected articles were quite similar. First, they used descriptive analysis to describe the characteristics of the sample populations, and then logistic regression models to assess the relationship

[1] The Medical Expenditure Panel Survey (MEPS) is a set of large-scale surveys of families and individuals, their medical providers, and employers across the United States. MEPS is the most complete source of data on the cost and use of health care and health insurance coverage.

between the outcome of interest and the independent variables. Education level, age, gender, occupation or income level, insurance status, urbanism, perceived need for care or symptoms severity were often used as explanatory variables. The outcomes are compiled in *Appendix 1*.

Immigrant groups and racial/ethnic minorities were categorised differently according to the country or context. They were often categorized as non-Hispanic Whites, Blacks/African American and Hispanics/Latinos, especially in USA. Ethnic identities were self-reported. Asian were less represented. In studies run in Europe, immigrant groups were mostly identified by country of birth, and other minority groups as Moroccan, Turkish, Indian or Eastern Europe were taken into account. Few articles included population having a special situation as cancer [41], diabetes [26, 43, 56], being pregnant [50] or use of hormonal contraception [48]. However, they were included in the review because they were still measuring disparities in medication use between immigrants and natives for depression, anxiety or PTSD.

The diagnosis of the disease, when available, was mostly made following the International Classification of Diseases (ICD) version 9 and 10. Other forms to classify it were the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) codes or the International Classification of Primary Care (ICPC) codes. To assess symptoms of depression, anxiety or PTSD, questionnaires were sometimes used, such as Composite International Diagnostic Interview (CIDI), the 2-item or the 9-item Patient Health Questionnaire (PHQ-2) (PHQ-9), Center for Epidemiologic Studies Depression Scale (CES-D) or Kessler Psychological Distress Scale (K6).

Pharmacological treatment for depression and anxiety was mostly identified by Anatomical Therapeutic Chemical (ATC) classification system of the WHO, N05 and N06 codes respectively. When the ATC system was not used to classify medications, it was specified whether the drug treatments were anxiolytics or antidepressants or if the medication were used to treat anxiety, depression or PTSD. We only included studies looking at medication for depression, anxiety and PTSD, but psychotherapy was often assessed together with medication in the included studies.

Ethnic minorities had usually lower rates of access to care and particularly less probabilities to have psychotropic medication prescriptions. However, some exceptions are worth mentioning. Stockdale, S.E. et al. (USA) [29] found that disparities were improved or eliminated in specialized psychiatric care. Fassaertn T. et al. (The Netherlands) [10] states that differences in treatment were small for Moroccan and Turkish patients, and treatment characteristics were

more favourable for Surinamese and Antillean clients. The results of the study of Fassaert, T. et al. (The Netherlands) [33] do not support the general idea that non-Western ethnic minority patients are less likely to receive guideline-concordant care for common mental disorders (CMD). Wittkampf, L.C. et al. (The Netherlands) [55] found there was a higher risk of antidepressant drug prescriptions among the Moroccan and Turkish populations in the Netherlands compared with the native Dutch population, however, anxiolytics drug prescription were higher among Turkish or lower in the Moroccan group. In the study of Riiser, S. et al. (Norway) [46], patients being immigrant were more likely to receive antidepressants compared to their native peers. Disparities were also different depending on Country of origin [32, 44, 47], maybe due to cultural differences. Quality of care was, generally, worse for racialised minorities [37, 10, 33, 30]. A summary of the relevant results is presented in *Appendix 2*.

Limitations

Following the STROBE guidelines, the vast majority (98 %) of the articles did not present a risk of bias. However, Satre, D.D. et al. [19] had a high risk of bias due to a large number of non-respondents to the survey and could not assess how representative the studied sample was. Their results must then be cautiously considered.

Minority and native groups of patients are defined by origin and/or ethnicity; however, immigrants' origins can change across host countries and ethnic minorities may be defined differently across contexts. Also, health systems characteristics differ significantly across countries, especially comparing USA (where no universal healthcare exists) and countries in Europe. This makes comparability of studies across different countries difficult.

Since the symptoms of depression, anxiety or PTSD were self-reported by the participants themselves, this information may be somehow biased. In fact, social desirability has been seen as a bias in self-reports, especially when talking about controversial or sensitive topics as mental health or drug use. Participants could be embarrassed of reporting some private information, or certain symptoms could be exaggerated or understated (20, 21, 22).

The studies included in the review do not include information on whether patients are complementing or substituting pharmacological treatment with psychotherapy. Only Meghan L.M (USA) [4] enquire about the utilization of complementary or unconventional treatment. Most studies which did not include information on psychotherapy are potentially suffering of omitted variables bias, i.e. there might exist some unidentified confounding variable that drives the disparities beyond the healthcare system.

Showing that immigrants and ethnic minorities are treated differently from native-born individuals and the ethnic majority could also reflect under-treatment (or under-diagnosis) of some patients as well as overtreatment (or over-diagnosis) of the others. Few studies [39, 33, 36, 43] reported comparisons with guideline-concordant treatment.

Discussion

The aim of this study was to identify disparities in access and use of optimal pharmacological treatment between ethnic minorities/migrants and ethnic majorities/natives, based on the hypothesis that there are differences between both groups.

Despite the efforts made by governments to reduce health disparities between ethnic minority and ethnic majority groups, a clear phenomenon emerges from this review: minorities struggle to access care similarly to the native populations, and when they do access care, they are not always treated in an equal way.

Cruz, I. et al. [45] and Brendler-Lindqvist, M. et al. [13] objectified an increase of antidepressants consumption with longer duration of residence in the host country. This may reflect either a deterioration of their mental health (the expectations they had moving to the host country are not fulfilled, no acculturation or feeling homesick) or improved access to the health system.

Causes of disparities are wide, and are often broken down into a patient, provider or system-level factors. Disparities may reflect both demand and supply side barriers to use of care for mental health, as well as the heterogeneity of individual patients' preferences. Patients from racial-ethnic minority groups may be reluctant to take antidepressants, after these medications are recommended, prescribed, or initially tried. It seems that they prefer counselling than drug therapy, may find medication treatment less acceptable and are less likely to believe antidepressant medications are effective, and more likely to believe that antidepressant medications are addictive than their native counterparts. Ethnic minorities are more likely to seek informal care sources, such as pastors, spiritual healers, traditional medicine or family and friends. Mental health disorders still carry the weight of social stigma among minorities, affecting the self-perceived needs and health seeking-behaviour. Specific cultural needs (such as family involvement in the process of seeking care and healing), coping strategies and educational level are also among the observed health barriers [39, 14, 38, 20, 40, 19, 26, 33, 4, 24, 9, 28, 53]. As stated in the WHO definition of quality of care, quality health services should be people-centred, i.e. providing care that responds to individual preferences, needs and values. Thus, this group of barriers should be a priority for policy makers.

Treating minorities remains a problem for physicians, who are not familiar with different cultures and often fall into unconscious stereotypes bias (they could think than immigrants are more likely to medication abuse or that they exaggerate when reporting symptoms). Cultural differences between both can difficult patient-provider relationship, where trust and effective communication must occur for appropriate diagnoses and treatment of common mental health disorders. Language barriers or the lack of translators in health visits are additional factors that difficult communication and comprehension in patient-provider exchanges [45, 55, 18, 34, 4, 24, 9, 1, 58, 28, 53].

Structural, financial and other access barriers (transportation, geographic factors, babysitting, inflexible work schedules, availability of out-of-pocket funds or insurance status) are often present as well.

Limitations of the study

The strength of this review is based on the wide number of studies included and the large time period, which makes possible to analyse trends.

This kind of review suffers of the usual limitations. First, results rely on the identification of all relevant scientific articles through the query equation used in the selected databases. Some relevant articles may be missing from those databases and for this reason excluded from the review. The exclusion of other identified articles because they were not accessible may have also affected conclusions. However, it is unlikely that enough articles were missed to hide a significant trend in results. Secondly, the data from the articles were only extracted and evaluated by one reviewer, the most inexperienced. It is possible that an evaluation bias remained.

Conclusions

This review found evidence of remaining disparities in mental health treatment for immigrants or ethnic minority groups. Patient, provider and system determinants influenced mental well-being and access and experiences with mental health services. The reasons are uncertain, but some articles suggest that stigma, poor health education, language barriers, ethnic segregation and discrimination, individual preferences, high expenditures or lack of insurance, health providers' prejudices and lack of interventions adapted to minorities beliefs could help to explain mental health care disparities (6, 7, 8, 9, 10, 11).

The results of the different studies included in the review highlight the complexities of the adult population and suggest new paths for disparities research. Quality improvement efforts are needed to address barriers to care. Future governmental programs could target collaborative mental healthcare initiatives between professional healthcare services and community organisations. This could improve understanding of mental diseases and treatments, and may lead to dissipate myths and stigma regarding mental health. It may also increase access to culturally competent mental health professionals.

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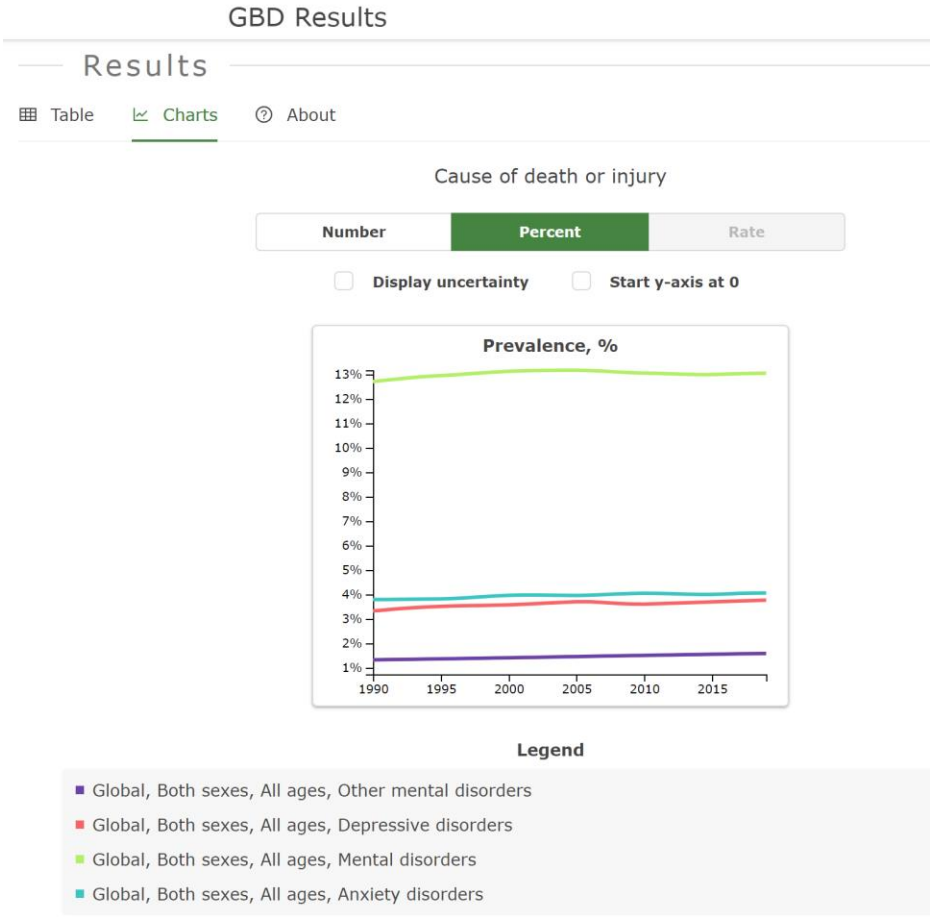

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Appendices

Table 1. *Search queries for each of the literature databases*

Database	Search Equation
Embase	('migration'/exp OR 'migrant'/exp OR 'displaced person*':ti,ab OR 'migrant*':ti,ab OR 'immigrant*':ti,ab OR 'incomer*':ti,ab OR 'refugee*':ti,ab OR 'ethnic minorit*':ti,ab OR 'ethnic disparit*':ti,ab OR 'racial minorit*':ti,ab OR 'racial disparit*':ti,ab OR 'native population':ti,ab OR 'host population':ti,ab OR 'born population':ti,ab OR 'settled communities':ti,ab OR 'foreign born':ti,ab OR 'born abroad':ti,ab) AND ('mental health'/exp OR 'anxiety':ti,ab OR 'depression':ti,ab OR 'PTSD':ti,ab OR 'post traumatic stress disorder*':ti,ab OR 'panic disorder*':ti,ab OR 'depressive disorder*':ti,ab OR 'stress disorder*':ti,ab OR 'emotional disorder*':ti,ab OR 'posttraumatic stress':ti,ab OR 'post-traumatic stress':ti,ab OR 'post traumatic stress':ti,ab OR 'posttraumatic disorder*':ti,ab OR 'post-traumatic disorder*':ti,ab OR 'post traumatic disorder*':ti,ab OR 'post-migratory stress':ti,ab OR 'mental':ti,ab OR 'mental distress':ti,ab OR 'psychological distress':ti,ab) AND ('prescription'/exp OR 'benzodiazepine derivative'/exp OR 'serotonin uptake inhibitor'/exp OR 'antidepressant agent'/exp OR 'anxiolytic agent'/exp OR 'drug prescription*':ti,ab OR 'drug prescribing*':ti,ab OR 'pharmacological treatment*':ti,ab OR 'medication*':ti,ab OR 'pharmaceutical consumption*':ti,ab OR 'medicine prescription*':ti,ab OR 'access to mental health care':ti,ab OR 'psychotropic prescription*':ti,ab OR 'mental health treatment*':ti,ab OR 'mental health intervention*':ti,ab OR 'antidepressive agent*':ti,ab OR 'anxiolytic*':ti,ab OR 'benzodiazepine*':ti,ab OR 'diphenylmethane derivative*':ti,ab OR 'carbamate*':ti,ab OR 'dibenzo-bicyclo-octadiene derivative*':ti,ab OR 'azaspirodecanedione derivative*':ti,ab OR 'antidepressant*':ti,ab OR 'SSRI':ti,ab OR 'selective Serotonin Reuptake Inhibitor*':ti,ab OR 'non-selective monoamine reuptake inhibitor*':ti,ab OR 'monoamine oxidase A inhibitors':ti,ab OR 'monoamine oxidase inhibitors':ti,ab) AND ('health care disparity'/exp OR 'health disparity'/exp OR 'record linkage study':ti,ab OR 'data linkage study':ti,ab OR 'healthcare disparit*':ti,ab OR 'health care Inequalit*':ti,ab OR 'healthcare Inequalit*':ti,ab OR 'health care Disparit*':ti,ab OR 'health inequalit*':ti,ab OR 'health inequit*':ti,ab OR 'disparit*':ti,ab OR 'difference*':ti,ab OR 'distinction*':ti,ab OR 'discrimination*':ti,ab OR 'variation*':ti,ab OR 'differenciation*':ti,ab OR 'dissimilarit*':ti,ab OR 'divergence*':ti,ab OR 'inequalit*':ti,ab OR 'inequit*':ti,ab OR 'comparison':ti,ab)
Pubmed	("Transients and Migrants"[mh] OR "displaced person*"[tiab] OR "migrant*"[tiab] OR "immigrant*"[tiab] OR "incomer*"[tiab] OR "refugee*"[tiab] OR "ethnic minorit*"[tiab] OR "ethnic disparit*"[tiab] OR "racial minorit*"[tiab] OR "racial disparit*"[tiab] OR "native population"[tiab] OR "host population"[tiab] OR "born population"[tiab] OR "settled communities"[tiab] OR "foreign born"[tiab] OR "born abroad"[tiab]) AND ("Mental health"[mh] OR "anxiety"[tiab] OR "depression"[tiab] OR "PTSD"[tiab] OR "post traumatic stress disorder*"[tiab] OR "panic disorder*"[tiab] OR "depressive disorder*"[tiab] OR "stress disorder*"[tiab] OR "emotional disorder*"[tiab] OR "posttraumatic stress"[tiab] OR "post-traumatic stress"[tiab] OR "post traumatic stress"[tiab] OR "posttraumatic disorder*"[tiab] OR "post-traumatic disorder*"[tiab] OR "post traumatic disorder*"[tiab] OR "post-migratory stress"[tiab] OR "mental"[tiab] OR "mental distress"[tiab] OR "psychological distress"[tiab]) AND ("Drug Prescriptions"[mh] OR "Benzodiazepines"[mh] OR "Selective Serotonin Reuptake Inhibitors"[mh] OR "Antidepressive Agents"[mh] OR "Anti-Anxiety Agents"[mh] OR "drug prescription*"[tiab] OR "drug prescribing*"[tiab] OR "pharmacological treatment*"[tiab] OR "medication*"[tiab] OR "pharmaceutical consumption*"[tiab] OR "medicine prescription*"[tiab] OR "access to mental health care"[tiab] OR "psychotropic prescription*"[tiab] OR "mental health treatment*"[tiab] OR "mental health intervention*"[tiab] OR "antidepressive agent*"[tiab] OR "anxiolytic*"[tiab] OR "benzodiazepine*"[tiab] OR "diphenylmethane derivative*"[tiab] OR "carbamate*"[tiab] OR "dibenzo-bicyclo-octadiene derivative*"[tiab] OR "azaspirodecanedione derivative*"[tiab] OR "antidepressant*"[tiab] OR "SSRI"[tiab] OR "selective Serotonin Reuptake Inhibitor*"[tiab] OR "non-selective monoamine reuptake inhibitor*"[tiab] OR "monoamine oxidase A inhibitors"[tiab] OR "monoamine oxidase inhibitors"[tiab]) AND ("Healthcare Disparities"[mh]

	OR "Health Inequities"[mh] OR "record linkage study"[tiab] OR "data linkage study"[tiab] OR "healthcare disparit*"[tiab] OR "health care Inequalit*"[tiab] OR "healthcare Inequalit*"[tiab] OR "health care Disparit*"[tiab] OR "health inequalit*"[tiab] OR "health inequit*"[tiab] OR "disparit*"[tiab] OR "difference*"[tiab] OR "distinction*"[tiab] OR "discrimination*"[tiab] OR "variation*"[tiab] OR "differenciation*"[tiab] OR "dissimilarit*"[tiab] OR "divergence*"[tiab] OR "inequalit*"[tiab] OR "inequit*"[tiab] OR "comparison"[tiab])
Scopus	(KEY ({Transients and Migrants}) OR KEY ({migration}) OR KEY ({migrant}) OR TITLE-ABS ("displaced person*") OR TITLE-ABS ("migrant*") OR TITLE-ABS ("immigrant*") OR TITLE-ABS ("incomer*") OR TITLE-ABS ("refugee*") OR TITLE-ABS ("ethnic minorit*") OR TITLE-ABS ("ethnic disparit*") OR TITLE-ABS ("racial minorit*") OR TITLE-ABS ("racial disparit*") OR TITLE-ABS ("native population") OR TITLE-ABS ("host population") OR TITLE-ABS ("born population") OR TITLE-ABS ("settled communities") OR TITLE-ABS ("foreign born") OR TITLE-ABS ("born abroad")) AND (KEY ({mental health}) OR TITLE-ABS ("anxiety") OR TITLE-ABS ("depression") OR TITLE-ABS ("PTSD") OR TITLE-ABS ("post traumatic stress disorder*") OR TITLE-ABS ("panic disorder*") OR TITLE-ABS ("depressive disorder*") OR TITLE-ABS ("stress disorder*") OR TITLE-ABS ("emotional disorder*") OR TITLE-ABS ("posttraumatic stress") OR TITLE-ABS ("post-traumatic stress") OR TITLE-ABS ("post traumatic stress") OR TITLE-ABS ("posttraumatic disorder*") OR TITLE-ABS ("post-traumatic disorder*") OR TITLE-ABS ("post traumatic disorder*") OR TITLE-ABS ("post-migratory stress") OR TITLE-ABS ("mental") OR TITLE-ABS ("mental distress") OR TITLE-ABS ("psychological distress")) AND (KEY ({drug prescriptions}) OR KEY ({benzodiazepines}) OR KEY ({selective serotonin reuptake inhibitors}) OR KEY ({antidepressive agents}) OR KEY ({Anti-Anxiety Agents}) OR KEY ({prescription}) OR KEY ({benzodiazepine derivative}) OR KEY ({serotonin uptake inhibitor}) OR KEY ({antidepressant agent}) OR KEY ({anxiolytic agent}) OR TITLE-ABS ("drug prescription*") OR TITLE-ABS ("drug prescribing*") OR TITLE-ABS ("pharmacological treatment*") OR TITLE-ABS ("medication*") OR TITLE-ABS ("pharmaceutical consumption*") OR TITLE-ABS ("medicine prescription*") OR TITLE-ABS ("access to mental health care") OR TITLE-ABS ("psychotropic prescription*") OR TITLE-ABS ("mental health treatment*") OR TITLE-ABS ("mental health intervention*") OR TITLE-ABS ("antidepressive agent*") OR TITLE-ABS ("anxiolytic*") OR TITLE-ABS ("benzodiazepine*") OR TITLE-ABS ("diphenylmethane derivative*") OR TITLE-ABS ("carbamate*") OR TITLE-ABS ("dibenzo-bicyclo-octadiene derivative*") OR TITLE-ABS ("azaspirodecanedione derivative*") OR TITLE-ABS ("antidepressant*") OR TITLE-ABS ("SSRI") OR TITLE-ABS ("selective Serotonin Reuptake Inhibitor*") OR TITLE-ABS ("non-selective monoamine reuptake inhibitor*") OR TITLE-ABS ("monoamine oxidase A inhibitors") OR TITLE-ABS ("monoamine oxidase inhibitors")) AND (KEY ({healthcare disparities}) OR KEY ({health inequities}) OR KEY ({health care disparity}) OR KEY ({health disparity}) OR TITLE-ABS ("record linkage study") OR TITLE-ABS ("data linkage study") OR TITLE-ABS ("healthcare disparit*") OR TITLE-ABS ("health care Inequalit*") OR TITLE-ABS ("healthcare Inequalit*") OR TITLE-ABS ("health care Disparit*") OR TITLE-ABS ("health inequalit*") OR TITLE-ABS ("health inequit*") OR TITLE-ABS ("disparit*") OR TITLE-ABS ("difference*") OR TITLE-ABS ("distinction*") OR TITLE-ABS ("discrimination*") OR TITLE-ABS ("variation*") OR TITLE-ABS ("differenciation*") OR TITLE-ABS ("dissimilarit*") OR TITLE-ABS ("divergence*") OR TITLE-ABS ("inequalit*") OR TITLE-ABS ("inequit*") OR TITLE-ABS ("comparison"))
PsycInfo	(MESH("Transients and Migrants") OR SU.EXPLODE("Immigration") OR SU.EXPLODE("Refugees") OR TIAB("displaced person*") OR TIAB("migrant*") OR TIAB("immigrant*") OR TIAB("incomer*") OR TIAB("refugee*") OR TIAB("ethnic minorit*") OR TIAB("ethnic disparit*") OR TIAB("racial minorit*") OR TIAB("racial disparit*") OR TIAB("native population") OR TIAB("host population") OR TIAB("born population") OR TIAB("settled communities") OR TIAB("foreign born") OR TIAB("born abroad")) AND (MESH("Mental health") OR SU.EXPLODE("Mental health") OR TIAB("anxiety") OR TIAB("depression") OR TIAB("PTSD") OR TIAB("post traumatic stress disorder*") OR TIAB("panic disorder*") OR TIAB("depressive disorder*") OR TIAB("stress disorder*") OR TIAB("emotional disorder*") OR TIAB("posttraumatic stress") OR TIAB("post-traumatic stress") OR TIAB("post traumatic stress") OR TIAB("posttraumatic disorder*") OR TIAB("post-traumatic disorder*") OR TIAB("post traumatic disorder*") OR TIAB("post-migratory stress") OR TIAB("mental") OR TIAB("mental distress"

	) OR TIAB("psychological distress")) AND (MESH("Drug Prescriptions") OR MESH("Benzodiazepines") OR MESH("Selective Serotonin Reuptake Inhibitors") OR MESH("Antidepressive Agents") OR MESH("Anti-Anxiety Agents") OR SU.EXPLODE("Prescription Drugs") OR SU.EXPLODE("Benzodiazepines") OR SU.EXPLODE("Antidepressant Drugs") OR SU.EXPLODE("Anxiolytic Drugs") OR TIAB("drug prescription*") OR TIAB("drug prescribing*") OR TIAB("pharmacological treatment*") OR TIAB("medication*") OR TIAB("pharmaceutical consumption*") OR TIAB("medicine prescription*") OR TIAB("access to mental health care") OR TIAB("psychotropic prescription*") OR TIAB("mental health treatment*") OR TIAB("mental health intervention*") OR TIAB("antidepressive agent*") OR TIAB("anxiolytic*") OR TIAB("benzodiazepine*") OR TIAB("diphenylmethane derivative*") OR TIAB("carbamate*") OR TIAB("dibenzo-bicyclo-octadiene derivative*") OR TIAB("azaspirodecanedione derivative*") OR TIAB("antidepressant*") OR TIAB("SSRI") OR TIAB("selective Serotonin Reuptake Inhibitor*") OR TIAB("non-selective monoamine reuptake inhibitor*") OR TIAB("monoamine oxidase A inhibitors") OR TIAB("monoamine oxidase inhibitors")) AND (MESH("Healthcare Disparities") OR MESH("Health Inequities") OR TIAB("record linkage study") OR TIAB("data linkage study") OR TIAB("healthcare disparit*") OR TIAB("health care Inequalit*") OR TIAB("healthcare Inequalit*") OR TIAB("health care Disparit*") OR TIAB("health inequalit*") OR TIAB("health inequit*") OR TIAB("disparit*") OR TIAB("difference*") OR TIAB("distinction*") OR TIAB("discrimination*") OR TIAB("variation*") OR TIAB("differenciation*") OR TIAB("dissimilarit*") OR TIAB("divergence*") OR TIAB("inequalit*") OR TIAB("inequit*") OR TIAB("comparison"))

Appendix 1. *Summary of the selected articles*

Date	Article	Dataset	Outcome of interest
2004	Virnig, B. et al. (USA) [37]	Individual-level Health Plan Employer Data and Information Set (HEDIS) data for reporting year 2000 (based on 1999 experience) were merged with demographic data obtained from the Centers for Medicare and Medicaid Services.	Percentage of members diagnosed as having a new episode of depression being treated with antidepressants
	Miranda, J. et al. (USA) [39]	Baseline survey of the Quality Improvement for Depression (QID) survey	Odds of receiving at least one antidepressant medication in the preceding 6 months
	Harman, J.S. et al. (USA) [42]	2000 Medical Expenditure Panel Survey (MEPS)	Odds of having filled at least one antidepressant prescription during the year among individuals with self-reported depression
2005	Han, E. et al. (USA) [14]	1996-2000 MEPS	Likelihood of using prescription drugs for mental illnesses
	Strothers III, H.S. et al (USA) [38]	1998 Medicaid claims data for five states	Odds of being treated with antidepressant drug therapy during the calendar year
2007	Blanco, C. et al. (USA) [20]	1993-1997 and 1998-2002 National Ambulatory Medical Care Survey (NAMCS)	Odds of having an antidepressant prescription
2008	Stockdale, S.E. et al. (USA) [29]	1995-2005 NAMCS (based on doctor report)	Probability of receiving an antidepressant prescription
2009	González, H.M. et al. (USA) [40]	2002-2003 National Latio and Asian American Study (NLAAS) and the National Comorbidity Survey-Replication (NCS-R) studies	Odds of any past year antidepressant use
2010	Fassaertn T. et al. (The Netherlands) [10]	ZORGIS, a national case register (2001-2005)	Time between registration at an institution for mental health care and the first treatment contact
	Satre, D.D. et al (USA) [19]	2002 or 2005 Kaiser Permanente Adult Member Health Survey (MHS)	Probability of having filled ≥ 1 antidepressant prescription
	Osborn, C.Y. et al. (USA) [26]	The Southern Community Cohort Study (SCCS), a prospective epidemiological cohort study designed to explore causes of health disparities in adults	Likelihood of antidepressant use

	Fassaert, T. et al. (The Netherlands) [33]	Electronic medical records collected for the Netherlands Information Network of General Practice (2007) and Dutch population registry at Statistics Netherlands	Proportion of Common Mental Disorders (CMD) episodes with guideline-concordant treatment (antidepressants and anxiolytics)
	Cruz, I. et al. (Spain) [45]	Computerized medical record and pharmaceutical records of medications dispensed in pharmacies, 2008	Prevalence ratio of antidepressant use in the native and immigrant populations
	Wittkampf, L.C. et al. (The Netherlands) [55]	Agis Health Database, 2001-2006	Odds of psychotropic drug prescription in different minority groups
	Teh, C.F. et al. (USA) [59]	Claims data from a Medicaid-enrolled population, 2006-2008	Probability of having a filled prescription for an antidepressant for 84 of the 144 days following the index visit; probability of having inadequate treatment
2011	Kozhimannil, K.B. et al. (USA) [18]	Administrative claims data from New Jersey's Medicaid program	Probability of having filled a prescription for an antidepressant medication in the six months after delivery
	Lagomasino, I.T. et al. (USA) [34]	NAMCS, 2003–2007	Odds of receiving any antidepressant prescription, and any care for depression or anxiety (antidepressant prescription, counselling or referral for counselling, or both)
	Ayalon, Liat. et al (Israel) [57]	Clalit Health Services database, 2006	Probability of purchasing antidepressant or antianxiety medications at least once in 2006
2012	Meghan L Mills (USA) [4]	2005–2007 pooled data from the National Survey on Drug Use and Health (NSDUH)	Odds of reporting use of any mental health treatment, any conventional treatment, any psychotropic medication, any unconventional treatment, any complementary and alternative medicine (CAM), and any parochial medicine
	Akincigil, A. et al. (USA) [24]	Medicare Current Beneficiary Survey data, 2001-2005	Probability of being diagnosed and treated for depression with either antidepressant medication or psychotherapy
2013	Jimenez, D.E. et al. (USA) [9]	Panels 9–13 (2004–2009) of the Medical Expenditure Panel Surveys	Probabilities of mental health treatment initiation (psychotropic drug prescription and outpatient care) and adequacy of care
2014	Brendler-Lindqvist, M. et al. (Sweden) [13]	Prescribed Drug Register held by the Swedish National Board of Health and Welfare and the Register of the Total Population held by Statistics Sweden	Probability of having at least one dispensed, prescribed psychotropic drug during 2009

	Jung, K. et al. (USA) [15]	MEPS, 2006 to 2010	Probability of having at least one antidepressant during the same year when the respondent reported a diagnosis of depression
	Pierre, G. et al. (USA) [16]	MEPS, 2000 to 2009	Likelihood of psychotropic drug use and psychotropic drug spending
	Cook, B.L. et al. (USA) [30]	MEPS, 2004 to 2009	Probability of initiation of care and having an episode with psychotropic drug fills among those that initiated treatment
	Quiñones, A.R. et al. (USA) [36]	Veterans Health Administration (VA) Office of Analytics and Business Intelligence (OABI) External Peer Review Program (EPRP) and VA Austin Automation Center	Odds of receipt of adequate antidepressant therapy
	Lupattelli, A. et al. (England) [50]	Anonymous online questionnaire, 1 October 2011 to 29 February 2012.	Likelihood of using any medication for depression or anxiety
2015	Cook, B.L. et al (USA) [5]	MEPS, 2004 to 2010	Probability of having any outpatient mental health care or any psychotropic medication use
	Spoont, M.R. et al. (USA) [54]	National Patient Care Database (NPCD) and outpatient prescriptions from the Decision Support System (DSS) National Pharmacy Extract data	Odds of having at least four 30-day supplies of antidepressants
2016	Straiton, M.L. et al. (Norway) [8]	National Population Register (NPR), the Norwegian Health Economics Administration database (HELFO) and the Norwegian Prescription Database (NorPD), 2008	Likelihood of women had received medication (antidepressants, anxiolytics) at least once, regardless of dosage
	Check, D.K. et al. (USA) [23]	National Cancer Institute SEER database linked with Medicare fee-for-service claims, 2006 to 2012	Odds of using nonopioid psychotropic medications (antidepressants and nonbenzodiazepine sleep aids) within 90 days after cancer diagnosis
	Chen, J. et al. (USA) [31]	MEPS, 2000 to 2009	Number of prescription drugs and physician visits that treat primary depressive and anxiety disorders.
	Freccero, C. et al. (The Netherlands) [49]	Primary Health Care Register, 2001 to 2007 and the Swedish Drug Register, 2005 to 2008	Pick-up rate, defined as collection of a prescription within 30 days.

2017	Dr.Benjamin Lê Cook et al. (USA) [1]	MEPS, 2004 to 2012	Odds of having any psychotropic medication in the past year
	Alwhaibi, M. et al. (USA) [41]	Surveillance, Epidemiology and End Results (SEER) and Medicare database, 2007 to 2011	Likelihood of having a depression treatment (antidepressants and psychotherapy) among elderly cancer survivors
	Cerri, C. et al. (Italy) [58]	Pharmacy of the Opera San Francesco (OSF), a major NGO in Milan, 2014	Odds of patients receiving at least one prescription of psychotropic drugs during the year of observation
2018	Wu, C. et al. (USA) [28]	Medical records in the Partner Health Care System's Research Patient Data Registry, 2009	Probability of having psychotropic medication treatments
	Cook, B. et al. (USA) [53]	Electronic health records of patients in a medium sized urban healthcare system in the New England area, 2013 to 2015	Likelihood of receiving benzodiazepines (BZD) prescriptions over the data collection period
2019	Rosato, M. et al. (Ireland) [7]	The Northern Ireland Longitudinal Study (NILS), a random 28% of the 2011 Census and a population-wide electronic database of prescribed medications.	Likelihood of receiving a prescription in the twelve-month period among those reporting a chronic mental health condition
	Bosqui, T. et al. (Northern Ireland) [32]	Administrative Data Research Centre Northern Ireland (ADRC-NI), 2011 Census and Enhanced Prescribing Database (EPD)	Odds of individuals accessed at least one prescription in 2011
	Presley, C.A. et al. (USA) [43]	Participants provided sociodemographic data, clinical data was abstracted from the medical record and recorded by research staff, 2011 to 2013	Odds of antidepressant usage across groups of participants
	Bosqui, T. et al. (Finland) [44]	Databases maintained by Statistics Finland, 2008 to 2014	Likelihood of individuals purchasing at least 1 prescription for an antidepressant medication within the index period
	Hawkins, JM et al. (USA) [56]	Secondary data from a large health care delivery system serving in a Midwestern urban city	Time before receiving psychiatric medication to treat depression after first depression diagnosis [(0) less than or equal to 6 months and (1) longer than 6 months]
2020	Mansour, R. et al. (UK) [21]	Clinical Record Interactive Search (CRIS) system, 2006 - 2017	Percentage of antipsychotics or antidepressant prescription mentioned in the patients record either in the two years before or after a diagnosis of late-life depression

	McGregor, B. et al. (USA) [22]	Medicaid Analytic Extract (MAX) file, 2008 - 2009	Probability of having treatment for depression
	Lehti, V. et al. (Finland) [47]	Finnish Central Population Register (FCPR) and the National Prescription Register, 2011-2015	Odds of purchasing psychotropic drugs
2021	Patel, K. et al. (Northern Ireland) [11]	2011 Northern Ireland Census and a centralized prescriptions database (Enhanced Prescribing Database (EPD))	Probability of having a chronic mental health problem and not been in receipt of psychotropic medication at least once during the first quarter of 2011 or in the following 12 months.
	Tsamakis, K. et al. (UK) [17]	Clinical Record Interactive Search system, 2007 – 2015	Odds of being prescribed antipsychotics, antidepressants
	Zettermark, S. et al. (Sweden) [48]	Database created by record linkage of several nationwide registers administered by Statistics Sweden and the Swedish National Board of Health and Welfare, 2010	Probability of being dispensed at least one antidepressant (ATC: N06A) during the 1-year follow-up.
2022	Lyndsay A Avalos et al. (USA) [2]	Administrative and electronic health records of the health care delivery system Kaiser Permanente Northern California, 2012 – 2017	Likelihood of receiving at least one antidepressant medication dispensation within 90 days of a new prenatal or postpartum depression diagnosis
	Helena Honkaniemi et al. (Sweden) [3]	Total Population Register and Longitudinal Integrated Database for Health Insurance and Labour Market Studies, the Prescribed Drug Register (PDR) and the Cause of Death Register for censoring purposes, 2005 – 2016	Time to first prescription of psychotropic medication
	Ahmad, G. et al. (England) [27]	Adult Psychiatric Morbidity Surveys (APMS), 2007 and 2014	Probability of treatment receipt by ethnicity
	Elser, H. et al. (USA) [35]	The Optum's Clinformatics® Data Mart (CDM and Medicare Advantage claims database, 2003 - 2020	Rate of treatment (the number of prescribed antidepressants per 1,000 person-months in the 365 days after diagnosis of poststroke depression)
	Riiser, S. et al. (Norway) [46]	National registries and unique personal identification number assigned to all residents of Norway, 2008 - 2016	Probability of general practitioner providing depression care (talking therapy, antidepressant drugs and sick leave certification) for 12 months from the date of the depression diagnosis

	Kieseppä, V. et al. (Finland) [51]	Register-based data maintained by the Finnish Institute for Health and Welfare, 2010	Likelihood of initiation and discontinuation of antidepressant medication
	Remmert, J.E. et al. (USA) [52]	VA Behavioral Health Laboratory (BHL), 2015 – 2020	Odds of having a current antidepressant prescription at the time of assessment
2023	Lin, C. et al. (USA) [6]	2020 National Survey on Drug Use and Health (NSDUH)	Odds of having any mental health treatment (including prescription medication) in the past year
	Ribas Roca, J. et al. (USA) [12]	National Hospital Ambulatory Medical Care Survey (NHAMCS), 2009 – 2018	Rates of benzodiazepine and SSRI prescriptions stratified by race/ethnicity
	Olfson, M. et al. (USA) [25]	MEPS, 2018 - 2019	Odds of receiving psychotropic medication, psychotherapy or both

Appendix 2. *Conclusion of the selected articles*

Article	Relevant results
Virnig, B. et al. (USA) [37]	Whites were more likely to receive effective acute-phase and continuation-phase treatment for antidepressant use. Quality of care is worse for racial and ethnic minorities than it is for white elderly persons.
Miranda, J. et al. (USA) [39]	Latino and African-American patients reported that their primary care providers recommended depression treatments at rates similar to those of white patients. Latinos and African Americans were less likely to receive antidepressant medications than were white patients.
Harman, J.S. et al. (USA) [42]	African Americans and Latinos with self-reported depression were significantly less likely to fill an antidepressant prescription than Caucasians. No significant differences in the probability of filling an adequate number of antidepressant prescriptions by race or ethnicity or type of insurance were observed for individuals who used antidepressants.
Han, E. et al. (USA) [14]	Racial minorities (Blacks, Hispanic and Asian-Indians) who were diagnosed with mental illnesses of interest based on their self-reports are less likely to use prescription drugs than Whites
Strothers III, H.S. et al (USA) [38]	African-American individuals were substantially more likely to receive no antidepressant treatment (37.1%) than Hispanic (23.6%), white (22.4%), or Asian individuals (13.8%). Race/ethnicity remained a significant risk factor for not receiving antidepressant drug treatment.
Blanco, C. et al. (USA) [20]	Visits resulting in prescription of psychotropic medication decreased from 10.2% to 9.3% in Hispanics, while they increased from 10.2% to 12.5% in non-Hispanics. Overall psychotropic prescription rate became significantly lower for Hispanics than for non-Hispanics.
Stockdale, S.E. et al. (USA) [29]	Disparities in counselling/referrals for counselling, antidepressant medications, and any care vastly improved or were **eliminated** over time in psychiatric visits. But these continued in primary care visits (lower odds of receiving an antidepressant prescription).
González, H.M. et al. (USA) [40]	Latinos (20.8%) had significantly lower rates of antidepressant compared to non-Latino Whites (32.4%). Mexican Americans are the most likely to encounter differences in antidepressant use
Fassaertn T. et al. (The Netherlands) [10]	Treatment characteristics were more favorable for Surinamese and Antillean clients. Treatment of depression episodes was less intensive for Moroccan and Turkish clients than for ethnic Dutch clients, yet differences are small → data therefore **do not support** the idea that mental health treatment is generally less favorable for clients from ethnic minority groups.
Satre, D.D. et al (USA) [19]	Among women diagnosed with depression, Latinas and Asian-Americans were less likely than Whites to fill an antidepressant prescription. Among men diagnosed with depression, African Americans were less likely than Whites to do so.

Osborn, C.Y. et al. (USA) [26]	Whites and others/mixed race were more likely to report using antidepressants than African Americans, regardless of the severity of depressive symptoms. African Americans were 0.32 times as likely and others/mixed race were 0.63 times as likely to be taking antidepressants than whites.
Fassaert, T. et al. (The Netherlands) [33]	There were **no differences** between ethnic Dutch, Turkish and Moroccan patients in the extent to which their GPs adhered to clinical guidelines. In case of Surinamese/Antillean patients, GPs were less likely to follow guidelines compared to ethnic Dutch patients. Surinamese/Antillean patients with a CMD were less likely to receive short- and long-term prescription for antidepressants; more short-term prescriptions of psychotropics among Turkish → the results of this study do not support the general idea that non-Western ethnic minority patients are less likely to receive guideline-concordant care for CMD.
Cruz, I. et al. (Spain) [45]	11% of the native population and 2.6% of the immigrant population withdrew at least one AD from the pharmacy in 2008. Immigrants were prescribed higher levels of generics and lower levels of recently commercialized drugs such as venlafaxine or duloxetine.
Wittkampf, L.C. et al. (The Netherlands) [55]	There was a **higher risk** of antidepressant drug prescriptions among the Moroccan and Turkish populations in the Netherlands compared with the native Dutch population
Teh, C.F. et al. (USA) [59]	African Americans were significantly less likely to receive minimally adequate pharmacotherapy than whites or individuals of other races, they were more likely than whites to receive inadequate treatment.
Kozhimannil, K.B. et al. (USA) [18]	A higher percentage (9%) of white women initiated antidepressant treatment or outpatient mental health services in the six months after delivery, compared with black women (4%) and Latinas (5%). Black women and Latinas were less likely to initiate care, and among those who initiated care the time from delivery to treatment initiation was significantly longer for blacks and Latinas than for whites.
Lagomasino, I.T. et al. (USA) [34]	In primary care settings, compared with visits by whites, visits by black and Hispanic patients were less likely to result in receipt of antidepressants or any care, and visits by Hispanics were less likely to result in receipt of counselling. In psychiatric settings, visits by black patients were less likely than those by white patients to result in receipt of antidepressants.
Ayalon, Liat. et al. (Israel) [57]	The purchase of medications seems to be higher among immigrants (with the exception of those born in Africa or Asia) and lower among Israeli Arabs and immigrants from Asia and Africa.
Meghan L Mills (USA) [4]	Blacks had 62% lower odds and Hispanics had 55% lower odds than whites of using psychotropic medication as a type of mental health treatment.

Akincigil, A. et al. (USA) [24]	Treatment rates and modalities differed by race/ethnicity: 27% of non-Hispanic Whites versus 39.6% of African Americans did not receive any treatment. Antidepressant use rates were lower among African Americans (52.5%) than among Whites (68.7%), whereas 58.0% of Hispanics used antidepressants.
Jimenez, D.E. et al. (USA) [9]	Older Blacks and Latinos had significantly lower predicted initiation and adequacy of treatment than older Whites. Older Blacks and Latinos were more likely to have episodes with only outpatient care visits (no psychotropic medication fills) than Whites.
Brendler-Lindqvist, M. et al. (Sweden) [13]	Lower rates of dispensed psychotropic drugs among recently settled refugees, compared to Swedish-born, with an increase with duration of residence.
Jung, K. et al. (USA) [15]	Large differences in the use of antidepressants across racial-ethnic groups in private coverage: 44% among whites, 26% among blacks, and 29% among Hispanics. For other insurance groups, no significant difference in the use of antidepressants was found across racial-ethnic groups.
Pierre, G. et al. (USA) [16]	Black, Hispanic, and Asian men were less likely to use psychotropic drugs compared to White men by 4.3, 3.8, and 4.5 percentage points, respectively
Cook, B.L. et al. (USA) [30]	Compared with whites, blacks and Latinos had less initiation and adequacy of care. Black and Latino episodes were shorter and had fewer psychotropic drug fills.
Quiñones, A.R. et al. (USA) [36]	Minority groups had lower odds of receiving adequate antidepressant therapy compared with white veterans. Rates of adequate antidepressant therapy and guideline-concordant depression care were lower for almost all nonwhite groups than for whites. However, Asian veterans were as likely to receive guideline-concordant care as whites.
Lupattelli, A. et al. (England) [50]	Immigrant women in Western and Northern Europe were less likely to report use of medication for chronic/long-term disorders during pregnancy than non-immigrants.
Cook, B.L. et al (USA) [5]	Compared with whites, a smaller proportion of blacks and Latinos with probable mental illness reported outpatient mental health care and, for blacks, psychotropic medication use. Rates of psychotropic drug use expenditure in the population with probable mental illness were 42.5%, 25.0%, and 27.6% for whites, blacks, and Latinos, respectively.
Spoont, M.R. et al. (USA) [54]	Lower odds of retention in pharmacotherapy for Latino and African American Veterans relative to Whites.
Straiton, M.L. et al. (Norway) [8]	With the exception of Swedish and Polish women, the odds of purchasing antidepressants and anxiolytics are lower for all other groups compared with Norwegians.

Check, D.K. et al. (USA) [23]	Racial disparity in women's use of nonopioid psychotropic medications to treat depression, anxiety, and insomnia was found. Specifically, compared with similar white women, black women had a 44% decreased risk of using these medications.
Chen, J. et al. (USA) [31]	Racial and ethnic minorities might have faced more barriers to access to mental health care during the Great Recession. Compared to white females, Latinas and African American females used significantly fewer prescription drugs. Compared to white males, Latino males had significantly lower rates of prescription drug utilization.
Freccero, C. et al. (The Netherlands) [49]	Patients born outside Europe had a statistically significantly lower pick-up rate compared with those born in Sweden and other European countries.
Dr.Benjamin Lê Cook et al. (USA) [1]	Significant disparities were noted among all three racial-ethnic minority groups (black, Hispanic, and Asian) compared with. Disparities in rates of access to any mental health care and any psychotropic medication were exacerbated. The widening disparities in any mental health care among blacks and Latinos were predominantly driven by significant increases in psychotropic medication use among whites but not among blacks and Latinos. Disparities were consistently wider for Asian Americans than for any other racial-ethnic group.
Alwhaibi, M. et al. (USA) [41]	African Americans and members of other racial-ethnic minority groups were less likely than whites to receive antidepressants only rather than no treatment.
Cerri, C. et al. (Italy) [58]	The percentage of natives using anxiolytics and antidepressants preparations was significantly higher than migrants. Individuals (both migrants and natives) on such treatment require the same amount of defined daily doses (DDD).
Wu, C. et al. (USA) [28]	15% of non-Hispanic Whites and 8.5% of African Americans patients diagnosed with a mental disorder were treated with a psychotropic agent, except for the $\geq$ 65 years old age group.
Cook, B. et al. (USA) [53]	Blacks, Latinos and Asians were significantly more likely than Whites to have only one BZD prescription. Whites were more likely to receive an extreme number of prescriptions (18 or more over a three-year period).
Rosato, M. et al. (Ireland) [7]	Ethnic minorities were only about one third as likely as the white population to report chronic poor mental health, and those who were unwell were only about one third as likely to receive psychotropic medications in the follow-up period.
Bosqui, T. et al. (Northern Ireland) [32]	11.8% of migrants were prescribed a psychotropic medication compared to 24% of the settled majority. Consistently lower level of dispensation of psychotropic drugs for migrants compared to the settled majority, with the exception of a comparable dispensation level for migrants from Germany
Presley, C.A. et al. (USA) [43]	Non-Hispanic Black and Hispanic participants were significantly less likely to be on an antidepressant medication compared with Non-Hispanic White participants

Bosqui, T. et al. (Finland) [44]	Higher use of antidepressants compared to the Finland-born majority for migrants from North Africa and the Middle East, and female migrants from Estonia and former Yugoslavia. All male migrant groups had either lower or comparable use of antidepressants compared to the Finnish majority. Women from Sweden and other Western and Eastern European countries had comparable use with Finland-born women. Women from Russia and the former USSR, East Asia, South Asia, South and Central America and Sub-Saharan Africa all had significantly lower use than the Finnish majority.
Hawkins, JM et al. (USA) [56]	Compared with older non-Hispanic White men in the sample, Black men were 2.18 times more likely to have a delay of the time to the first medication after a diagnosis of depression.
Mansour, R. et al. (UK) [21]	Black Caribbean and Black African patients were significantly less likely to have antidepressant treatment after diagnosis than White British; antidepressant prescribing most likely in White Irish
McGregor, B. et al. (USA) [22]	Significant racial and ethnic disparities in rates of treatment and treatment modality among adults with a diagnosis of depression despite the fact that patients in the sample had the same health care coverage through Medicaid. African Americans and Hispanics diagnosed with depression were about 50% and 25% less likely to have received treatment for their depression when compared to whites diagnosed with depression. Blacks that received treatment were 48% less likely to receive medication.
Lehti, V. et al. (Finland) [47]	Migrants from Eastern Europe were the only group that showed a higher rate of psychotropic drug purchases than the Finnish-born controls. Migrants from Nordic countries and other Western countries did not differ significantly from the Finnish-born population. The rest of the regional groups were less likely to purchase psychotropic drugs.
Patel, K. et al. (Northern Ireland) [11]	86% of the settled population with chronic poor mental health received at least one psychotropic medication during the study period, compared to 67% of the equivalent population of migrants.
Tsamakis, K. et al. (UK) [17]	Lower likelihood of antidepressant prescribing in Black Caribbean and African patients compared with white British, white Irish, and other white patients.
Zettermark, S. et al. (Sweden) [48]	The highest use of antidepressants were observed in non-immigrant women; the difference in propensity to use antidepressants was more pronounced in more oppressed intersectional contexts like those composed by immigrant, low-income women with previous mental issues.
Lyndsay A Avalos et al. (USA) [2]	Latina, Black and Asian women were less likely to initiate antidepressant medication than were White women. Low rates of treatment initiation for prenatal depression, racial-ethnic inequities in postpartum depression treatment initiation, and racial-ethnic inequities in perinatal treatment type.
Helena Honkaniemi et al. (Sweden) [3]	Intramarried immigrant women had higher psychotropic prescription hazards than intramarried native references, whereas intermarried immigrant women had equal hazards. Immigrant women's hazards were lower than native references after adjustment. Intramarried

	immigrant men had the greatest prescription hazards, and intermarried immigrant men slightly higher hazards than intramarried natives. Integration indicated by intermarriage appears to be protective for the mental health of immigrants, especially for immigrant men.
Ahmad, G. et al. (England) [27]	Lower proportions of people from all ethnic minority groups had any form of treatment in the past year relative to White British people. Odds of treatment receipt appeared lower in all ethnic minority groups in 2007 and 2014, compared with White British.
Elser, H. et al. (USA) [35]	Among individuals diagnosed with post-stroke depression, 69.8% were prescribed an antidepressant. Rates of treatment were lower among members of racial/ethnic minorities.
Riiser, S. et al. (Norway) [46]	Patients being male, older, low or medium educated, or immigrant, were **more likely to receive antidepressants** compared to their counterparts.
Kieseppä, V. et al. (Finland) [51]	Immigrants had more often more severe depression, received less intensive psychiatric treatment and had lower psychiatric comorbidity than the Finnish-born population. Both groups received most often SSRIs as the first medication, although Finnish-born more often than immigrants. The immigrant population were **more likely to initiate antidepressant** medication than the Finnish-born population, and were more likely to discontinue medication.
Remmert, J.E. et al. (USA) [52]	White patients were significantly more likely than Black patients to have an antidepressant prescription, regardless of the severity of their depression.
Lin, C. et al. (USA) [6]	Non-Hispanic White had the highest proportion of receiving any treatment (52.1%) and prescription medication (45.0%), while non-Hispanic Asians had the lowest.
Ribas Roca, J. et al. (USA) [12]	Compared to NH-White patients, NH-Black patients were 36% less likely to be prescribed a benzodiazepine and Hispanic patients were 19% less likely to be prescribed a benzodiazepine.
Olfson, M. et al. (USA) [25]	Black and Hispanic patients were less likely than White patients to receive psychotropic medications; but were more likely to receive psychotherapy. No significant racial-ethnic differences were found in the percentages of patients who received minimally adequate treatment.

Appendix 3. STROBE guideline

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding
		(*b*) Describe any methods used to examine subgroups and interactions
		(*c*) Explain how missing data were addressed
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(*b*) Report category boundaries when continuous variables were categorized
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21	Discuss the generalisability (external validity) of the study results
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

Appendix 4. *PRISMA-P 2015 checklist*

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item
ADMINISTRATIVE INFORMATION		
Title:		
Identification	1a	Identify the report as a protocol of a systematic review
Update	1b	If the protocol is for an update of a previous systematic review, identify as such
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number
Authors:		
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments
Support:		
Sources	5a	Indicate sources of financial or other support for the review
Sponsor	5b	Provide name for the review funder and/or sponsor
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol
INTRODUCTION		
Rationale	6	Describe the rationale for the review in the context of what is already known
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)
METHODS		
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated
Study records:		
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

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