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Prevalence and risks of tuberculosis multimorbidity in low- and middle-income countries: a meta-review

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3 **Prevalence and risks of tuberculosis multimorbidity in low- and middle-income countries: a**
4 **meta-review**
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8 Running title: Meta-review of TB multimorbidity
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Abstract (264 / 300)

Objectives: Co-occurrence of tuberculosis (TB) with other chronic conditions (TB multimorbidity) increases complexity of management and adversely affects health outcomes. We aimed to map the prevalence of the co-occurrence of one or more chronic conditions in people with tuberculosis (TB) and associated health risks by systematically reviewing previously published systematic reviews.

Design: Systematic review of systematic reviews (meta-review).

Setting: Low- and middle-income countries (LMIC).

Papers: We searched in Medline, Embase, PsycINFO, Social Sciences Citation Index, Science Citation Index, Emerging Sources Citation Index and Conference Proceedings Citation Index, and the WHO Global Index Medicus from inception to 23/10/2020, contacted authors, and reviewed reference lists. Pairs of independent reviewers screened titles, abstracts and full texts, extracted data, and assessed the included reviews' quality (AMSTAR2). We included systematic reviews reporting data for people in LMIC with TB multimorbidity and synthesised them narratively. We excluded reviews focused on children or specific subgroups (e.g. incarcerated people).

Primary and secondary outcome measures: Prevalence or risk of TB multimorbidity (primary); any measure of burden of disease (secondary).

Results: From the 7,557 search results, 54 were included, representing >6,296,000 people with TB. We found that the most prevalent conditions in people with TB were depression (45.19%, 95% Confidence Interval [CI] 38.04%-52.55%, 25 studies, 4,903 participants, $I^2=96.28%$, high quality), HIV (31.81%, 95%CI 27.83%-36.07%, 68 studies, 62,696 participants, $I^2=98%$, high quality), and diabetes mellitus (17.7%, 95%CI 15.1%-20.0.5%, 3 studies, 578 participants, $I^2=81.4%$, critically low quality).

Conclusions: We identified several chronic conditions that co-occur in a significant proportion of people with TB. Although limited by varying quality and gaps in the literature, this first meta-review of TB multimorbidity highlights the magnitude of additional ill health burden due to chronic conditions on people with TB.

Registration: Prospero CRD42020209012

Key words: Tuberculosis; Noncommunicable Diseases; Chronic Disease; Mental Disorders; Communicable Diseases; HIV; Diabetes Mellitus; Comorbidity; Multiple Chronic Conditions

Strengths and limitations of this study

- We did an extensive search strategy, including databases of grey literature and protocols.
- We summarised data synthesised at the country, regional (e.g. Eastern Sub-Saharan Africa), continental, and global (LMIC) level as long as the pooled estimate did not include data from high-income countries.
- Whenever there was an overlap between two reviews in terms of countries covered, TB comorbidities, and reported outcomes, we included the most complete one only if its quality, as assessed with the AMSTAR2 tool, was not lower than the other one.
- Although we had initially planned to re-do reported meta-analyses that included studies from high-income countries without these studies (to have pooled estimates from LMICs only), this was deemed unfeasible due to the high number of reviews where this would have been required.

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For peer review only

INTRODUCTION

About 30% adults in developed countries experience multimorbidity, i.e. the co-occurrence of two or more chronic conditions (including non-communicable diseases [NCDs], chronic communicable diseases [CCDs] and mental disorders) in a single individual at one point in time. Multimorbidity is a growing global concern[1] and its prevalence is rising in low- and middle-income countries (LMICs),[2] as CCDs such as tuberculosis (TB) and HIV remain major public health issues.[3] and NCDs are increasing due to major demographic shifts, urbanization, changing environmental factors, economic empowerment and accompanying lifestyle changes [4–8] This shift away from risks for CCD in children towards those for NCD in adults is also reflected in the steady increase in the burden of disability-adjusted life years (DALYs) attributed to NCDs over the past decades,[9] reaching 34% in low-income countries, and up to 82% in middle-high-income countries in 2019.[10]

TB is one of the leading causes of mortality from a single infectious disease globally[9] and contributes 1.86% of the total worldwide DALYs and 2.54% of the total worldwide years of life lost (making it the 12th and 11th highest contributor, respectively).[4,10] TB frequently co-occurs with NCDs, including diabetes mellitus (DM, 2.79% of worldwide DALYs), depression (1.84% of worldwide DALYs), and cancer (neoplasms representing 9.93% of worldwide DALYs).[4, 11] Depression[12] and DM[13] have been reported to be important risk factors for TB. Similarly, CCDs such as HIV (1.88% of worldwide DALYs) and TB adversely affect each other at the molecular, cellular, individual and population levels.[4,14]

We defined TB multimorbidity as the co-occurrence of TB and one or more chronic conditions (NCDs or CCDs).[15] This co-occurrence increases complexity of management and adversely affects health, economic and mortality outcomes, threatening the capacity for LMIC to achieve global public health targets. The cost and access to healthcare is of particular concern in LMICs, where the high costs relating to TB multimorbidity may further burden healthcare systems already under stress, and given the high out-of-pocket expenditure, it could lead to great financial burden for patients.

Numerous systematic reviews to date have considered individual chronic conditions in people with TB (e.g. [16–19]). However, no review has synthesised the evidence on a range of chronic conditions, their prevalence in people with TB and the burden associated with such co-occurrence of conditions. Understanding the overarching literature on TB multimorbidity is essential to enable better services to be developed to identify, prevent, and manage this common situation, which presents a significant health and financial burden to people with TB and to health services. Furthermore, differences in TB multimorbidity by gender, socio-economic group and country, which could shed further light on the problem, remain unclear.

The primary aim of this comprehensive meta-review of systematic reviews was to summarise and map the prevalence and risk of chronic conditions (CCD or NCD, alone or in combination) in people with TB in LMICs compared with people without TB, and to summarise the associated health outcomes (e.g. TB treatment success and measures of disease burden) in people with TB multimorbidity, compared with people with TB only.

METHODS

We have followed the PRISMA guidelines [20] in reporting this meta-review and its protocol was registered in the international prospective register of systematic reviews (PROSPERO, CRD42020209012).

Search strategy

We ran our search strategy in Medline (Ovid), Embase (Ovid), PsycINFO (Ovid), Social Sciences Citation Index (Web of Science), Science Citation Index (Web of Science), Emerging Sources Citation Index and Conference Proceedings Citation Index (Web of Science), and the WHO Global Index Medicus from inception to October 23rd, 2020. To identify unpublished studies, we also searched PROSPERO and the Open Grey database, and contacted authors of conference abstracts. Reference lists of included reviews were hand searched. We did not set any restrictions on the origin of the paper, date of publication, or language.

We used free text and controlled vocabulary (e.g., MeSH terms for Medline) for terms related to communicable, non-communicable, and mental diseases and combined them with terms for TB using Boolean operators: (CCD or NCD or mental disease) AND Tuberculosis. Supplementary Table 1 (Appendix 1) lists the search terms for Medline and the full search strategy can be found in Appendix 2.

Selection criteria

We included systematic reviews reporting data for people in LMICs, with any type of TB and one or more additional chronic conditions. This included, but was not limited to, heart disease, DM, arthritis, chronic obstructive pulmonary disease (COPD), HIV, Hepatitis B (HBV) and Hepatitis C (HCV), depression, and anxiety disorders (as defined by review authors). As there is no clear and widely used definition of what constitutes a chronic condition,[21] whenever there were doubts, four of the authors with clinical/research expertise (KS, NS, HE, BS) decided by consensus if a disorder was to be considered as a chronic condition. Conditions considered side effects of TB medications, such as nausea or diarrhoea, were not considered chronic conditions for this review.

After registering the protocol, the following additional changes were made: First, we decided to limit our population of interest to the general TB population, excluding studies that stated focusing on children. Second, we decided to exclude studies focused on specific subgroups (e.g., incarcerated people, health care workers, etc.), focussing on populations for which results are more readily generalisable. Studies in patients with a specific type of TB (e.g., extra-pulmonary TB) were, however, considered eligible.

Included systematic reviews had to report either pooled or individual study data for at least one of our primary or secondary outcomes. Narrative, non-systematic reviews and systematic reviews focused only on high-income countries (HIC) were excluded.

Primary outcomes

The co-primary outcomes included prevalence (or incidence) of each chronic condition (or combination of more than one condition) in people with TB, and odds ratios (or other comparative statistic) of having a chronic condition (or combination of conditions) in people with TB compared to those without TB.

Secondary outcomes

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3 Secondary outcomes included any measure of disease burden in people with TB multimorbidity, such as
4 mortality, loss to follow up (treatment interrupted for two consecutive months or more), treatment failure
5 (sputum smear or culture remained positive at month five or later during treatment), treatment completion
6 (without evidence of failure, but with no record of being cured), cured (smear- or culture-negative patients in the
7 last month of treatment and on at least one previous occasion), successful treatment (patients who were cured or
8 who completed treatment), or unsuccessful treatment (patients who were lost to follow-up, had treatment failure,
9 or died).[22,23] Other secondary outcomes of interest included years of life lived with disability, years of life
10 lost, DALYs, outcomes related to the additional chronic conditions, and any other reported measure of disease
11 burden.
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16 17 **Study selection**

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19 Multiple authors (ER, SA, AJ, NS) contributed to the screening and data extraction procedures, with titles and
20 abstracts of all deduplicated search results screened independently by at least two reviewers. The full text of
21 potentially eligible papers was reviewed against our inclusion and exclusion criteria independently by two
22 reviewers. Disagreements were resolved by discussion, with a third reviewer available as an arbitrator if
23 necessary. We used the online software Rayyan (<https://rayyan.ai/>) to manage the study selection process.
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27 28 **Data extraction and quality assessment**

29 Two reviewers used a piloted form (Google Form) developed for the review to independently extract data
30 regarding review characteristics, characteristics of included primary studies, and outcome data. If clarifications
31 were needed, we contacted the corresponding authors.
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34 The quality of included systematic reviews was assessed by two reviewers (ER and SA, with discrepancies
35 resolved by agreement or a third independent assessor, AJ) using the AMSTAR2 tool, which classifies the
36 overall confidence in the results of each review as critically low, low, moderate, or high.[24]
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40 41 **Data synthesis**

42 The following steps were followed to synthesise the evidence: First, all included systematic reviews were
43 described in a summary table. Second, the results (primary and secondary outcomes) for each combination of
44 conditions were summarised, including the pooled estimates, the number of studies, pooled sample size, a
45 measure of heterogeneity, range of pooled effect sizes, and quality assessment. Third, the results were stratified
46 by age, gender, socio-economic group, type of TB and region, where possible. We had initially planned to
47 extract and pool individual study data for LMICs when such studies had been pooled together with data from
48 HICs, or when individual study data were reported but not pooled in a meta-analysis. However, such an
49 approach was deemed unfeasible due to the high number of reviews where this would have been required. In
50 these cases, we reported the study characteristics and the range of study effect sizes from LMICs.
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55 56 **Patient and Public Involvement**

57 We asked patients' representatives for feedback on the study protocol and they will be involved in the
58 dissemination of our results. Patients or the public were not involved in the conduct or reporting of our research.
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6 The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing
7 of the report.
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9 10 **RESULTS**

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12 Our search strategy identified 7,557 results, of which 2,200 were duplicates and were removed. Of the 221
13 results remaining after screening titles and abstracts, 130 were excluded for not meeting eligibility criteria.
14 Supplementary Table 2 (Appendix 1) specifies the reasons for exclusion. The full text corresponding to 34
15 protocols or conference abstracts could not be obtained. We contacted the authors of these references (with a
16 follow-up email two weeks later), seven of which replied confirming that no full article had been published.
17 Three journal articles, related to coronary heart disease, head and neck TB, and HBV, could not be assessed in
18 full text despite our efforts (no institutional access and no response from authors[25–27]). The full text of one
19 additional study[25] could not be obtained, but the pooled relative risk of coronary heart disease was reported in
20 the abstract and was therefore included. Ultimately, 54 studies were included in our review (Figure 1).
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26 **Study and participant characteristics**

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28 Overall, there were over 6,296,000 people with TB across the 54 included systematic reviews, covering 85
29 LMICs (Appendix 3). Of these, 23 reported a pooled estimate of interest to our review,[S1–S23] while the
30 remainder reported outcomes of interest for individual studies, but either did not pool them in a meta-analysis or
31 pooled them with data from HICs. Among the 23 reviews reporting pooled outcomes, even when they assessed
32 the same combination of TB and chronic condition(s), there was limited overlap between them with regards to
33 geographical region and/or reported outcomes (Supplementary Table 3 in Appendix 1). Supplementary Table 4
34 (Appendix 1) details outcome information reported by each review.
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38 Most of the included systematic reviews reported data on TB without specifying a particular type of TB:[S1–
39 S4,S7–S10,S14,S16,S17,S20–S46] nine focused on drug-resistant TB (DR-TB),[S6] multidrug-resistant TB
40 (MDR-TB),[S5,S12,S19,S47–S50] or extensively drug-resistant TB (XDR-TB);[S12,S47] three focused on
41 pulmonary TB (PTB),[S15,S18,S51] three on TB meningitis,[S13,S52,S53] and one on TB lymphadenitis.[S11]
42 The chronic conditions most often considered were HIV (31 reviews),[S1,S2,S5–S13,S24–S36,S47–S50,S52–
43 S54] DM (14 reviews),[S4,S14–S18,S37–S43,S51] and mental illness (5 reviews).[S3,S19–S21,S44] None of
44 the systematic reviews reported results on the prevalence and/or associated risks of more than one additional
45 chronic condition in people with TB. Supplementary Table 5 (Appendix 1) lists what conditions were
46 considered or not a chronic condition for this review.
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50 Most of the identified systematic reviews were assessed as low or critically low quality according to AMSTAR2
51 (n=42). Only seven reviews were assessed as moderate (n=2)[S7,S22] or high (n=5)[S6,S10,S11,S20,S42]
52 quality, six of which reported a pooled estimate of interest. The critical domains that failed most often were
53 regarding risk of bias assessment (37 studies) and protocol registration (29 studies). Supplementary Table 6
54 (Appendix 1) details the AMSTAR2 assessment for each study.
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Summary of results

TB and HIV

Of the 31 reviews reporting data on TB and HIV (>3,017,000 participants from 72 countries),[S1,S2,S5–S13,S24–S36,S47–S50,S52–S54] 11 focused on specific types of TB,[S5,S6,S11–S13,S47–S50,S52,S53] and 11 reported at least one pooled outcome of interest (Supplementary Table 3 in Appendix 1).[S1,S2,S5–S13] One review[S9] reported the pooled prevalence for Latin America (25%, 95%CI 19.3%–30.8%, 7 studies, critically low quality) and Africa (31.2%, 95%CI 19.3%–43.2%, 17 studies, critically low quality). Prevalence estimates for sub-continental regions were also reported in other reviews, ranging from 25% in Western Sub-Saharan Africa (SSA, high quality) to 44% in Southern SSA (high quality), as well as for China, Ethiopia, and Iran (Table 1).

One review[S5] reported a reduced odds of treatment success (OR 0.87, 95%CI 0.79–0.96, 6 studies, critically low quality) in people with TB and HIV compared to people with only TB, in SSA.

Table 1 also summarises the results of systematic reviews reporting data for specific types of TB (DR-TB, and MDR-TB, PTB, TB meningitis, and TB lymphadenitis).

Table 1: Prevalence of HIV and effect on outcomes in people with tuberculosis

Region	Outcome (quality ^a)	Effect size (95% CI)	Range	Number of studies (number of participants)	I ²	Year
Latin America	Prevalence (Critically low)[S9]	25% (19.3% - 30.8%)	NR	7 (NR)	95.2%	2013
Africa	Prevalence(Critically low)[S9]	31.2% (19.3% - 43.2%)	NR	17 (NR)	99.6%	2013
SSA	Prevalence (High)[S10]	31.81% (27.83% -36.07%)	6.03%-72.25%	68 (62,696)	98%	2019
	Successful treatment (Critically low)[S5]	OR 0.87 (0.79 - 0.96)	0.75-1.26	6 (NR)	NR	2019
Western SSA	Prevalence (High)[S10]	25.48% (19.70%-32.27%)	10.26%-72.13%	21 (16,145)	98%	2019
Eastern SSA	Prevalence (High)[S10]	31.14% (25.39%-37.54%)	6.03%-60.51%	32 (33,637)	98%	2019
Southern SSA	Prevalence (High)[S10]	43.67% (35.05%-52.69%)	23.84%-72.25%	12 (11,148)	99%	2019
Central SSA	Prevalence (High)[S10]	41.33% (30.39%-53.19%)	31.29%-51.56%	3 (2,039)	96%	2019
China	Prevalence(Critically low)[S8]	0.9% (0.6%–1.4%)	0.1%–4.5%	18 (NR)	92.21%	2010
	<i>Prevalence in Women</i> (Critically low)[S8]	0.6% (0.3%-1.1%)	NR	9 (NR)	71.8%	2010
	<i>Prevalence in Men</i> (Critically low)[S8]	1.1% (0.6%-2.0%)	NR	9 (NR)	94.7%	2010
Ethiopia	Prevalence (Moderate)[S7]	23.40% (19.56%-27.24%)	9.50%-52.10%	13 (19,212)	97.6%	2019
	Successful treatment (Critically low)[S2]	67% (56%-79%)	NR	NR (NR)	NR	2018
	Unsuccessful treatment (Critically low)[S2]	33% (21%-44%)	NR	NR (NR)	NR	2018
	Unsuccessful treatment (Critically low)[S2]	OR 1.98 (1.56-2.52)	0.82-14.31	20 (NR)	81.0%	2018
India	Case-fatality rate during treatment (Critically low)[S1]	10.91% (7.68%-15.50%)*	NR	35 (NR)	Tau2=0.90 [†]	2020
	Case-fatality rate after treatment (Critically low)[S1]	4.15% (1.06% to 16.24%)	NR	5 (NR)	Tau2=1.90 [†]	2020
Iran	Prevalence (Critically low) [S28]	14% (12% - 15%)	0%-54%	48 (21,388)	97.93%	2019

Drug resistant TB + HIV						
SSA	Unsuccessful treatment (High)[S6]	RR 1.18 (1.07-1.30) ^{‡,§}	0.71-2.37	19 (8,301)	48%	2020
	Treatment failure (High)[S6]	RR 0.66 (0.38-1.13) †	0.15-2.40	10 (5,474)	73%	2020
	Loss to follow-up (High)[S6]	RR 0.82 (0.74-0.92) †	0.49-2.61	14 (7,051)	0%	2020
	Mortality (High)[S6]	RR 1.50 (1.30-1.74) †	0.73-2.18	16 (7,365)	39%	2020
Western SSA	Unsuccessful treatment (High)[S6]	RR 1.42 (0.95-2.13)	1.31-2.37	2 (790)	12%	2020
	Mortality (High)[S6]	RR 1.42 (0.96-2.09)	NA	1 (588)	NA	2020
Eastern SSA	Unsuccessful treatment (High)[S6]	RR 1.47 (1.23-1.75)	1.14-1.77	6 (1,970)	0%	2020
	Mortality (High)[S6]	RR 1.52 (1.19-1.93)	1.20-2.18	5 (1,442)	0%	2020
Southern SSA	Unsuccessful treatment (High)[S6]	RR 1.09 (0.98-1.20) †	0.71-1.41	11 (5,541)	43%	2020
	Mortality (High)[S6]	RR 1.49 (1.21-1.83) †	0.73-1.47	10 (5,335)	60%	2020
Multidrug resistant TB + HIV						
LMIC	Unsuccessful treatment (Low)[S12]	RR 1.34 (1.04-1.72)	0.55-3.33	13 (5816)	88%	2018
Low income countries	Unsuccessful treatment (Low)[S12]	RR 2.23 (1.60 - 3.11)	0.67-3.33	7 (NR)	41%	2018
	Treatment failure (Low)[S12]	RR 0.75 (0.44-1.29)	0.32-2.40	7 (5,930)	55%	2018
SSA	Successful treatment (Critically low)[S5]	OR 0.87 (0.79 - 0.96)	0.75 - 1.26	6 (NR)	NR	2019
	Mortality (Critically low)[S5]	18% (14%-23%)	9%-31%	9 (NR)	91.1%	2019
	Cured (Critically low)[S5]	34% (22%-45%)	3%-60%	9 (NR)	98.9%	2019
Pulmonary TB + HIV						
Ethiopia	Prevalence (Moderate)[S7]	22.08% (14.36%-29.81%)	4.97%-28.60%	3 (1079)	89.9%	2019
TB meningitis + HIV						
LMIC	Prevalence (Critically low)[S13]	10.6% (4.2%-24.6%)	NR	NR (NR)	NR	2019
	Mortality (Critically low)[S13]	53.4% (42.4%-64.1%)	NR	7 (547)	2.1%	2019
TB lymphadenitis + HIV						
Africa	Prevalence (High)[S11]	52% (33%-71%)	6%-91%	14 (NR)	99.2%	2019
Ethiopia	Prevalence (High)[S11]	21% (12%-30%)	6%-67%	6 (NR)	92.9%	2019

Notes: SSA: Sub-Saharan Africa; LMIC: Low and middle-income countries; NA: Not applicable; RR: Risk ratio; NR: Not reported; OR: Odds ratio.

* Including only 7 high quality studies: 12.17% (95% CI 5.68%-26.11%)

† In the original review they considered this value low if it was <4

‡ Includes one study focused on children

§ Excluding one study focused on children: RR 1.12 (0.96-1.30, I²=69%)

¶ Quality rating represents the overall confidence in the results of the review, as assessed with the AMSTAR2 tool

TB and DM

Of the 14 reviews reporting data on TB and DM (>2,878,000 participants from 48 countries),[S4,S13–S17,S36–S42,S50] three focused on specific types of TB,[S14,S17,S50] and six reported at least one pooled outcome of interest (Supplementary Table 3 in Appendix 1).[S4,S14–S18]

One review[S17] reported the pooled prevalence separately for low-income countries (7.9%, 95%CI 4.9%-11.5%, 15 studies, 9,434 participants, critically low quality), lower-middle income countries (17.7%, 95%CI 15.1%-20.5%, 48 studies, 48,036 participants, critically low quality), and upper-middle income countries (14.4%, 95%CI 12.8%-16.0%, 75 studies, 1,994,027 participants, critically low quality). The same review also reported the prevalence of DM in people with TB in Africa (8.0%, 95%CI, 5.9%-10.4%, 119 studies, 474,944 participants, critically low quality, Table 2). Pooled prevalences in other continents were also reported, but were excluded from our review, as they included data from HICs. Other reviews reported prevalence estimates for sub-continental regions, ranging from 9% in SSA (low quality)[S14] to 21% in South Asia (low quality),[S4] as well as for multiple individual countries (Figure 2, Table 2).

One review[S16] reported an increased odds of mortality (OR 1.80, 95%CI 1.35-2.40, 34 studies, low quality) and treatment failure or death (OR 1.90, 95%CI 1.43-2.53, 22 studies, low quality) in people with TB and DM compared to people with only TB, in LMICs overall.

Table 2 also summarises the results of systematic reviews focused on (or reporting data for) specific types of TB (MDR-TB and PTB).

Table 2: Prevalence of diabetes mellitus and effect on outcomes in people with tuberculosis

Region	Outcome (quality ^a)	Effect size (95% CI)	Range	Number of studies (number of participants)	I ²	Year
LMIC	Mortality (Low)[S16]	OR 1.80 (1.35-2.40)	0.45-29.22	34 (NR)	91.1%	2019
	Treatment failure or death (Low)[S16]	OR 1.90 (1.43-2.53)	0.73-11.75	22 (NR)	87.3%	2019
World (Low-income countries)	Prevalence (Critically low)[S17]	7.9% (4.9%-11.5%)	NR	15 (9,434)	96.8%	2019
World (Lower-Middle income countries)	Prevalence (Critically low)[S17]	17.7% (15.1%-20.5%)	NR	48 (48,036)	98.3%	2019
World (Upper-Middle income countries)	Prevalence (Critically low)[S17]	14.4% (12.8%-16.0%)	NR	75 (1,994,027)	99.9%	2019
Africa	Prevalence (Critically low)[S17]	8.0% (5.9%-10.4%)	1.9%-32.4%	119 (474,944)	99.8%	2019
Southeast Asia	Prevalence (Critically low)[S17]	19.0% (16.2%-21.9%)	5.1%-54.1%	30 (30,382)	97.0%	2019
South Asia	Prevalence (Low)[S4]	21% (18%-23%)	4%-66%	65 (NR)	98.28%	2021
SSA	Prevalence (Low)[S14]	9% (6%-12%)	2%-38%	16 (13,286)	97.48%	2019
Bangladesh	Prevalence (Critically low)[S17]	10.6% (7.2%-14.5%)	8.3%-12.8%	3 (3,010)	85.9%	2019
Benin	Prevalence (Critically low)[S17]	1.9% (0.2%-4.7%)	NA	1 (159)	NA	2019
Brazil	Prevalence (Critically low)[S17]	7.2% (6.3%-8.1%)	3.3%-33.1%	12 (1,726,436)	99.7%	2019
China	Prevalence (Critically low)[S17]	14.5% (10.5%-19.0%)	2.7%-30.1%	14 (19,529)	98.4%	2019
Egypt	Prevalence (Critically low)[S17]	22.8% (15.2%-31.4%)	15.8%-27.7%	3 (578)	81.4%	2019
Ethiopia	Prevalence (Critically low)[S17]	18.8% (1.9%-47.1%)	8.3%-32.4%	2 (1,749)	99.2%	2019
Fiji	Prevalence (Critically low)[S17]	10.1% (4.4%-17.7%)	5.2-13.7	3 (1,139)	91.8%	2019
Georgia	Prevalence (Critically low)[S17]	12.4% (7.4%-18.5%)	NA	1 (137)	NA	2019
Guinea-Bissau	Prevalence (Critically low)[S17]	2.7% (0.3%-6.8%)	NA	1 (110)	NA	2019
Guyana	Prevalence (Critically low)[S17]	14.0% (7.8%-21.6%)	NA	1 (100)	NA	2019

India	Prevalence (Low)[S4]	22.0% (19.0%–25.0%)	NR	47 (NR)	97.92%	2021
	Mortality (Low)[S4]	OR 1.74 (1.21-2.51)	NR	5 (NR)	19.43%	2021
	Treatment failure (Low)[S4]	OR 1.65 (1.12-2.44)	NR	5 (NR)	49.63%	2021
	Recurrence (Low)[S4]	OR 0.53 (0.32-0.87)	NA	1 (NR)	NA	2021
	Cured (Low)[S4]	OR 0.32 (0.10-1.05)	NA	1 (NR)	NA	2021
Indonesia	Prevalence (Critically low)[S17]	14.8% (12.2%-17.7%)	NA	1 (634)	NA	2019
Iran	Prevalence (Critically low)[S17]	17.8% (12.5%-23.8%)	5.5%-40.0%	11 (3,134)	93.3%	2019
Kazakhstan	Prevalence (Critically low)[S17]	7.1% (5.1%-9.4%)	NA	1 (562)	NA	2019
Kiribati	Prevalence (Critically low)[S17]	36.7% (31.1%-42.5%)	NA	1 (275)	NA	2019
Libya	Prevalence (Critically low)[S17]	6.1% (3.5%-9.4%)	NA	1 (262)	NA	2019
Malaysia	Prevalence (Critically low)[S17]	26.9% (17.8%-37.0%)	15.4%-39.0%	5 (23,438)	98.1%	2019
Marshall Islands	Prevalence (Critically low)[S17]	45.2% (32.9%-57.7%)	NA	1 (62)	NA	2019
Mexico	Prevalence (Critically low)[S17]	30.8% (26.4%-35.3%)	19.3%-54.4%	10 (192,420)	97.9%	2019
Nepal	Prevalence (Low)[S4]	12.0% (4.0%–20.0%)	NR	4 (NR)	97.6%	2021
Nigeria	Prevalence (Critically low)[S17]	7.8% (4.4%-12.0%)	4.8%-12.0%	4 (9,821)	97.8%	2019
Pakistan	Prevalence (Low)[S4]	19.0% (11.0%–27.0%)	NR	10 (NR)	99.18%	2021
Peru	Prevalence (Critically low)[S17]	4.8% (1.7%-9.5%)	2.5%-11.1%	4 (3,983)	96.8%	2019
Romania	Prevalence (Critically low)[S17]	18.4% (13.6%-23.7%)	NA	1 (228)	NA	2019
Senegal	Prevalence (Critically low)[S17]	4.9% (2.2%-8.5%)	3.8%-7.0%	2 (2,848)	75.1%	2019
South Africa	Prevalence (Critically low)[S17]	9.4% (7.6%-11.3%)	NA	1 (947)	NA	2019
Sri Lanka	Prevalence (Low)[S4]	24.0% (21.0%–27.0%)	NR	2 (NR)	NR	2021
Tanzania	Prevalence (Critically low)[S17]	8.5% (4.8%-13.0%)	2.6%-16.7%	7 (4,178)	95.1%	2019
Thailand	Prevalence (Critically low)[S17]	7.5% (6.2%-8.8%)	6.0%-16.3%	5 (17,862)	81.6%	2019
Tunisia	Prevalence (Critically low)[S17]	7.6% (5.9%-9.6%)	NA	1 (788)	NA	2019
Turkey	Prevalence (Critically low)[S17]	7.8% (6.8%-8.8%)	7.9%-8.6%	3 (2,773)	0%	2019
Uganda	Prevalence (Critically low)[S17]	7.3% (4.7%-10.3%)	5.4%-8.5%	2 (390)	9.9%	2019
Yemen	Prevalence (Critically low)[S17]	9.5% (6.0%-13.8%)	NA	1 (220)	NA	2019
Multidrug resistant TB + DM						
LMIC	Unsuccessful treatment (Low)[S12]	RR 0.90 (0.65-1.23)	0.23-0.98	3 (687)	19%	2018
Pulmonary TB + DM						
China	Prevalence (Critically low)[S15]	7.20% (6.01%-8.39%)	2.08%-16.16%	22 (56,805)	NR	2013
	Retreatment (Critically low)[S18]	OR 2.05 (1.30-3.22)	NR	3 (499)	0%	2016
	Retreatment (Critically low)[S18]	aOR 3.38 (1.56-7.29)	NR	2 (NR)	75%	2016

Notes: LMIC: Low and middle-income countries; OR: Odds ratio; aOR: adjusted odds ratio; NR: Not reported; NA: Not applicable

* Quality rating represents the overall confidence in the results of the review, as assessed with the AMSTAR2 tool

TB and mental disorders

TB and mental disorders (pooled as a composite outcome)

We found one systematic review considering a composite outcome for mental disorders,[S21] as well as several other reviews looking at individual mental disorders such as depression, anxiety, and psychosis. The review[S21] that reported the effect of mental disorders (defined as a composite variable including depression, psychological distress, PTSD, or mental disorder) on unsuccessful treatment (a composite measure combining some or all of treatment failure, loss to follow-up, and death), loss to follow-up, and non-adherence, found no evidence of a significant increase in the odds of these outcomes in people with TB and mental disorders, compared to people with only TB (Table 3).

TB and depression

Of the four reviews reporting data on TB and depression (>21,770 participants from 33 countries),[S3,S19,S20,S44] three[S3,S20,S44] reported at least one pooled outcome of interest (Supplementary Table 3 in Appendix 1). One systematic review[S20] of 25 studies reported the prevalence of depression in people with TB in LMICs as 45.19% (95%CI 38.04%-52.55%, 25 studies, 4,903 participants, high quality). None of the included reviews reported this outcome at a continental, regional or country level (Table 3). One systematic review[S3] reported an increased odds of mortality (OR 2.85, 95%CI 1.52-5.36, 2 studies, 1,303 participants, critically low quality) and other adverse outcomes in people with TB and depression compared to people with only TB (Table 3). Table 3 summarises the results of systematic reviews focused on MDR-TB. According to these results, the prevalence of depression in people with MDR-TB is 52% (95%CI 38%-66%, 5 studies, high quality).[S20]

TB and anxiety

Of the two[S19,S44] reviews reporting data on TB and anxiety (>7,500 participants from 31 countries), only one,[S19] focused on MDR-TB, reported any pooled outcome of interest: the prevalence of anxiety overall (24%, 95%CI 2%-57%, 3 studies, 209 participants, critically low quality) and in the regions of Southeast Asia and the Americas (Table 3).

TB and psychosis

One systematic review (7518 participants from 17 countries), focused on MDR-TB, reported the prevalence of psychosis in Africa (12%, 95%CI 8%-17%, 5 studies, critically low quality) and in several subcontinental regions (Table 3).[S19]

Table 3: Prevalence and effect on outcomes in people with tuberculosis (TB) and mental disorders: as a composite outcome and separately for depression, anxiety, and psychosis.

Region	Outcome (quality [‡])	Effect size (95% CI)	Range	Number of studies (number of participants)	I ²	Year
<i>TB + Mental disorders (composite measure)*</i>						
LMIC	Unsuccessful treatment [†] (Critically low)[S21]	OR 2.13 (0.85-5.37)	0.80-4.25	4 (1,196)	82%	2020
	Loss to follow-up (Critically low)[S21]	OR 1.90 (0.33-10.91)	0.88-5.33	2 (1,139)	78%	2020

	Non-adherence to treatment (Critically low)[S21]	OR 1.60 (0.84-3.02)	0.94-3.67	4 (10,851)	86%	2020
TB + Depression						
LMIC	Prevalence (High)[S20]	45.19% (38.04%-52.55%)	15.56%-80.00%	25 (4,903)	96.28%	2020
	<i>Prevalence in Women (High)[S20]</i>	51.54% (40.34%-62.60%)	NR	17 (NR)	92.55%	2020
	<i>Prevalence in Men (High)[S20]</i>	45.25% (35.19%-55.71%)	NR	17 (NR)	95.09%	2020
	Mortality or loss to follow-up (Critically low)[S3]	OR 4.26 (2.33-7.79)	3.65-4.88	2 (1303)	0%	2020
	Mortality (Critically low)[S3]	OR 2.85 (1.52-5.36)	1.76-2.99	2 (973)	0%	2020
	Loss to follow up (Critically low)[S3]	OR 8.70 (4.95-9.09)	4.95-9.09	2 (973)	0%	2020
	Non-adherence to TB treatment (Critically low)[S3]	OR 1.38 (0.70-2.72)	0.92-3.67	3 (9,349)	94.36%	2020
Multidrug resistant TB + Depression						
LMIC	Prevalence (High)[S20]	52.34% (38.09%-66.22%)	NR	5 (NR)	92.55%	2020
Africa	Prevalence (Critically low)[S19]	16% (9%-24%)	NA	3 (NR)	NA	2018
The Americas Region	Prevalence (Critically low)[S19]	36% (23-50%)	NR	3 (NR)	NR	2018
European Region	Prevalence (Critically low)[S19]	11% (4%-21%)	NR	3 (NR)	NR	2018
Eastern Mediterranean Region	Prevalence (Critically low)[S19]	73% (64%-81%)	NR	2 (NR)	NR	2018
Western Pacific Region	Prevalence (Critically low)[S19]	5% (1%-12%)	NA	1 (NR)	NA	2018
Southeast Asia	Prevalence (Critically low)[S19]	22% (0%-60%)	NA	3 (NR)	NA	2018
Multidrug resistant TB + Anxiety						
LMIC	Prevalence (Critically low)[S19]	24% (2%-57%)	12%-56%	3 (209)	95%	2018
The Americas Region	Prevalence (Critically low)[S19]	14% (9%-21%)	NR	2 (NR)	NR	2018
Southeast Asia	Prevalence (Critically low)[S19]	56% (45%-66%)	NR	1 (NR)	NR	2018
Multidrug resistant TB + Psychosis						
Africa	Prevalence (Critically low)[S19]	12% (8%-17%)	NR	5 (NR)	NR	2018
The Americas Region	Prevalence (Critically low)[S19]	11% (7%-17%)	NR	2 (NR)	NR	2018
European Region	Prevalence (Critically low)[S19]	6% (0%-17%)	NR	2 (NR)	NR	2018
Eastern Mediterranean Region	Prevalence (Critically low)[S19]	7% (1%-17%)	NA	1 (NR)	NA	2018
Southeast Asia	Prevalence (Critically low)[S19]	10% (5%-17%)	NA	2 (NR)	NA	2018

Notes: LMIC: Low and middle-income countries; OR: Odds ratio; NR: Not reported; NA: Not applicable.

* Includes depression, psychological distress, PTSD, or mental disorder as a composite variable.

† Composite measure combining some or all of: treatment failure, loss to follow-up, and death.

‡ Quality rating represents the overall confidence in the results of the review, as assessed with the AMSTAR2 tool

TB and HCV

One systematic review estimated the prevalence of HCV in people with TB in Africa to be 11% (95%CI 1%-23%, 3 studies, 327 participants, $I^2=93.9%$, moderate quality).[S22]

Risk of cancer in people with TB

One systematic review[S23] reported the risk of different types of cancer in people with TB in upper-middle income countries, including lung cancer (RR 1.53, 95%CI 1.25-1.87, 9 studies, low quality), non-Hodgkin's lymphoma (RR 1.70, 95%CI 1.13-2.56, 1 study, low quality) and leukaemia (RR 1.61, 95%CI 1.13-2.29, 1 study, low quality)(Table 4).

Risk of coronary heart disease in people with TB

One systematic review reported (in their abstract) an increased risk of coronary heart disease in people with TB in LMICs (RR 1.76, 95%CI 1.05–2.95)(Table 4).[S55]

Table 4 : Risk of cancer and coronary heart disease in people with tuberculosis

Region	Outcome (quality ^a)	Effect size (95% CI)	Range	Number of studies (number of participants)	I ²	Year
Upper-Middle income countries	Lung cancer (Low)[S23]	RR 1.53 (1.25-1.87)	NR	9 (NR)	94.6%	2020
	non-Hodgkin's lymphoma (Low)[S23]	RR 1.70 (1.13-2.56)	NA	1 (NR)	NA	2020
	Leukaemia (Low)[S23]	RR 1.61 (1.13-2.29)	NA	1 (NR)	NA	2020
LMIC	Coronary heart disease † [S55]	RR 1.76 (1.05–2.95)	NA	4 (NR)	97%	2020

Notes: LMIC: Low and middle-income countries; RR: Risk ratio; NR: Not reported; NA: Not applicable.

^a Quality rating represents the overall confidence in the results of the review, as assessed with the AMSTAR2 tool

† Data extracted from abstract only, as we could not obtain the full text article.

Subgroup analyses

Regarding our planned subgroup analyses, we could only find data stratified by gender reported for the prevalence of HIV in people with TB in China (Women: 0.6%, 95%CI 0.3%-1.1%, 9 studies, critically low quality; Men: 1.1% (95%CI 0.6%-2.0%; 9 studies, critically low quality)(Table 1)[S8] and the prevalence of depression in people with TB (Women: 51.54%, 95%CI 40.34%-62.60%, 17 studies, high quality; Men: 45.25%, 95%CI 35.19%–55.71%, 17 studies, high quality)(Table 3).[S20] We did not find any pooled results stratified by age.

DISCUSSION

This was the first meta-review to identify and map out the co-occurrence of CCDs and NCDs in people with TB in LMICs. Although the geographical regions covered by the included reviews varied, we found that the most prevalent chronic conditions were depression, HIV, and DM. We also found some evidence that people with TB and these chronic conditions had significantly increased odds of adverse outcomes such as death and treatment failure. No systematic review pooled the prevalence of two or more additional chronic conditions in people with TB and differences between people with TB and a single chronic condition vs multiple additional chronic conditions could not be explored.

While HIV, DM and depression are well-known comorbidities of TB, our review highlights that their prevalence can vary, in some cases substantially, between different countries or regions. Such regional differences should

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3 be taken into account when designing interventions, illustrating how a one-size-fits-all approach is unlikely to
4 succeed.
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7 Our findings offer an overview of TB multimorbidity to see comorbid conditions in relation to each other. For
8 instance, despite the known synergistic relationship between TB and HIV,[14] our review suggests that the
9 negative impact of HIV on TB treatment outcomes is less severe than the impact of depression, which not only
10 had higher odds of adverse outcomes, but also was more prevalent among people with TB. This apparent
11 smaller impact of HIV than depression in people with TB could partially be explained by the disparity – in
12 attention and resources – between HIV and depression, and illustrates how an integrated approach, such as the
13 one received by at least some patients with TB and HIV, could reduce the negative impact of other chronic
14 conditions, such as depression, in TB patients. This also illustrates how the results of our review could be used
15 when planning for new services. Moreover, it highlights the importance of screening for mental health in areas
16 where mental health services need improvement.[28,29]
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22 Our meta-review highlights the many gaps in the literature on TB multimorbidity in LMIC. For example, while
23 the meta-analysis of the prevalence of TB and depression included 25 studies,[30] the meta-analysis for
24 treatment outcomes in this group included only two studies,[18] reflecting the lack of evidence for the impact of
25 TB multimorbidity on TB treatment outcomes. Data stratified by gender or age was also minimal, which is
26 particularly important when women might have different healthcare seeking behaviours and limited voice in
27 decision making. In addition to the gaps in the literature with regards to primary studies, our meta-review also
28 highlights the lack of systematic reviews focused on people with TB and more than one additional chronic
29 condition, which is an increasingly likely scenario as the prevalence of NCDs in LMICs grows.[2] In this
30 regard, several cohort studies have assessed the impact of multimorbidity on TB treatment outcomes, such as in
31 China or Brazil [31,32] finding worse outcomes among patients with multiple additional chronic conditions.
32 Furthermore, Chen et al [31] results' highlight that some combinations of comorbidities, such as the group with
33 cardiovascular morbidity with complications, increase the risk of negative TB treatment outcomes more than
34 others. Considering the potential multiple-way synergies between multiple chronic conditions, a systematic
35 review of the literature on this topic is sorely needed. This evidence gap is addressed in a complementary review
36 by our group.[33]
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45 We did not find any systematic reviews focusing on CCDs and NCDs in people with zoonotic TB (zTB). While
46 this type of TB was estimated to represent 1.4% of all TB cases in 2019, this number is likely to be an
47 underestimate, as there are poor surveillance programmes, under-reporting and lack of laboratory confirmation
48 of the causative agent [34]. It is therefore not surprising that we could not find any systematic reviews
49 synthesising studies reporting on the prevalence of comorbidities specifically in zTB.
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53 In addition to the gaps in the literature, our meta-review also highlights the need for systematic reviews of
54 higher quality, as most of the identified systematic reviews were assessed as low or critically low quality
55 according to AMSTAR2, limiting the certainty we can have in their results. The systematic reviews with high or
56 moderate quality that we have identified reported prevalence of TB+HIV in SSA (and Ethiopia), the effect of
57 HIV in people with DR-TB in SSA, the prevalence of HIV in people with TB lymphadenitis in Africa (and
58 Ethiopia), and the prevalence of depression in people with TB and with MDR-TB in LMIC.
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Strengths

Our review has several strengths, such as an extensive search strategy, including databases of grey literature and protocols. Considering that PROSPERO is the main registry for systematic reviews and our efforts to contact authors of potentially relevant protocols, we are confident in the coverage of our search strategy. Another strength of our review is our focus on LMICs, making sure that data from HICs was not included, as the differences in risk factors, resources and treatment opportunities would make the results less applicable to LMICs.

Limitations

Our review has several limitations as well. First, most of the meta-analyses had very high heterogeneity and should therefore be interpreted with caution. This was the case even in systematic reviews focused on a single country. While part of this heterogeneity could be explained by methodological differences between the included studies (e.g. differences in the definitions and measurement of comorbidities), it could also reflect variation, inside a country, in how TB treatment strategies are adapted to local needs, their cultural acceptance and funding limitations. As risk factors for specific CCDs and NCDs are also heterogeneous between regions (e.g. prevalence of HIV in the community, smoking habits, access to treatment, etc.), the pattern of TB comorbidities is also likely to vary both between and within countries. Second, more than half of the studies summarised in our results had low or critically low quality. Third, despite the large number of systematic reviews identified in our review, our focus on LMIC excluded many results reported in them. Finally, we found little evidence regarding the burden of TB multimorbidity, which was one of the goals of this review. This highlights gaps in the body of evidence of systematic reviews, suggesting new future lines of research.

Conclusion

Given the fact that multimorbidity is common in LMICs[35,36] and is associated with a wide range of adverse outcomes for the individual, family, and society, and poses challenges for healthcare systems, particularly in LMICs, our results are important.[37,38] TB multimorbidity appears to be common and to have additional burdensome impact, deserving urgent attention.[15,39] Research is needed to identify early at-risk populations and ultimately prevent the onset of TB multimorbidity and to develop effective treatments and clinical pathways to care for this heterogeneous and burdensome group of people.[15] The high prevalence of TB multimorbidity in LMICs is a triple challenge, as these regions already have the highest (and growing) number of people with multimorbidity generally, the highest levels of TB, and health and social care systems which are stretched/sparse and unable to deal with these complexities.[15] Thus, urgent research is needed to better address this clearly prevalent, burdensome, and important issue.

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Competing interests

All authors declare no competing interests

Ethics statement

Ethical approval was not needed as this was a systematic review of published literature.

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Contributions

NS, BS, KS, and HE conceptualised the study; AJ, ER, AE, YL, RH, HE, KS, BS, and NS contributed to the design of the study; AJ, ER and NS contributed to the titles and abstracts screening; AJ, ER, and SA contributed to the full text screening and data extraction, ER and SA contributed to the quality assessment; AJ summarised the results and wrote the first draft of the report with input from BS and NS; ER, SA, AE, YL, and KS contributed to the interpretation of the results and revised the manuscript. All authors had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Data sharing

All data relevant to the study are included in the article or uploaded as supplementary information.

Figure legends

Figure 1: Flow diagram of the search results and screening process.

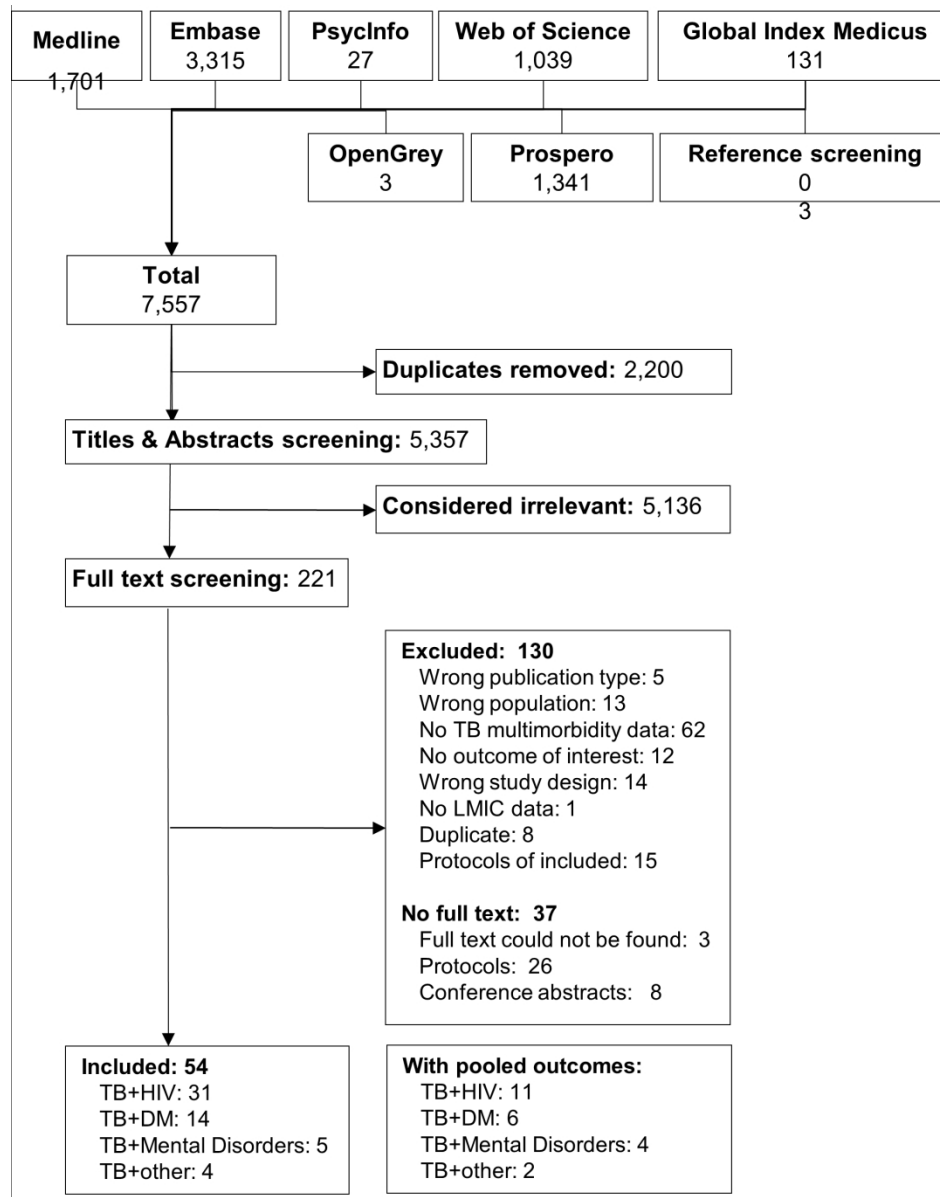
Figure 2: Prevalence of diabetes mellitus in people with TB in each country

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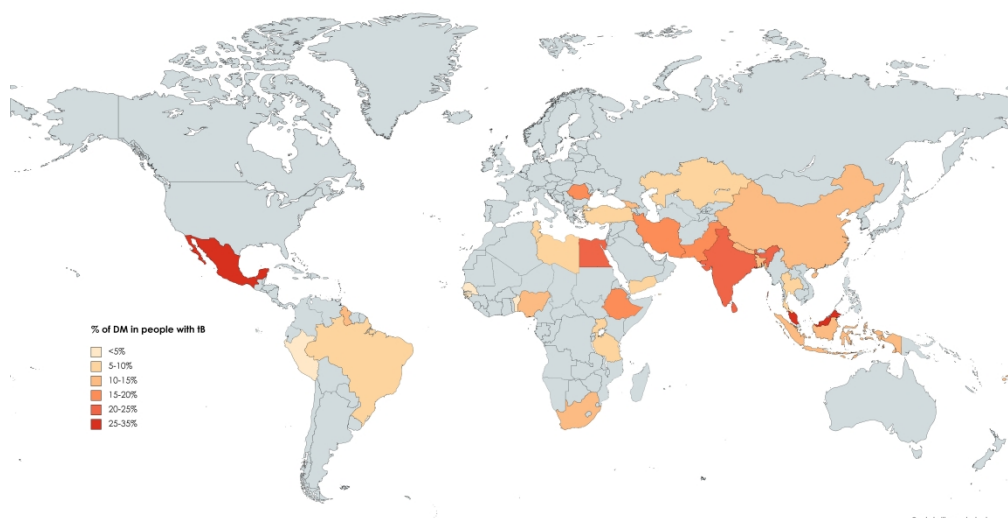
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Flow diagram of the search results and screening process.

157x194mm (330 x 330 DPI)

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Prevalence of diabetes mellitus in people with TB in each country

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Supplemental material

Supplementary Table 1: Search terms used in Medline (run on October 23rd, 2020)

	Searches
1	exp Noncommunicable Diseases/ or ((Non-communicable or Noncommunicable or Non-infectious) adj (disease* or condition* or illness*)).mp.
2	exp Chronic Disease/ or ((chronic or long-term) adj (disease* or condition* or illness*)).mp.
3	exp Heart Diseases/ or (heart adj (disease* or disorder* or failure)).mp. or (cardiac adj (disease* or disorder* or failure)).mp.
4	exp Cardiovascular Diseases/ or (cardiovascular adj (disease* or disorder* or failure)).mp.
5	exp Coronary Disease/ or (coronary adj (disease* or disorder* or failure)).mp.
6	exp Cerebrovascular Disorders/ or (cerebrovascular adj (disease* or disorder* or insufficienc* or occlusion*)).mp. or (vascular adj (disease* or disorder*)).mp. or (carotid* adj (disease* or disorder*)).mp.
7	exp Peripheral Arterial Disease/ or (arter* adj (disease* or disorder*)).mp.
8	exp Rheumatic Heart Disease/ or exp Heart Defects, Congenital/ or (heart adj3 (malform* or defect* or congeni*)).mp.
9	exp Venous Thrombosis/ or ((deep vein or deep venous) adj thrombos*).mp. or phlebothrombos*.mp.
10	exp Pulmonary Embolism/ or (pulmonar* adj (thromboembolism* or embolism* or disease* or disorder*)).mp.
11	exp Stroke/ or stroke.mp.
12	exp Neoplasms/ or Cancer*.mp. or neoplas*.mp. or tumor*.mp.
13	exp Lung Diseases/ or exp Respiratory Tract Diseases/ or exp Lung Diseases, Obstructive/ or ((lung* or respiratory or pulmonar* or airflow or airway) adj2 (disease* or obstruct* or hypersensitiv*)).mp. or exp Asthma/ or asthma*.mp. or exp Pulmonary Disease, Chronic Obstructive/ or exp Respiratory Hypersensitivity/
14	exp Diabetes Mellitus/ or diabet*.mp.
15	exp Autoimmune Diseases/ or ((autoimmun* or auto immun* or autoaggress* or auto aggress*) adj (disorder* or disease*)).mp.
16	exp Metabolic Syndrome/ or exp Metabolic Diseases/ or ((metabolic or insulin resistance) adj (disorder* or disease* or syndrome*)).mp.
17	exp Obesity/ or obes*.mp.
18	exp Osteoporosis/ or osteopor*.mp. or bone loss.mp. or exp osteolysis/ or osteolysis.mp. or bone resorption.mp.
19	exp Parkinson disease/ or parkinson*.mp. or paralysis agitans.mp.
20	exp Arthritis/ or arthriti*.mp. or polyarthriti*.mp. or rheumarthriti*.mp.
21	exp Kidney Diseases/ or (kidney adj (disease* or disorder*)).mp.
22	exp Liver Diseases/ or (liver adj (disease* or disorder* or dysfunction*)).mp.
23	exp Hypertension/ or high blood pressure*.mp. or hypertens*.mp.
24	exp Hyperlipidemias/ or hyperlipem*.mp. or hyperlipidem*.mp. or lipem*.mp. or lipidem*.mp.
25	exp Hypercholesterolemia/ or ((high* or elevat*) adj cholesterol*).mp. or hypercholesterem*.mp. or hypercholesterolem*.mp.
26	exp Hypertriglyceridemia/ or hypertriglyceridem*.mp.
27	exp Thyroid Diseases/ or (thyroid adj (disease* or disorder*)).mp. or exp Hyperthyroidism/ or hyperthyroid*.mp. or exp Hypothyroidism/ or hypothyroid*.mp. or ((thyroid-stimulating hormone* or tsh) adj deficien*).mp.
28	exp Motor Neuron Disease/ or motor neuron* disease*.mp. or lateral scleros*.mp. or motor system disease*.mp.
29	exp Multiple Sclerosis/ or multiple sclerosis.mp. or disseminated sclerosis.mp.
30	exp Emphysema/ or emphysema*.mp.
31	exp Bronchitis/ or bronchit*.mp.
32	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31
33	exp Mental Disorders/ or exp Psychotic Disorders/ or ((mental* or psychiatr* or psycho*) adj (disorder* or disease* or illness*)).mp.
34	exp Depressive Disorder, Major/ or exp Depression/ or Depress*.mp. or MDD.mp.
35	exp Anxiety Disorders/ or exp Anxiety/ or anxi*.mp.

36	exp Phobic Disorders/ or phobi*.mp.
37	exp Schizophrenia/ or schizophreni*.mp. or hebephreni*.mp.
38	exp Somatoform Disorders/ or ((somatoform* or somati* or medically unexplained or briquet or pain) adj (disorder* or syndrome* or symptom*)).mp. or exp Medically Unexplained Symptoms/
39	exp Dissociative Disorders/ or (dissociative adj (disorder* or hysteri* or reaction*)).mp. or dissociation*.mp.
40	exp Hysteria/ or hysteri*.mp.
41	exp Mood Disorders/ or ((affective* or mood*) adj (disorder* or disease* or illness* or symptom*)).mp.
42	exp Stress Disorders, Post-Traumatic/ or PTSD.mp. or ((post trauma* or posttrauma*) adj (stress* or neurose*)).mp. or combat disorder*.mp. or war disorder*.mp.
43	exp Cognition Disorders/ or ((cognitive or cognition or mental or neurocognitive) adj (dysfunction* or decline* or impairment* or deterioration* or disorder* or illness* or disease*)).mp.
44	exp Personality Disorders/ or personality disorder*.mp.
45	exp "Disruptive, Impulse Control, and Conduct Disorders"/ or impulse control disorder*.mp. or intermittent explosive disorder*.mp.
46	exp "Feeding and Eating Disorders"/ or ((eating or appetite or feeding) adj disorder*).mp.
47	exp Bipolar Disorder/ or ((bipolar or mani*) adj (disorder* or illness* or disease*)).mp.
48	exp Obsessive-Compulsive Disorder/ or OCD*.mp. or ((obsess*-compulsi* or obsess* or compulsi*) adj (disorder* or illness* or disease* or neuros*)).mp.
49	exp Panic Disorder/ or (panic adj (attack* or disorder*)).mp.
50	exp Agoraphobia/ or agoraphobi*.mp.
51	exp Neurotic Disorders/ or neuros*.mp. or neurotic disorder*.mp. or psychoneuros*.mp.
52	33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51
53	exp Communicable Diseases/ or ((communic* or contag* or transmi* or infect*) adj (disease* or infection* or illness*)).mp.
54	exp Bacterial Infections/ or bacteri* infection*.mp.
55	exp Conjunctivitis/ or conjunctivitis.mp.
56	exp HIV/ or hiv.mp. or Human immuno deficiency virus.mp.
57	exp Acquired Immunodeficiency Syndrome/ or AIDS.mp. or immunodeficiency associated virus.mp. or immun* deficiency associated virus.mp. or acquired immunodeficiency syndrome*.mp. or acquired immun* deficiency syndrome*.mp.
58	exp Buruli Ulcer/ or Bairnsdale.mp. or Buruli.mp.
59	exp Onchocerciasis/ or onchocer*.mp.
60	hepatitis.mp. or exp Hepatitis B/ or exp Hepatitis C/
61	exp Leishmaniasis/ or leishmania*.mp.
62	exp Leprosy/ or lepros*.mp. or hansen*.mp.
63	exp Elephantiasis, Filarial/ or elephantias*.mp. or filaria*.mp.
64	exp Trachoma/ or egyptian ophthalmia*.mp. or trachoma*.mp.
65	exp Chikungunya Fever/ or chickungunya.mp. or chikungunya.mp.
66	exp Taeniasis/ or taenia*.mp.
67	exp Cysticercosis/ or cysticercos*.mp.
68	exp Echinococcosis/ or hydatid*.mp. or echinococc*.mp.
69	exp Chagas Disease/ or trypanosom*.mp. or chagas.mp.
70	exp Trypanosomiasis/ or sleeping sickness.mp.
71	exp Encephalitis, Japanese/ or (japanese adj3 encephalitis).mp.
72	exp Syphilis/ or syphilis.mp.
73	53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 r 72
74	exp Tuberculosis/
75	Tuberculos*.mp.
76	TB.mp.

77	koch*.mp.
78	exp Tuberculosis/ or Tuberculos*.mp. or TB.mp. or koch*.mp.
79	(multiple adj (ill* or disease* or condition* or syndrom* or disorder*)).mp.
80	((Cooccur* or co-occur* or coexist* or co-exist* or multipl* or concord* or discord* or long-term or physical*) adj3 (disease* or ill* or care or condition* or disorder* or health* or medication* or symptom* or syndrom*)).mp.
81	(comorbid* or multimorbid* or co-occurren* or co-morbid* or Multidisease* or multi-disease*).mp.
82	(comorbid* or multimorbid* or co-occurren* or co-morbid* or multi-morbid* or Multidisease* or multi-disease*).mp.
83	exp Comorbidity/ or exp Multimorbidity/ or exp Multiple Chronic Conditions/
84	79 or 80 or 81 or 82 or 83
85	exp "Systematic Review"/
86	"systematic review*".m_titl.
87	exp Meta-Analysis/
88	"meta-analys*".m_titl.
89	exp "Systematic Review"/ or "systematic review*".m_titl. or exp Meta-Analysis/ or "meta-analys*".m_titl.
90	32 or 52 or 73
91	(32 or 52 or 73) and 78
92	(32 or 52 or 73) and 78 and 84
93	(32 or 52 or 73) and 78 and 84 and 89
94	exp Animals/ not exp Humans/
95	((32 or 52 or 73) and 78 and 84) not 94
96	((32 or 52 or 73) and 78 and 84 and 89) not 94
97	((32 or 52 or 73) and 78 and 89) not 94

review only

Supplementary Table 2. Reasons for exclusion of references assessed in full text.

Wrong population	
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Does not report data on people with TB+1 chronic condition	
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Wrong publication type (letters to the editor, corrections, protocol for this meta-review)	
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166.	Chen L. and Li N. and Liu M. and Zhang J. and Zhang H. High prevalence of multidrug-resistant tuberculosis in Zunyi, Guizhou province of China. <i>Journal of Antimicrobial Chemotherapy</i> , 2011; 66(10):2435-2437.
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Supplementary Table 3: Study characteristics of systematic reviews reporting pooled outcomes of studies from LMICs

Lead author and year	Search dates and limits	Number of studies in LMIC/Total number of studies (countries covered)	Clusters covered	Outcomes	Quality rating
TB + HIV					
Alemu 2020[S54]	2009 to Jan 2020; English language, in Ethiopia	17/17 (Ethiopia)	TB +HIV	Prevalence*	Low
Arega 2020 [S24]	200 to 2019; English language, in Ethiopia	47 / 47 (Ethiopia)	TB +HIV	Prevalence*	Critically low
Bastos 2019 [S25]	period between 2008 and 2017; Brazil only	15 /15 (Brazil)	TB +HIV	Mortality*, Treatment outcomes*	Critically low
Bisson 2020 [S48]	2009 to Sep 2015	52 (South Africa, Philippines, Georgia, Russia, Latvia, Peru, India, Haiti, Pakistan, Belarus, Brazil, Thailand, Mexico, Bulgaria, Argentina, Ecuador)	MDR-TB +HIV	Prevalence (pooled individuals - no meta-analysis)	Low
Chem 2019 [S5]	2004 to May 2018; English language, in SSA countries	9 / 9 (South Africa, Lesotho, Botswana, Ethiopia)	MDR-TB +HIV	OR of treatment success and prevalence of death and cured. Prevalence*	Critically low
Edessa 2020 [S6]	up to Feb 2020; English language, in SSA countries	19/19 (South Africa, Lesotho, Ethiopia, Kenya, Tanzania, Niger, Botswana)	DR-TB +HIV	RR of unfavourable outcome (Failed treatment/Lost from treatment/died), death, treatment failure and loss to follow-up	High
Endalamaw 2019 [S7]	2003-2018; English language, in Ethiopia	13/13 (Ethiopia)	TB +HIV ; PTB +HIV	Prevalence	Moderate
Eshetie 2018 [S2]	up to 2017; English language, in Ethiopia	34 /34 (Ethiopia)	TB +HIV	Prevalence of successful and unsuccessful treatment	Critically low
Gao 2010 [S8]	up to Apr 2010; English or Chinese language, in mainland China	29/29 (China)	TB +HIV	Prevalence (also by sex)	Critically low
Gao 2013 [S9]	up to Dec 2011; English language, any country except China	31/47 (Brazil, Nigeria, Ethiopia, India, Iran, South Africa, Zambia, Zimbabwe, Cambodia, Tanzania, Thailand, Togo, Ukraine, Vietnam)	TB +HIV	Prevalence	Critically low
Gelaw 2019 [S10]	up to Sep 2017; English language in SSA countries	68/68 (Ethiopia, Tanzania, Kenya, Eritrea, Uganda, South Africa, Zambia, Zimbabwe, Angola, Malawi, Nigeria, Cote d'Ivoire, Ghana, Burkina Faso, Togo, Cameroon, Republic of Congo)	TB +HIV	Prevalence (in SSA and in the central, southern, western and eastern regions of SSA)	High
Huddart 2020 [S1]	2006 to Jan 2019; in India	212 / 212 (India)	TB +HIV	Case-fatality rate (during treatment and after treatment)	Critically low
Lukoye 2015 [S26]	2003 to 2013; SSA countries only	27/27 (SSA)	TB +HIV	Prevalence*	Critically low
McMurry 2019 [S27]	1990 to 2016.; English language, LMIC only	84/84 (India, China, Mexico, Tanzania, Ethiopia, Malaysia, Pakistan, Brazil, Nigeria, South Africa, Bangladesh, Indonesia, Marshall Islands, Turkey, Benin, Fiji, Georgia, Guinea, Guinea-Bissau, Guyana, Iran, Kazakhstan, Kiribati, Kyrgyzstan, Micronesia, Peru, Philippines, Sri Lanka, Thailand, Zambia)	TB +HIV ; TB +DM	Prevalence*	Low
Mekonnen 2019 [S11]	up to Mar 2018; English language, in African countries	28 / 28 (Ethiopia, Zambia, South Africa, Nigeria, Burkina Faso, Uganda, Djibouti, Mozambique, Sudan, Tunisia, Tanzania, Malawi)	TB lymphadenitis +HIV	Prevalence	High
Mesfin 2014 [S49]	up to April 2012.; English language	4/24 (Ukraine, Haiti, Georgia, South Africa)	MDR-TB +HIV	Prevalence*, OR*	Critically low
Pormohammad 2018 [S52]	1985 to Mar 2018	16 / 20 (Dominican Republic, South Africa, Indonesia, China, Vietnam, Turkey, India, Brazil, Peru, Zambia)	TB Meningitis +HIV	Prevalence*	Critically low

Pourakbari 2019 [S28]	up to Apr 2017; Persian and English languages, Iran only	48/48 (Iran)	TB +HIV	Prevalence*	Critically low
Purmohamad 2020 [S53]	2000 to Jan 2017; English language	22/26 (South Africa, Turkey, China, India, Egypt, Brazil, Peru, Vietnam, Indonesia)	TB Meningitis +HIV	Prevalence*	Critically low
Rajendran 2020 [S29]	2009 to Dec 2018; English language, Malaysia only	23/23 (Malaysia)	TB +HIV; TB +DM	Prevalence*	Critically low
Reddy 2010 [S30]	up to Jun 2009; African countries only	22 / 22 but only 5 provided data on TB (Tanzania, Malawi, Uganda, and Cote d'Ivoire)	TB +HIV	Prevalence (pooled individuals - no meta-analysis)	Critically low
Samuels 2018 [S12]	1980 to Jun 2016; English, French and Spanish language	39 / 48 (Ethiopia, Georgia, Russia, Latvia, South Africa, India, Cameroon, Nigeria, Pakistan, Vietnam, Uzbekistan, Moldova, Belarus, Peru, China, Turkey, Haiti, Philippines,)	MDR/XDR-TB +HIV; MDR/XDR-TB +DM	RR of unsuccessful treatment (composite of failure, death, and default) and treatment failure. Prevalence*	Low
Seid 2018 [S31]	up to Mar 2017; English language, Ethiopia only	34 / 34 (Ethiopia)	TB +HIV	Prevalence*	Critically low
Sotgiu 2009 [S47]	2006 to Dec 2008.; English language	5 / 13 (South Africa, Russia, Peru)	MDR-TB +HIV; XDR-TB +HIV	Mortality*, Treatment outcomes*	Critically low
Straetmans 2011 [S32]	up to Mar 2011; English language	50 / 70 (studies with TB + HIV: 14 / 22) (South Africa, Ivory Coast, Uganda, Somalia, Iran, Malawi, Thailand, Zambia, Mexico, Russia, Sudan, Cambodia, Central African Republic, Guinea-Bissau, Nepal, Ivory Coast, India, Burkina Faso, Cameroon, Kenya, Zaire, China, Vietnam)	TB +HIV	Mortality*	Critically low
Tesfaye 2018 [S33]	2007 to 2016; English language, Ethiopia only	21/21 (15 for prevalence data) (Ethiopia)	TB +HIV	Prevalence*	Critically low
Teweldemedhin 2018 [S34]	1995 to Nov 2017; English language, Ethiopia only	30/30, but only 19/30 determined HIV infection among TB patients (Ethiopia)	TB +HIV	Prevalence*	Critically low
Uchida 2019 [S35]	1919 to 2017; English language	2/7 (India, Nigeria)	TB +HIV	Treatment outcomes*	Critically low
Waitt 2011 [S36]	1966 to 2010; English language	40 / 62 (China, Sudan, Brazil, Vietnam, South Africa, Gambia, Malawi, India, Russia, Thailand, Tanzania, Guinea Bissau, Peru, Mexico, Zambia, Uganda, Bolivia)	TB +HIV; TB +Non-infective comorbidities	Mortality*	Critically low
Wang 2019 [S13]	up to May 2018; English language	21 / 22 (Turkey, India, China, Vietnam, South Africa, Indonesia, Malaysia, Madagascar)	TB meningitis +HIV	Prevalence and prevalence of death	Critically low
Wu 2016 [S50]	up to Oct 2012; English or Chinese language	23/39 (Peru, India, Bangladesh, Lesotho, Iran, China, Latvia, Russia, Uzbekistan, Turkey, South Africa)	MDR-TB +HIV	Prevalence*	Critically low
TB + DM					
Alebel 2019 [S14]	up to Sep 2017; English language, in SSA countries	16/16 (Benin, Tanzania, Guinea-Bissau, Uganda, Nigeria, Ethiopia, Guinea, Madagascar, Kenya, Cameroon)	TB +DM	Prevalence	Low
Almeida 2018 [S51]	up to Nov 2015	2/11 (Iran, China)	PTB +DM	Mortality*	Critically low
Baker 2011 [S37]	1980 to Dec 2010	12 / 33 (Indonesia, Thailand, India, Turkey, Iran, Russia, Tunisia, Republic of the Congo, Mexico, China)	TB +DM	Prevalence*, Mortality*, Treatment outcomes*	Critically low
Chen 2013 [S15]	2000-Apr 2013; in China	22/22 (China)	PTB +DM	Prevalence	Critically low
Gautam 2021 [S4]	1980 to Jul 2020; English language, in Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka	65/ 74 (India, Pakistan, Nepal, Bangladesh, and Sri-Lanka)	TB +DM	Prevalence (also by countries), OR of mortality, treatment failure, culture conversion, recurrence, and MDR-TB	Low

Han 2016 [S38]	1980 to Jul 2015; English language	27/54 (total articles included), 27/33 (articles used for the meta-analysis) (Congo, Tunisia, Russia, Turkey, Thailand, China, India, Mexico, Iran, Kiribati, Brazil, Malaysia, Tanzania, Peru, Indonesia)	TB +DM	Mortality*, Treatment outcomes*	Critically low
Huang 2020 [S39]	1966 to Jul 2019; English only	10/13 (India, China, Mexico, Thailand, Georgia, Iran)	TB +DM	Prevalence*	Critically low
Huangfu 2019 [S16]	1980 to Jul 2018	57/104 (Congo, Indonesia, Iran, Thailand, Tunisia, Turkey, Brazil, India, Mexico, China, Malaysia, Fiji, Kiribati, Ethiopia, Argentina, Poland, Tanzania, Russia, Egypt, Uganda, Georgia, Saudi Arabia, Senegal)	TB +DM	OR of death only and treatment failure and death	Low
Jeon 2010 [S40]	up to May 2009 (databases), 2007 to 2008 (World Lung Conferences abstracts)	16 / 18 studies that met our inclusion criteria on screening for DM among patients with TB (32 studies included in total) (India, Russia, Nigeria, Guinea, Pakistan, Turkey, Indonesia, Tanzania, Mexico, Iran)	TB +DM	Prevalence*, RR*	Critically low
Lutfiana 2019 [S41]	2012 to Sep 2017; English language	32/41 (South Africa, China, India, Thailand, Bangladesh, Georgia, Brazil, Tanzania, Vietnam, Mongolia)	TB +DM	Prevalence*	Critically low
Noubiap 2019 [S17]	1986 to Jun 2017	138/ 200 (Benin, Ethiopia, Guinea-Bissau, Nigeria, Senegal, South Africa, Tanzania, Uganda, Georgia, Kazakhstan, Romania, Turkey, Egypt, Iran, Libya, Pakistan, Tunisia, Yemen, Guyana, Mexico, Brazil, Peru, Bangladesh, India, Sri Lanka, China, Fiji, Indonesia, Kiribati, Malaysia, Marshall Islands, Thailand)	TB +DM	Prevalence (by income level, regions and countries)	Critically low
Shao-hua 2016 [S18]	up to Nov 2015; in China	13 / 13 (China)	PTB +DM	OR and aOR of adverse outcomes (failure to retreatment, death, and loss)	Critically low
Tegegne 2018 [S42]	up to Jul 2018; English language	17 / 25 (Iran, Georgia, Mexico, Egypt, Thailand, Peru, China, Indonesia, Bangladesh, Turkey)	TB +DM	Prevalence*	High
Workneh 2017 [S43]	up to Mar 2016; English language	80/94 (India, China, Iran, Indonesia, Pakistan, Sri Lanka, Nepal, Thailand, Georgia, Philippines, Malaysia, Benin, Ethiopia, Tanzania, Guinea, Kenya, Ethiopia, Uganda, Nigeria, South Africa, Madagascar, Mexico, Peru, Brazil, Kiribati, Marshall Islands, Guyana, Fiji)	TB +DM	Prevalence*	Low
TB + Mental disorders					
Alene 2018 [S19]	up to September 2017	37/40 (1 studies on Canada and 2 on South Korea) (China, Peru, Russia, Argentina, Turkey, Iran, Lesotho, Latvia, South Africa, Tanzania, Haiti, Pakistan, Ethiopia, Vietnam, Indonesia, Nigeria, Namibia)	MDR-TB +Depression; MDR-TB +Anxiety; MDR-TB +Psychosis	Prevalence (also by regions)	Critically low
Duko 2020 [S20]	up to Dec 2019; English language	25/25 (Pakistan, Turkey, India, Brazil, China, Nigeria, Cameroon, Ethiopia)	TB +Depression; MDR-TB +Depression	Prevalence (also by sex)	High
Lee 2020 [S21]	1990 to Oct 2018; English, French, Spanish, Portuguese, and Korean languages	10/10 (South Africa, Ethiopia, Zimbabwe, Zambia, Tanzania, Peru, China)	TB +Mental Disorders	OR of poor TB treatment outcomes, loss to follow-up and non-adherence to treatment. Prevalence*, Mortality*	Critically low
Rensburg 2020 [S44]	2000 to 2019; English language	100/100 (Pakistan, South Africa, Peru, Pakistan, China, Ethiopia, Thailand, India, Sudan, Cameroon, Kazakhstan, Sri Lanka, Nigeria, Zambia, Russia, Brazil, Poland, Burkina Faso, Estonia, Angola, Romania, Ukraine)	TB +Mental illness (Depression, Anxiety, Alcohol use, and General Mental health)	Prevalence*	Critically low

Ruiz-Grosso 2020 [S3]	up to Aug 2019; English language	8/8 (South Africa, Peru, Ethiopia, China, Zimbabwe, Zambia, Tanzania)	TB +Depression	OR of negative outcomes (death and loss to follow-up), death, loss to follow-up and non-adherence	Critically low
TB + HCV					
Behzadifar 2019 [S22]	2000 to Mar 2018; English language	13/21 (Georgia, Argentina, Iran, Brazil, Egypt, Pakistan, China, Sudan, Iraq)	TB +HCV	Prevalence	Moderate
TB + other					
Basham 2020 [S45]	up to Jan 2020 (databases), 2013 to Dec 2019 (The International Journal of Tuberculosis and Lung Disease); English language	5/16 (Tanzania, Egypt, Peru, Russia, Estonia)	TB + cardiovascular disease	OR*, Mortality*	Critically low
Leung 2020 [S23]	up to Jun 2019; any language	14/47 (Lithuania, China, Czech Republic)	TB +Lung cancer; TB +non-Hodgkin's lymphoma; TB +Leukaemia	RR of lung cancer, non-Hodgkin's lymphoma, and leukaemia	Low
Rehm 2009 [S46]	up to Sep 2008; English language	14/53 (Russia, India, Brazil, Belarus, Kazakhstan, Romania, Slovenia)	TB+AUD (Alcohol Use Disorder)	Prevalence*	Critically low

Notes: aOR: adjusted OR; DM: Diabetes Mellitus; DR-TB: Drug resistant TB; HCV: Hepatitis C Virus; HIV: Human immunodeficiency virus; LMIC: Low- and middle-income countries; MDR-TB: Multidrug resistant TB; OR: Odds Ratio; PTB: Pulmonary TB; RR: Relative Risk; SSA: Sub-Saharan Africa; Tuberculosis; XDR-TB: Extensively drug-resistant TB.

* Outcomes available for individual studies, but not pooled

Supplementary Table 4: Outcomes reported by each systematic review

Lead author and year	Clusters covered	Outcomes	Quality rating
TB+HIV			
Alemu 2020	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 7.1% - 30.4%	Low
Arega 2020	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 1.70%-45.80%	Critically low
Bastos 2019	TB +HIV	Outcomes available for individual studies, but not pooled: Mortality*: range 3.6% - 30.9%, Treatment outcomes*: cure (33% - 62%), abandonment of treatment (4.2% - 13.6%)	Critically low
Bisson 2020	MDR-TB +HIV	Low and lower-middle income countries: 5.1% (130 of (2421+130) pooled individuals from two studies) - no MA Upper-middle: 3585/(3585+3244)= 52.5% (pooled individuals from two studies) - no MA	Low
Chem 2019	MDR-TB +HIV	Successful treatment: OR 0.87 (0.79 - 0.96), 6 studies, number of participants NR, I ² NR, range 0.75 - 1.26) Mortality: 18% (14%-23%, 9 studies, number of participants NR, I ² =91.1%, range=9%-31%) Cured: 34% (22%-45%, 9 studies, number of participants NR, I ² =98.9%, range= 3%-60%) Outcomes available for individual studies, but not pooled: Prevalence*: 21.73% - 100%	Critically low
Edessa 2020	DR-TB +HIV	Unsuccessful treatment: † RR 1.18 (1.07-1.30, 19 studies, 8301 participants, I ² =48%, range=0.71-2.37) Unsuccessful treatment (western SSA region) : RR 1.42 (0.95-2.13, 2 studies, 790 participants, I ² =12%, range=1.31-2.37) Unsuccessful treatment (eastern SSA region): RR 1.47 (95% CI: 1.23–1.75, 6 studies, 1970 participants, I ² =0%, range=1.14-1.77) Unsuccessful treatment (southern SSA region): † RR 1.09 (0.98-1.20, 11 studies, 5541 participants, I ² =43%, range=0.71-1.41) Mortality: † RR 1.50 (1.30-1.74, 16 studies, 7365 participants, I ² =39%, range=0.73-2.18) Mortality (western SSA region) : RR 1.42 (0.96-2.09, 1 study, 588 participants) Mortality (eastern SSA region): RR 1.52 (95% CI: 1.19–1.93, 5 studies, 1442 participants, I ² =0%, range=1.20-2.18) Mortality (southern SSA region): † RR 1.49 (1.21-1.83, 10 studies, 5335 participants, I ² =60%, range=0.73-1.47) Treatment failure: † RR 0.66 (0.38-1.13, 10 studies, 5474 participants, I ² =73%, range=0.15-2.40) Loss to follow up: † RR 0.82 (0.74-0.92, 14 studies, 7051 participants, I ² =0%, range=0.49-2.61)	High
Endalamaw 2019	TB +HIV; PTB +HIV	Prevalence: 23.40% (95% CI 19.56%-27.24%, 13 studies, 19212 participants, I ² =97.6%, range=9.50%-52.10%) PTB: 22.08% (95% CI 14.36%-29.81%, 3 studies, 1079 participants, I ² =89.9%, range 14.97%-28.60%)	Moderate
Eshetie 2018	TB +HIV	Successful treatment: prev 67% (56%-79%, number of studies NR, number of participants NR, I ² NR, range NR) Unsuccessful treatment: prev 33% (21%-44%, number of studies NR, number of participants NR, I ² NR, range NR) Unsuccessful treatment: OR (TB+HIV vs TB) 1.98 (1.56-2.52, 20 studies, number of participants NR, I ² =81.0%, range 0.82-14.31)	Critically low
Gao 2010	TB +HIV	Prevalence: 0.9% (95% CI 0.6%–1.4%, 18 studies, number of participants NR, I ² = 92.21, range 0.1%–4.5%) Men: 1.1% (95% CI 0.6% - 2.0%, 9 studies, number of participants NR, I ² =94.7%) Women: 0.6% (95% CI 0.3% - 1.1%, 9 studies, number of participants NR, I ² =71.8%)	Critically low
Gao 2013	TB +HIV	Africa: 31.2% (95% CI 19.3% - 43.2%), 17 studies, number of participants NR, I ² =99.6%, range NR) Latin America: 25% (95% CI 19.3% - 30.8%), 7 studies, number of participants NR, I ² =95.2%, range NR)	Critically low
Gelaw 2019	TB +HIV	SSA: prevalence 31.81% (95% CI 27.83%-36.07%; 68 studies, 62696 participants, I ² =98%, range=6.03%-72.25%) Eastern region (SSA): prev. 31.14% (95% CI 25.39%-37.54%, 32 studies, 33637 participants, I ² =98%, range=6.03%-60.51%) Western region (SSA): prev. 25.48% (95% CI 19.70%-32.27%), 21 studies, 16145 participants, I ² =98%, range=10.26%-72.13%) Southern region (SSA): prev. 43.67% (95% CI 35.05%-52.69%, 12 studies, 11148 subject, I ² =99%, range=23.84%-72.25%) Central region (SSA): prev. 41.33% (95% CI 30.39%-53.19%, 3 studies, 2039 participants, I ² =96%, range=31.29%-51.56%)	High
Huddart 2020	TB +HIV	Case-fatality rate (during treatment): 10.91% (7.68%-15.50%), 35 studies, number of participants NR, Tau ² =0.90 (considered low heterogeneity if <4, according to the authors) Case-fatality rate (after treatment): 4.15% (1.06% to 16.24%), 5 studies, number of participants NR, Tau ² =1.902 (considered low heterogeneity if <4, according to the authors)	Critically low

Lukoye 2015	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 25.4% - 79.9%	Critically low
McMurry 2018	TB +HIV; TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: range 1.9% - 45%	Low
Mekonnen 2019	TB lymphadenitis +HIV	Africa: 52% (95% CI 33%-71%, 14 studies, number of participants NR, I ² =99.2%, range 6%-91%) Ethiopia: 21% (95% CI 12%-30%, 6 studies, number of participants NR, I ² =92.9%, range 6%-67%)	High
Mesfin 2014	MDR-TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 3.4% - 31.6%, OR*	Critically low
Pormohammad 2018	TB Meningitis +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 0% - 100%	Critically low
Pourakbari 2019	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 0.4% - 38%	Critically low
Purmohamad 2020	TB meningitis +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 0% - 91%	Critically low
Rajendran 2020	TB +HIV; TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: MDR-TB+DM: 26.7% (1 study); MDR-TB+HIV: 17.6% (1 study)	Critically low
Reddy 2010	TB +HIV	161 / 166 (97%) – no meta-analysis	Critically low
Samuels 2018	MDR/XDR-TB +HIV ; MDR/XDR-TB +DM	Unsuccessful treatment: MDR/XDR-TB + HIV (low gross domestic product countries): RR 2.23 (1.60-3.11, 7 studies, 2662 participants, I ² =41%, range=0.67-3.33) MDR/XDR-TB + HIV (LMIC): RR 1.34 (1.04-1.72, 13 studies, 5816 participants, I ² =88%, range=0.55-3.33) MDR/XDR-TB + DM (vs MDR/XDR-TB only): RR 0.90 (0.65-1.23, 3 studies, 687 participants, I ² =19%, range=0.23-0.98) Treatment Failure (defined as 5 cultures positive within the last 12 months of therapy or any culture positivity within the last 3 cultures; alternatively, failure was defined as treatment discontinuation due to lack of appropriate response or significant adverse events): MDR/XDR-TB + HIV (vs MDR/XDR-TB only): RR 0.75 (0.44-1.29, 7 studies, 5930 participants, I ² =55%, range=0.32-2.40) Outcomes available for individual studies, but not pooled: Prevalence*:	Low
Seid 2018	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 2.0% - 100%	Critically low
Sotgiu 2009	MDR-TB +HIV; XDR-TB +HIV	Outcomes available for individual studies, but not pooled: Mortality*: , Treatment outcomes*:	Critically low
Straetemans 2011	TB +HIV	Outcomes available for individual studies, but not pooled: Mortality*: range 2.2% - 34.4%	Critically low
Tesfaye 2018	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 11.4% - 36.2%	Critically low
Teweldemedhin 2018	TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*: range 6%-52.1%	Critically low
Uchida 2019	TB +HIV	Outcomes available for individual studies, but not pooled: Treatment outcomes*: Unsuccessful outcomes (death, failure, loss to follow-up and transferred-out HIV positive): aOR 3.6 (95%CI 1.1-11.7) (1 study)	Critically low
Waitt 2011	TB +HIV; TB + Non-infective comorbidities	Outcomes available for individual studies, but not pooled: Mortality*:	Critically low
Wang 2019	TB meningitis +HIV	Prevalence: 10.6% (95% CI: 4.2%–24.6%, number of studies NR, number of participants NR, I ² NR, range NR) Mortality: 53.4% (42.4%–64.1%, 7 studies, 547 participants, I ² = 2.1%, range NR)	Critically low
Wu 2016	MDR-TB +HIV	Outcomes available for individual studies, but not pooled: Prevalence*:	Critically low
TB+DM			

1			
2			
3			
4	Alebel 2019	TB +DM	Prevalence TB+DM: 9% (95% CI 6%-12%, 16 studies, 13286 participants, I ² = 97.48%, range: 2%-38%) Nigeria: 15% (95% CI 7%-23%, 4 studies, 4998 participants, I ² NR, range NR) Ethiopia: 10% (95% CI 6%-13%, 3 studies, 1633 participants, I ² NR, range NR) Tanzania: 11% (95% CI 9%-12%, 2 studies, 1309 participants, I ² NR, range NR)
5			Low
6	Almeida 2018	PTB +DM	Outcomes available for individual studies, but not pooled: Mortality*: OR 9.70 (95% CI 2.92-32.22)
7			Critically low
8	Baker 2011	TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: , Mortality*: range of RR 1.26 - 28.47, Treatment outcomes*: relapse: range of RR 1.88 - 5.96; remaining sputum culture positive: range of RR 0.79 - 2.17, failure/death: range of RR 1.44 - 3.13
9			Critically low
10	Chen 2013	PTB +DM	Prev: 7.20% (95% CI 6.01%-8.39%, 22 studies, 56805 participants, I ² NR, range 2.08%-16.16%)
11			Critically low
12			Pooled prevalence 21% (95% CI 18%-23%, 65 studies, 49,792 patients, I ² =98.28%, range NR) MDR-TB OR 1.05 (95% CI 0.63-1.74, 4 studies, number of participants NR, I ² =40.71%, range NR) Among adults only: 21.0% (95% CI 18.0-23.0%, 55 studies, number of participants NR, I ² = 97.99%, range NR)
13			Bangladesh prevalence 11.0% (95% CI 10.0%-12.0%, 2 studies, number of participants NR, I ² NR, range NR) India prevalence 22.0% (95% CI 19.0%-25.0%, 47 studies, number of participants NR, I ² =97.92%, range NR) Nepal prevalence 12.0% (95% CI 4.0%-20.0%, 4 studies, number of participants NR, I ² =96.70%, range NR) Pakistan prevalence 19.0% (95% CI 11.0%-27.0%, 10 studies, number of participants NR, I ² =99.18%, range NR) Sri Lanka prevalence 24.0% (95% CI 21.0%-27.0%, 2 studies, number of participants NR, I ² NR, range NR) Mortality in TB+DM vs TB: OR 1.74 (1.21-2.51, 5 studies, number of participants NR, I ² =19.43%, range 0.14-1.95) Treatment failure: OR 1.65 (1.12-2.44, 5 studies, number of participants NR, I ² =49.63%, range 1.34-21.91) Cured: OR 0.32, 95% CI 0.10 - 1.05, 1 study) Recurrence: OR 0.53 (95% CI 0.32, 0.87, 1 study)
14	Gautam 2021	TB +DM	MDR-TB: OR 1.05 (0.63-1.74, 4 studies, number of participants NR, I ² =40.71%, range=0.45-4.70)
15			Low
16	Han 2016	TB +DM	Outcomes available for individual studies, but not pooled: Mortality*: range of OR 0.41 - 29.22, Treatment outcomes*: Sputum culture conversion at 2 to 3 months: range of OR 0.57 - 5.27; Failure/death: range of OR 0.86 - 18.91; Relapse: range of OR 0.97 - 6.35
17			Critically low
18	Huang 2020	TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: range 9% - 49%
19			Critically low
20	Huangfu 2019	TB +DM	Mortality: OR 1.80 (95%CI 1.35-2.40; 32 studies, number of participants NR, I ² =91%, range NR) Treatment failure or death: OR 1.90 (95%CI 1.43-2.53; 22 studies, number of participants NR, I ² =87.3%, range NR)
21			Low
22	Jeon 2010	TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: , RR*
23			Critically low
24	Lutfiana 2019	TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: range 3.3%-100%
25			Critically low
26			Prevalence: Low income countries: 7.9% (95% CI 4.9%-11.5%, 15 studies, 9434 participants, I ² =96.8%, range NR) Lower-middle income: 17.7% (95% CI 15.1%-20.5%, 48 studies, 48036 participants, I ² =98.3%, range NR) Upper-middle income: 14.4% (95% CI 12.8%-16.0%, 75 studies, 1,994,027 participants, I ² =99.9%, range NR)
27			African region: 8.0% (95% CI 5.9%-10.4%, 119 studies, 474,944 participants, I ² =99.8%, range 1.9%-32.4%) Southeast Asia: 19.0% (95% CI 16.2%-21.9%, 30 studies, 30382 participants, I ² =97.0%, range 5.1%-54.1%)
28			Benin: 1.9% (95% CI 0.2%-4.7%, 1 study, 159 participants) Ethiopia: 18.8% (95% CI 1.9%-47.1%, 2 studies, 1749 participants, I ² =99.2%, range: 8.3%-32.4%) Guinea-Bissau: 2.7% (95% CI 0.3%-6.8%, 1 study, 110 participants) Nigeria: 7.8% (95% CI 4.4%-12.0%, 4 studies, 9821 participants, I ² =97.8%, range=4.8%-12.0%) Senegal: 4.9% (95% CI 2.2%-8.5%, 2 studies, 2848 participants, I ² =75.1%, range=3.8%-7.0%) South Africa: 9.4% (95% CI 7.6%-11.3%, 1 study, 947 participants) Tanzania: 8.5% (95% CI 4.8%-13.0%, 7 studies, 4178 participants, I ² =95.1%, range=2.6%-16.7%)
29	Noubiap 2019	TB +DM	
30			Critically low
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		<p>Uganda: 7.3% (95% CI 4.7%-10.3%, 2 studies, 390 participants, I²=9.9%, range=5.4%-8.5%)</p> <p>Kazakhstan: 7.1% (95% CI 5.1%-9.4%, 1 study, 562 participants) Romania: 18.4% (95% CI 13.6%-23.7%, 1 study, 228 participants) Turkey: 7.8% (95% CI 6.8%-8.8%, 3 studies, 2773 participants, I²=0%, range=7.9%-8.6%) Georgia: 12.4% (95% CI 7.4%-18.5%, 1 study, 137 participants)</p> <p>Egypt: 22.8% (95% CI 15.2%-31.4%, 3 studies, 578 participants, I²=81.4%, range=15.8%-27.7%) Iran: 17.8% (95% CI 12.5%-23.8%, 11 studies, 3134 participants, I²=93.3%, range=5.5%-40.0%) Libya: 6.1% (95% CI 3.5%-9.4%, 1 study, 262 participants) Pakistan: 22.0% (95% CI 12.8%-32.8%, 6 studies, 5201 participants, I²=98.8%, range=11.4%-39.6%) Tunisia: 7.6% (95% CI 5.9%-9.6%, 1 study, 788 subject) Yemen: 9.5% (95% CI 6.0%-13.8%, 1 study, 220 participants)</p> <p>Guyana: 14.0% (95% CI 7.8%-21.6%, 1 study, 100 participants) Mexico: 30.8% (95% CI 26.4%-35.3%, 10 studies, 192420 participants, I²=97.9%, range=19.3%-54.4%)</p> <p>Brazil: 7.2% (95% CI 6.3%-8.1%, 12 study, 1726436 participants, I²=99.7%, range=3.3%-33.1%) Peru: 4.8% (95% CI 1.7%-9.5%, 4 studies, 3983 participants, I²=96.8%, range=2.5%-11.1%)</p> <p>Bangladesh: 10.6% (95% CI 7.2%-14.5%, 3 studies, 3010 participants, I²=85.9%, range=8.3%-12.8%) India: 19.9% (95% CI 16.8%-23.2%, 26 studies, 27260 participants, I²=97.2%, range=5.1%-54.1%) Sri Lanka: 24.1% (95% CI 16.6%-32.5%, 1 study, 112 participants)</p> <p>China: 14.5% (95% CI 10.5%-19.0%, 14 studies, 19529 participants, I²=98.4%, range=2.7%-30.1%) Fiji: 10.1% (95% CI 4.4%-17.7%, 3 studies, 1139 participants, I²=91.8%, range=5.2%-13.7%) Indonesia: 14.8% (95% CI 12.2%-17.7%, 1 study, 634 participants) Kiribati: 36.7% (95% CI 31.1%-42.5%, 1 study, 275 participants) Malaysia: 26.9% (95% CI 17.8%-37.0%, 5 studies, 23438 participants) Marshall Island: 45.2% (95% CI 32.9%-57.7%, 1 study, 62 participants) Thailand: 7.5% (95% CI 6.2%-8.8%, 5 studies, 17862 participants, I²=81.6%, range=6.0%-16.3%)</p>	
Shao-hua 2016	PTB +DM	<p>Retreatment: OR 2.05 (1.30-3.22, 3 studies, 499 participants, I²=0%, range NR) aOR 3.38 (1.56-7.29, 2 studies, n participants NR, I²=75%, range NR)</p>	Critically low
Tegegne 2018	TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: range 5% - 36%	High
Workneh 2017	TB +DM	Outcomes available for individual studies, but not pooled: Prevalence*: range 1.9% - 45%	Low
TB+Mental disorders			
Alene 2018	MDR-TB + Depression; MDR-TB +Anxiety; MDR-TB +Psychosis	<p>Depression: Overall: Prev. 25% (95% CI 14%-39%, 15 studies, n participants NR, I²=98%, range= 3%-79%) African region: 16% (95% CI 9%-24%, 3 studies, n participants NR, I² NR, range NR) The Americas Region: 36% (95% CI 23%-50%, 3 studies, n participants NR, I² NR, range NR) South-East Asia Region: 22% (95% CI 0%-60%, 3 studies, n participants NR, I² NR, range NR) European region: 11% (95% CI 4%-21%, 3 studies, n participants NR, I² NR, range NR) Eastern Mediterranean Region: 73% (95% CI 64%-81%, 2 studies, n participants NR, I² NR, range NR) Western Pacific Region: 5% (95% CI 1%-12%, 1 study, n participants NR, I² NR, range NR)</p>	Critically low

		<p>Anxiety: Overall: Prev: 24% (95% CI 2%-57%, 3 studies, n participants NR, I²=95%, range=12%-56%) The Americas Region: 14% (95% CI 9%-21%, 2 studies, n participants NR, I² NR, range NR) South-East Asia Region: 56% (95% CI 45%-66%, 1 studies, n participants NR, I² NR, range NR)</p> <p>Psychosis: (Overall includes a study from S.Korea) African region: 12% (95% CI 8%-17%, 5 studies, n participants NR, I² NR, range NR) The Americas Region: 11% (95% CI 7%-17%, 2 studies, n participants NR, I² NR, range NR) South-East Asia Region: 10% (95% CI 5%-17%, 2 studies, n participants NR, I² NR, range NR) European region: 6% (95% CI 0%-17%, 2 studies, n participants NR, I² NR, range NR) Eastern Mediterranean Region: 7% (95% CI 1%-17%, 1 studies, n participants NR, I² NR, range NR)</p>	
Duko 2020	TB + Depression; MDR-TB +Depression	<p>Prevalence: 45.19% (95% CI 38.04%-52.55%, 25 studies, 4903 participants, I²=96.28%, range=15.56%-80.00%) Women: 51.54% (95% CI 40.34%-62.60%, 17 studies, number of participants NR, I² = 92.55%, range NR) Men: 45.25% (95% CI 35.19%-55.71%, 17 studies, number of participants NR, I² = 95.09%, range NR) MDR-TB: 52.34% (95% CI 38.09%-66.22%, 5 studies, number of participants NR, I²=92.55%, range=NR)</p>	High
Lee 2020	TB +Mental Disorders	<p>Unsuccessful treatment: OR 2.13 (95%CI 0.85-5.37, 4 studies, 1196 participants, I²=82%, range NR) Loss to follow up: OR 1.90 (95%CI 0.33-10.91, 2 studies, 1139 participants, I²=78%, range NR) Non-adherence to treatment (measured by self-report, missed visits, pill count, or physiological tests): OR 1.60 (95% CI 0.84-3.02, 4 studies, 10851 participants, I²=86%, range=0.94-3.67) Outcomes available for individual studies, but not pooled: Prevalence*: Depression: range 37.5% - 53.9%; Mental disorder: range 18.9%-22.4%; Psychological distress: range 22% - 67.6%; PTSD: 29.6% (1 study), Mortality*:</p>	Critically low
Rensburg 2020	TB +Mental illness (Depression, Anxiety, Alcohol use, and General Mental health)	<p>Outcomes available for individual studies, but not pooled: Prevalence*: Depression: range 9.3% - 84%; Anxiety: range 2%-47.2%; Alcohol use: range 5% - 63%; Psychiatric comorbidity: range 3%; Psychological distress: range 22% - 83.6%; Poor mental quality: range 13.1% (1 study); Common mental disorder/Mental disorder: range 22.4%-38.3%</p>	Critically low
Ruiz-Grosso 2020	TB +Depression	<p>Mortality or loss to follow-up: OR = 4.26 (95% CI 2.33-7.79, 2 studies, 973 participants, I²=0%, range=3.65-4.88) Mortality: OR 2.85 (1.52-5.36, 2 studies, 973 participants, I²=0%, range=1.76-2.99) Loss to follow up: OR 8.70 (4.95-9.09, 2 studies, 973 participants, I²=0%, range=4.95-9.09) Non-adherence to TB treatment: OR 1.38 (0.70-2.72, 3 studies, 9349 participants, I²=94.36%, range=0.92-3.67)</p>	Critically low
	TB+HCV		
Behzadifar 2019	TB +HCV	Africa: 11% (95% CI 1%-23%, 3 studies, 327 participants, I ² =93.9%, range=NR)	Moderate
	TB+other		
Basham 2020	TB + cardiovascular disease	Outcomes available for individual studies, but not pooled: Mortality*: range of ORs 2.50 - 3.01	Critically low
Leung 2020	TB +Lung cancer; TB +non-Hodgkin's lymphoma; TB +Leukaemia	<p>Upper middle-income countries Lung cancer: RR 1.53 (95% CI 1.25-1.87, 9 studies, number of participants NR, I²=94.6%, range NR) non-Hodgkin's lymphoma: RR 1.70 (95% CI 1.13-2.56, 1 study, number of participants NR, I²=NA) leukaemia: RR 1.61 (95% CI 1.13-2.29, 1 study, number of participants NR, I²= NA)</p>	Low
Rehm 2009	TB+ Alcohol Use Disorder	Outcomes available for individual studies, but not pooled: Prevalence*:	Critically low

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3 *Note:* Quality was assessed using the AMSTAR2 tool. aOR: adjusted OR; DM: Diabetes Mellitus; DR-TB: Drug resistant TB; HCV: Hepatitis C Virus; HIV: Human immunodeficiency virus; LMIC:
4 Low- and middle-income countries; MDR-TB: Multidrug resistant TB; NR: Not reported; OR: Odds Ratio; prev.: prevalence; PTB: Pulmonary TB; RR: Relative Risk; SSA: Sub-Saharan Africa;
5 Tuberculosis; XDR-TB: Extensively drug-resistant TB.

6 * Outcomes available for individual studies, but not pooled. Range of effect estimates reported.

7 † Includes one study focused on children
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For peer review only

Supplementary Table 5: Conditions that were considered chronic (and therefore included) or not (and therefore excluded) for this review

Condition/risk factor	Should be considered as a comorbidity in this review?	Description or details
Included		
Acquired immunodeficiency syndrome (AIDS)	Yes	
Anxiety	Yes	Clinical diagnostic of an anxiety disorder or assessed with a validated scale
Arthritis	Yes	
Asthma	Yes	
Autoimmune diseases	Yes	
Cancer	Yes	Any type of cancer
Cardiovascular disease	Yes	
cerebrovascular accident	Yes	
cerebrovascular accident	Yes	Cerebrovascular disease is a form of cardiovascular disease
chronic airflow obstruction	Yes	As a proxy for COPD
Chronic kidney disease / Chronic renal failure	Yes	No if acute renal failure- Yes if chronic renal failure
Chronic liver disease / Cirrhosis / Chronic hepatic dysfunction	Yes	
Chronic lung disease	Yes	
Chronic obstructive pulmonary disease (COPD)	Yes	COPD is form of chronic lung disease
Cor pulmonale	Yes	
Depression	Yes	Clinical diagnostic or assessed with a validated scale (e.g. PHQ-9)
Diabetes mellitus (DM)	Yes	
hearing defect	Yes	
Heart disease / Cardiopathies	Yes	
Heart failure	Yes	
Hepatitis B virus (HBV)	Yes	
Hepatitis C virus (HCV)	Yes	
HIV	Yes	
hyperthyroidism	Yes	
hypothyroidism	Yes	
Mental disorder	Yes	Umbrella term for conditions such as PTSD, OCD, depression, anxiety disorders, etc.
Obsessive compulsive disorder (OCD)	Yes	
Panic disorder	Yes	

pneumoconiosis	Yes	
Post-traumatic stress disorder (PTSD)	Yes	
seizures (cause not determined)	Yes if called epilepsy	Yes only if called epilepsy
Substance use / drug abuse	Yes	usually reserved for illicit substances
T. pallidum	Yes	
Unstable angina	Yes	
Excluded		
Acute Respiratory Distress Syndrome	No	Acute
Anaemia	No	
Aspergillus coinfection	No	complications of HIV
BMI	No	
Candida coinfection	No	complications of HIV
cardiomyopathy	No	Can be acute and/or reversible
Cavitary disease	No	
Chronic corticosteroid therapy	No	Treatment
Chronic diarrhoea	no	Unless it's inflammatory bowel disorders, no.
cryptococcus	No	complications of HIV
cryptococcal IRIS (immune reconstitution inflammatory syndrome) adenitis	No	
deep venous thrombosis	NO	
dermatitis	No	
Drinking alcohol	No	No, unless it is something like 'harmful use of alcohol' or 'alcohol dependence'
drug-induced hepatotoxicity/ liver injury	No	
Dyslipidemia	No	
haemorrhoids/fistula-in-ano	No	
HTLV (Human T-Cell LymphotropicVirus)	No	complications of HIV
Hypertension	No	
hypokalaemia	No	
hyponatremia	No	complications of HIV
Intestinal parasites	No	
Leukopenia	no	
Malnourishment	No	
Obesity	No	

pancreatitis	No	Unless Long term pancreatitis and it is clearly specified
Pneumonia	No	Acute condition
pneumothorax	No	
Pulmonary edema	No	Symptom
pulmonary fungal infection	No	complications of HIV
sacroiliitis	NO	
scabies	No	
severe epistaxis	No	
Skin conditions	no	
smoking	No	Would not fall under 'substance abuse', even if it is reported as 'high dependence smoking'
visual impairment (reported as a symptom of DM)	No (reported as a complication)	

Supplementary Table 6: AMSTAR2 assessment details for each study

Study Id	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	confidence rating
Duko 2020	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	High
Alemu 2020	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Low
Arega 2020	Yes	No		Partial Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Critically low
Huddart 2020	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	Yes	Yes	Yes	No	Yes	Critically low
Huang 2020	Yes	Partial Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Critically low
Edessa 2020	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	Partial Yes	No		Yes	Yes	Yes	Yes	Yes	High
Basham 2020	Yes	No	Yes	Partial Yes	Yes	Yes	No	Yes	Partial Yes	No	No	Yes	Yes	Yes			Critically low
Bisson 2020	Yes	Yes	Yes	Partial Yes	No	No	Partial Yes	No	No	No	NA	NA	NA	No	NA	Yes	Low
Huangfu 2019	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	Partial Yes	No	Yes	Yes	Yes	Yes	No	Yes	Low
Bastos 2019	Yes	Yes	Yes	Partial Yes	Yes	Yes	No	Partial Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low
Endalamaw 2019		Partial Yes	Yes	Partial Yes	No	Yes	Partial Yes	Partial Yes	Partial Yes	No	Yes	Yes	Yes	No	Yes	Yes	Moderate
Chem 2019	Yes	Partial Yes	Yes	Partial Yes	Yes	No	Partial Yes	Yes	Partial Yes	Yes	Yes	Yes	No	Yes	No	Yes	Critically low
Alebel 2019	Yes	Yes	Yes	Partial Yes	No	Yes	No	Partial Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Low
Behzadifar 2019	Yes	Partial Yes	Yes	Partial Yes	Yes	No	Partial Yes	Partial Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Moderate
Gelaw 2019	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	High
Alene 2018		Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	No	No	No	No	No	No	No	Yes	Critically low
Almeida 2018	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	No	No	No	No	Yes	Critically low
Eshetie 2018		No	Yes	Partial Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Critically low
Gao 2013	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	Yes	No	No	Yes	No	Yes	Critically low
	Yes	No		Partial Yes	No	No	Partial Yes	Partial Yes	No	No	NA	NA	NA	No	NA	No	Critically low
Baker 2011	Yes	No	Yes	Partial Yes	No	Yes	Partial Yes	Partial Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Critically low
Jeon 2010	Yes	No	Yes	Partial Yes	No	Yes	No	Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low
Gao 2010	Yes	No	Yes	Partial Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	No	Yes	Critically low

	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Critically low
Leung 2020	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Yes	Yes	Partial Yes	No	No	Yes	Yes	Yes	Yes	Yes	Low
Rensburg 2020	Yes	No	Yes	Partial Yes	Yes	No	No	Partial Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low
Han 2016	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	No	No	No	No	No	No	Yes	Yes	No	Critically low
Lee 2020	Yes	Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Critically low
Purmohamad 2020	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	No	No	Yes	Yes	Yes	Critically low
Rajendran 2020	Yes	No	Yes	Partial Yes	No	No	Yes	No	No	No	NA	NA	NA	No	NA	Yes	Critically low
Ruiz-Grosso 2020	Yes	Partial Yes	Yes	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	Critically low
Pourakbari 2019	Yes	No	Yes	Partial Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Critically low
Lutfiana 2019	Yes	No	Yes	Partial Yes	No	No	Partial Yes	Partial Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low
Wang 2019		No	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Critically low
Uchida 2019	Yes	No	Yes	No	Yes	No	No	Partial Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low
Mekonnen 2019	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	Partial Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	High
Teweldemedhin 2018	Yes	No	Yes	No	Yes	No	Yes	Partial Yes	No	No	Yes	No	No	Yes	Yes	Yes	Critically low
Tegegne 2018	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Yes	Partial Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	High
Tesfaye 2018	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	No	Partial Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Critically low
Seid 2018	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	No	No	No	Yes	Yes	Critically low
Pormohammad 2018	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	Yes	Yes	No	Yes	Yes	Critically low
Samuels 2018	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Low
Lukoye 2015	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	No	No	No	No	No	No	Yes	Yes	Critically low
Mesfin 2014	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Yes	Partial Yes	No	No	No	No	Yes	Yes	Yes	Critically low
Straetemans 2011	Yes	Partial Yes	Yes	Partial Yes	No	No	Yes	Partial Yes	No	No	Yes	No	No	Yes	Yes	Yes	Critically low
Waitt 2011	Yes	No	Yes	No	No	No	Partial Yes	Partial Yes	No	No	No	NA	No	No	No	No	Critically low
Reddy 2010	Yes	No	No	Partial Yes	Yes	Yes	Yes	No	No	No	NA	NA	NA	No	NA	Yes	Critically low
Rehm 2009	Yes	No	Yes	Partial Yes	Yes	No	No	Partial Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low

Sotgiu 2009	Yes	No	Yes	Partial Yes	Yes	No	No	Partial Yes	No	No	NA	NA	NA	No	NA	Yes	Critically low
Noubiap 2019		Partial Yes	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Critically low
Wu 2016	Yes	No	Yes	Partial Yes	No	No	Partial Yes	Yes	No	No	Yes	Yes	No	Yes	No	Yes	Critically low
Gautam 2021	Yes	Partial Yes	Yes	Partial Yes	Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	Yes	Yes	Yes	Yes	Low
Chen 2013	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	Yes	Yes	Yes	Yes	No	Critically low
McMurry 2018	Yes	Partial Yes	Yes	Partial Yes	Yes	No	Partial Yes	Partial Yes	No	No	NA	NA	NA	No	NA	yes	Low
Workneh 2017	Yes	Partial Yes	Yes	Partial Yes	No	No	Partial Yes	Partial Yes	No	No	NA	NA	NA	no	NA	Yes	Low
Shao-hua 2016	Yes	No	Yes	Partial Yes	Yes	Yes	Partial Yes	Partial Yes	No	No	No	No	No	Yes	No	No	Critically low

Note: Items assessing critical domains are bolded.

1. Did the research questions and inclusion criteria for the review include the components of PICO?
2. Did the report of the review contain an explicit statement that the review methods were established prior to conduct of the review and did the report justify any significant deviations from the protocol?
3. Did the review authors explain their selection of the study designs for inclusion in the review?
4. Did the review authors use a comprehensive literature search strategy?
5. Did the review authors perform study selection in duplicate?
6. Did the review authors perform data extraction in duplicate?
7. Did the review authors provide a list of excluded studies and justify the exclusions?
8. Did the review authors describe the included studies in adequate detail?
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?
10. Did the review authors report on the sources of funding for the studies included in the review?
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?
13. Did the review authors account for RoB in individual studies when interpreting/discussing the results of the review?
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?

Medline (October 23rd 2020)

# ▲	Searches	Results
1	exp Noncommunicable Diseases/ or ((Non-communicable or Noncommunicable or Non-infectious) adj (disease* or condition* or illness*)).mp.	11685
2	exp Chronic Disease/ or ((chronic or long-term) adj (disease* or condition* or illness*)).mp.	343000
3	exp Heart Diseases/ or (heart adj (disease* or disorder* or failure)).mp. or (cardiac adj (disease* or disorder* or failure)).mp.	1252363
4	exp Cardiovascular Diseases/ or (cardiovascular adj (disease* or disorder* or failure)).mp.	2482639
5	exp Coronary Disease/ or (coronary adj (disease* or disorder* or failure)).mp.	224638
6	exp Cerebrovascular Disorders/ or (cerebrovascular adj (disease* or disorder* or insufficienc* or occlusion*)).mp. or (vascular adj (disease* or disorder*)).mp. or (carotid* adj (disease* or disorder*)).mp.	460609
7	exp Peripheral Arterial Disease/ or (arter* adj (disease* or disorder*)).mp.	172699
8	exp Rheumatic Heart Disease/ or exp Heart Defects, Congenital/ or (heart adj3 (malform* or defect* or congeni*)).mp.	182266
9	exp Venous Thrombosis/ or ((deep vein or deep venous) adj thrombos*).mp. or phlebothrombos*.mp.	68358
10	exp Pulmonary Embolism/ or (pulmonar* adj (thromboembolism* or embolism* or disease* or disorder*)).mp.	138141
11	exp Stroke/ or stroke.mp.	320701
12	exp Neoplasms/ or Cancer*.mp. or neoplas*.mp. or tumor*.mp.	4416189
13	exp Lung Diseases/ or exp Respiratory Tract Diseases/ or exp Lung Diseases, Obstructive/ or ((lung* or respiratory or pulmonar* or airflow or airway) adj2 (disease* or obstruct* or hypersensitiv*)).mp. or exp Asthma/ or asthma*.mp. or exp Pulmonary Disease, Chronic Obstructive/ or exp Respiratory Hypersensitivity/	1474479
14	exp Diabetes Mellitus/ or diabet*.mp.	710026
15	exp Autoimmune Diseases/ or ((autoimmun* or auto immun* or autoaggress* or auto aggress*) adj (disorder* or disease*)).mp.	516672
16	exp Metabolic Syndrome/ or exp Metabolic Diseases/ or ((metabolic or insulin resistance) adj (disorder* or disease* or syndrome*)).mp.	1067250
17	exp Obesity/ or obes*.mp.	365459
18	exp Osteoporosis/ or osteoporo*.mp. or bone loss.mp. or exp osteolysis/ or osteolysis.mp. or bone resorption.mp.	153480

19	exp Parkinson disease/ or parkinson*.mp. or paralysis agitans.mp.	131499
20	exp Arthritis/ or arthriti*.mp. or polyarthriti*.mp. or rheumarthriti*.mp.	321229
21	exp Kidney Diseases/ or (kidney adj (disease* or disorder*)).mp.	544657
22	exp Liver Diseases/ or (liver adj (disease* or disorder* or dysfunction*)).mp.	591670
23	exp Hypertension/ or high blood pressure*.mp. or hypertens*.mp.	522886
24	exp Hyperlipidemias/ or hyperlipem*.mp. or hyperlipidem*.mp. or lipem*.mp. or lipidem*.mp.	84750
25	exp Hypercholesterolemia/ or ((high* or elevat*) adj cholesterol*).mp. or hypercholesterem*.mp. or hypercholesterolem*.mp.	50873
26	exp Hypertriglyceridemia/ or hypertriglyceridem*.mp.	15254
27	exp Thyroid Diseases/ or (thyroid adj (disease* or disorder*)).mp. or exp Hyperthyroidism/ or hyperthyroid*.mp. or exp Hypothyroidism/ or hypothyroid*.mp. or ((thyroid-stimulating hormone* or tsh) adj deficient*).mp.	166497
28	exp Motor Neuron Disease/ or motor neuron* disease*.mp. or lateral scleros*.mp. or motor system disease*.mp.	38409
29	exp Multiple Sclerosis/ or multiple sclerosis.mp. or disseminated sclerosis.mp.	84720
30	exp Emphysema/ or emphysema*.mp.	38522
31	exp Bronchitis/ or bronchit*.mp.	41201
32	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31	10292435
33	exp Mental Disorders/ or exp Psychotic Disorders/ or ((mental* or psychiatr* or psycho*) adj (disorder* or disease* or illness*)).mp.	1313460
34	exp Depressive Disorder, Major/ or exp Depression/ or Depress*.mp. or MDD.mp.	552268
35	exp Anxiety Disorders/ or exp Anxiety/ or anxi*.mp.	289411
36	exp Phobic Disorders/ or phobi*.mp.	17668
37	exp Schizophrenia/ or schizophreni*.mp. or hebephreni*.mp.	150158
38	exp Somatoform Disorders/ or ((somatoform* or somati* or medically unexplained or briquet or pain) adj (disorder* or syndrome* or symptom*)).mp. or exp Medically Unexplained Symptoms/	49713
39	exp Dissociative Disorders/ or (dissociative adj (disorder* or hysteri* or reaction*)).mp. or dissociation*.mp.	115459
40	exp Hysteria/ or hysteri*.mp.	6074
41	exp Mood Disorders/ or ((affective* or mood*) adj (disorder* or disease* or illness* or symptom*)).mp.	158894

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4	42	exp Stress Disorders, Post-Traumatic/ or PTSD.mp. or ((post trauma* or posttrauma*) adj (stress* or neurose*)).mp. or combat disorder*.mp. or war disorder*.mp.	48359
5			
6			
7	43	exp Cognition Disorders/ or ((cognitive or cognition or mental or neurocognitive) adj (dysfunction* or decline* or impairment* or deterioration* or disorder* or illness* or disease*)).mp.	377493
8			
9			
10	44	exp Personality Disorders/ or personality disorder*.mp.	48830
11			
12	45	exp "Disruptive, Impulse Control, and Conduct Disorders"/ or impulse control disorder*.mp. or intermittent explosive disorder*.mp.	9781
13			
14			
15			
16	46	exp "Feeding and Eating Disorders"/ or ((eating or appetite or feeding) adj disorder*).mp.	38361
17			
18	47	exp Bipolar Disorder/ or ((bipolar or mani*) adj (disorder* or illness* or disease*)).mp.	51927
19			
20	48	exp Obsessive-Compulsive Disorder/ or OCD*.mp. or ((obsess*-compulsi* or obsess* or compulsi*) adj (disorder* or illness* or disease* or neuros*)).mp.	22060
21			
22			
23	49	exp Panic Disorder/ or (panic adj (attack* or disorder*)).mp.	12638
24			
25	50	exp Agoraphobia/ or agoraphobi*.mp.	4210
26			
27	51	exp Neurotic Disorders/ or neuros*.mp. or neurotic disorder*.mp. or psychoneuros*.mp.	190989
28			
29	52	33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51	2107749
30			
31			
32	53	exp Communicable Diseases/ or ((communic* or contag* or transmi* or infect*) adj (disease* or infection* or illness*)).mp.	212955
33			
34			
35	54	exp Bacterial Infections/ or bacteri* infection*.mp.	916393
36			
37	55	exp Conjunctivitis/ or conjunctivitis.mp.	24690
38			
39	56	exp HIV/ or hiv.mp. or Human immuno deficiency virus.mp.	362332
40			
41	57	exp Acquired Immunodeficiency Syndrome/ or AIDS.mp. or immunodeficiency associated virus.mp. or immun* deficiency associated virus.mp. or acquired immunodeficiency syndrome*.mp. or acquired immun* deficiency syndrome*.mp.	226679
42			
43			
44			
45			
46	58	exp Buruli Ulcer/ or Bairnsdale.mp. or Buruli.mp.	1104
47			
48	59	exp Onchocerciasis/ or onchocer*.mp.	5978
49			
50	60	hepatitis.mp. or exp Hepatitis B/ or exp Hepatitis C/	256450
51			
52	61	exp Leishmaniasis/ or leishmania*.mp.	37940
53			
54	62	exp Leprosy/ or lepros*.mp. or hansen*.mp.	31193
55			
56	63	exp Elephantiasis, Filarial/ or elephantias*.mp. or filaria*.mp.	14354
57			
58	64	exp Trachoma/ or egyptian ophthalmia*.mp. or trachoma*.mp.	20432
59			
60	65	exp Chikungunya Fever/ or chickungunya.mp. or chikungunya.mp.	5766

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66	exp Taeniasis/ or taenia*.mp.	12366
67	exp Cysticercosis/ or cysticercos*.mp.	7146
68	exp Echinococcosis/ or hydatid*.mp. or echinococc*.mp.	29913
69	exp Chagas Disease/ or trypanosom*.mp. or chagas.mp.	44250
70	exp Trypanosomiasis/ or sleeping sickness.mp.	23416
71	exp Encephalitis, Japanese/ or (japanese adj3 encephalitis).mp.	5847
72	exp Syphilis/ or syphilis.mp.	37477
73	53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72	1872806
74	exp Tuberculosis/	192915
75	Tuberculos*.mp.	256334
76	TB.mp.	56951
77	koch*.mp.	9469
78	exp Tuberculosis/ or Tuberculos*.mp. or TB.mp. or koch*.mp.	283447
79	(multiple adj (ill* or disease* or condition* or syndrom* or disorder*)).mp.	5522
80	((Cooccur* or co-occur* or coexist* or co-exist* or multipl* or concord* or discord* or long-term or physical*) adj3 (disease* or ill* or care or condition* or disorder* or health* or medication* or symptom* or syndrom*)).mp.	269814
81	(comorbid* or multimorbid* or co-occurren* or co-morbid* or Multidisease* or multi-disease*).mp.	268450
82	(comorbid* or multimorbid* or co-occurren* or co-morbid* or multi-morbid* or Multidisease* or multi-disease*).mp.	268954
83	exp Comorbidity/ or exp Multimorbidity/ or exp Multiple Chronic Conditions/	111238
84	79 or 80 or 81 or 82 or 83	519584
85	exp "Systematic Review"/	137409
86	"systematic review*".m_titl.	134940
87	exp Meta-Analysis/	121268
88	"meta-analys*".m_titl.	115466
89	exp "Systematic Review"/ or "systematic review*".m_titl. or exp Meta-Analysis/ or "meta-analys*".m_titl.	260449
90	32 or 52 or 73	13060984
91	(32 or 52 or 73) and 78	228989
92	(32 or 52 or 73) and 78 and 84	4072

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93	(32 or 52 or 73) and 78 and 84 and 89	89
94	exp Animals/ not exp Humans/	4747614
95	((32 or 52 or 73) and 78 and 84) not 94	4004
96	((32 or 52 or 73) and 78 and 84 and 89) not 94	89
97	((32 or 52 or 73) and 78 and 89) not 94	1701

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Embase (October 23rd 2020)

# ▲	Searches	Results
1	exp non communicable disease/ or ((Non-communicable or Noncommunicable or Non-infectious) adj (disease* or condition* or illness*)).mp.	16547
2	exp chronic disease/ or ((chronic or long-term) adj (disease* or condition* or illness*)).mp.	268915
3	exp heart disease/ or (heart adj (disease* or disorder* or failure)).mp. or (cardiac adj (disease* or disorder* or failure)).mp.	1935434
4	exp cardiovascular disease/ or (cardiovascular adj (disease* or disorder* or failure)).mp.	4171750
5	exp coronary artery disease/ or (coronary adj (disease* or disorder* or failure)).mp.	338836
6	exp cerebrovascular disease/ or (cerebrovascular adj (disease* or disorder* or insufficienc* or occlusion*)).mp. or (vascular adj (disease* or disorder*)).mp. or (carotid* adj (disease* or disorder*)).mp.	760319
7	exp peripheral occlusive artery disease/ or (arter* adj (disease* or disorder*)).mp.	427607
8	exp rheumatic heart disease/ or exp congenital heart malformation/ or (heart adj3 (malform* or defect* or congeni*)).mp.	187115
9	exp vein thrombosis/ or ((deep vein or deep venous) adj thrombos*).mp. or phlebothrombos*.mp.	137063
10	exp lung embolism/ or (pulmonar* adj (thromboembolism* or embolism* or disease* or disorder*)).mp.	205531
11	exp cerebrovascular accident/ or stroke.mp.	513128
12	exp neoplasm/ or Cancer*.mp. or neoplas*.mp. or tumor*.mp.	5810559
13	exp lung disease/ or exp respiratory tract disease/ or exp chronic obstructive lung disease/ or ((lung* or respiratory or pulmonar* or airflow or airway) adj2 (disease* or obstruct* or hypersensitiv*)).mp. or exp asthma/ or asthma*.mp. or exp chronic obstructive lung disease/ or exp respiratory tract allergy/	2529309
14	exp diabetes mellitus/ or diabet*.mp.	1165861
15	exp autoimmune disease/ or ((autoimmun* or auto immun* or autoaggress* or auto aggress*) adj (disorder* or disease*)).mp.	628015
16	exp metabolic syndrome X/ or exp metabolic disorder/ or ((metabolic or insulin resistance) adj (disorder* or disease* or syndrome*)).mp.	2728282
17	exp obesity/ or obes*.mp.	632387
18	exp osteoporosis/ or osteoporo*.mp. or bone loss.mp. or exp osteolysis/ or osteolysis.mp. or bone resorption.mp.	237604
19	exp Parkinson disease/ or parkinson*.mp. or paralysis agitans.mp.	212471

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20	exp arthritis/ or arthriti*.mp. or polyarthriti*.mp. or rheumarthriti*.mp.	510423
21	exp kidney disease/ or (kidney adj (disease* or disorder*)).mp.	973568
22	exp liver disease/ or (liver adj (disease* or disorder* or dysfunction*)).mp.	1021173
23	exp hypertension/ or high blood pressure*.mp. or hypertens*.mp.	1010094
24	exp hyperlipidemia/ or hyperlipem*.mp. or hyperlipidem*.mp. or lipem*.mp. or lipidem*.mp.	170635
25	exp hypercholesterolemia/ or ((high* or elevat*) adj cholesterol*).mp. or hypercholesterem*.mp. or hypercholesterolem*.mp.	90843
26	exp hypertriglyceridemia/ or hypertriglyceridem*.mp.	31673
27	exp thyroid disease/ or (thyroid adj (disease* or disorder*)).mp. or exp hyperthyroidism/ or hyperthyroid*.mp. or exp hypothyroidism/ or hypothyroid*.mp. or ((thyroid-stimulating hormone* or tsh) adj deficien*).mp.	238358
28	exp motor neuron disease/ or motor neuron* disease*.mp. or lateral scleros*.mp. or motor system disease*.mp.	52581
29	exp multiple sclerosis/ or multiple sclerosis.mp. or disseminated sclerosis.mp.	143653
30	exp emphysema/ or emphysema*.mp.	52663
31	exp bronchitis/ or bronchit*.mp.	70185
32	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31	13930977
33	exp mental disease/ or exp psychosis/ or ((mental* or psychiatr* or psycho*) adj (disorder* or disease* or illness*)).mp.	2252075
34	exp major depression/ or exp depression/ or Depress*.mp. or MDD.mp.	837980
35	exp anxiety disorder/ or exp anxiety/ or anxi*.mp.	518902
36	exp phobia/ or phobi*.mp.	35665
37	exp schizophrenia/ or schizophreni*.mp. or hebephreni*.mp.	209868
38	exp somatoform disorder/ or ((somatoform* or somati* or medically unexplained or briquet or pain) adj (disorder* or syndrome* or symptom*)).mp. or exp medically unexplained symptom/	82640
39	exp dissociative disorder/ or (dissociative adj (disorder* or hysteri* or reaction*)).mp. or dissociation*.mp.	142193
40	exp hysteria/ or hysteri*.mp.	7294
41	exp mood disorder/ or ((affective* or mood*) adj (disorder* or disease* or illness* or symptom*)).mp.	539796
42	exp posttraumatic stress disorder/ or PTSD.mp. or ((post trauma* or posttrauma*) adj (stress* or neurose*)).mp. or combat disorder*.mp. or war disorder*.mp.	68828

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4	43	802224
5	exp cognitive defect/ or ((cognitive or cognition or mental or neurocognitive) adj (dysfunction* or	
6	decline* or impairment* or deterioration* or disorder* or illness* or disease*)).mp.	
7	44	64830
8	exp personality disorder/ or personality disorder*.mp.	
9	45	12514
10	exp impulse control disorder/ or impulse control disorder*.mp. or intermittent explosive	
11	disorder*.mp.	
12	46	64625
13	exp eating disorder/ or ((eating or appetite or feeding) adj disorder*).mp.	
14	47	73910
15	exp bipolar disorder/ or ((bipolar or mani*) adj (disorder* or illness* or disease*)).mp.	
16	48	46156
17	exp obsessive compulsive disorder/ or OCD*.mp. or ((obsess*-compulsi* or obsess* or compulsi*)	
18	adj (disorder* or illness* or disease* or neuros*)).mp.	
19	49	25651
20	exp panic/ or (panic adj (attack* or disorder*)).mp.	
21	50	7128
22	exp agoraphobia/ or agoraphobi*.mp.	
23	51	284790
24	exp neurosis/ or neuros*.mp. or neurotic disorder*.mp. or psychoneuros*.mp.	
25	52	3032495
26	33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or	
27	50 or 51	
28	53	227165
29	exp communicable disease/ or ((communic* or contag* or transmi* or infect*) adj (disease* or	
30	infection* or illness*)).mp.	
31		
32	54	875706
33	exp bacterial infection/ or bacteri* infection*.mp.	
34	55	42120
35	exp conjunctivitis/ or conjunctivitis.mp.	
36	56	440016
37	exp Human immunodeficiency virus/ or hiv.mp. or Human immuno deficiency virus.mp.	
38	57	245085
39	exp acquired immune deficiency syndrome/ or AIDS.mp. or immunodeficiency associated	
40	virus.mp. or immun* deficiency associated virus.mp. or acquired immunodeficiency syndrome*.mp.	
41	or acquired immun* deficiency syndrome*.mp.	
42	58	1384
43	exp Buruli ulcer/ or Bairnsdale.mp. or Buruli.mp.	
44	59	7089
45	exp onchocerciasis/ or onchocer*.mp.	
46	60	401827
47	hepatitis.mp. or exp hepatitis B/ or exp hepatitis C/	
48	61	45114
49	exp leishmaniasis/ or leishmania*.mp.	
50	62	32759
51	exp leprosy/ or lepros*.mp. or hansen*.mp.	
52	63	17315
53	exp elephantiasis/ or elephantias*.mp. or filaria*.mp.	
54	64	25318
55	exp trachoma/ or egyptian ophthalmia*.mp. or trachoma*.mp.	
56	65	8172
57	exp chikungunya/ or chickungunya.mp. or chikungunya.mp.	
58	66	13801
59	exp taeniasis/ or taenia*.mp.	
60	67	5977
	exp Cysticercosis/ or cysticercos*.mp.	

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4	68	exp echinococcosis/ or hydatid*.mp. or echinococc*.mp. 30362
5		
6	69	exp Chagas disease/ or trypanosom*.mp. or chagas.mp. 47764
7		
8	70	exp trypanosomiasis/ or sleeping sickness.mp. 25238
9		
10	71	exp Japanese encephalitis/ or (japanese adj3 encephalitis).mp. 7060
11		
12	72	exp syphilis/ or syphilis.mp. 32633
13		
14	73	53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 2039904
15		70 or 71 or 72
16		
17	74	exp tuberculosis/ 193084
18		
19	75	Tuberculos*.mp. 245295
20		
21	76	TB.mp. 72736
22		
23	77	koch*.mp. 12432
24		
25	78	exp tuberculosis/ or Tuberculos*.mp. or TB.mp. or koch*.mp. 284028
26		
27	79	(multiple adj (ill* or disease* or condition* or syndrom* or disorder*)).mp. 7515
28		
29	80	((Cooccur* or co-occur* or coexist* or co-exist* or multipl* or concord* or discord* or long-term or 468523
30		physical*) adj3 (disease* or ill* or care or condition* or disorder* or health* or medication* or
31		symptom* or syndrom*)).mp.
32		
33	81	(comorbid* or multimorbid* or co-occurren* or co-morbid* or Multidisease* or multi-disease*).mp. 461825
34		
35	82	(comorbid* or multimorbid* or co-occurren* or co-morbid* or multi-morbid* or Multidisease* or 462635
36		multi-disease*).mp.
37		
38	83	exp Comorbidity/ or exp Multimorbidity/ or exp Multiple Chronic Conditions/ 281021
39		
40	84	79 or 80 or 81 or 82 or 83 895311
41		
42	85	exp "systematic review"/ 268161
43		
44	86	"systematic review* ".m_titl. 163162
45		
46	87	exp meta analysis/ 200254
47		
48	88	"meta-analys* ".m_titl. 144571
49		
50	89	exp "systematic review"/ or "systematic review* ".m_titl. or exp meta analysis/ or "meta-analys* 411674
51		".m_titl.
52		
53	90	32 or 52 or 73 16955591
54		
55	91	(32 or 52 or 73) and 78 237676
56		
57	92	(32 or 52 or 73) and 78 and 84 9231
58		
59	93	(32 or 52 or 73) and 78 and 84 and 89 271
60		
	94	exp animal/ not exp human/ 4710933

95	((32 or 52 or 73) and 78 and 84) not 94	9130
96	((32 or 52 or 73) and 78 and 84 and 89) not 94	271
97	((32 or 52 or 73) and 78 and 89) not 94	3315

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PsycINFO (October 23rd 2020)

# ▲	Searches	Results
1	((Non-communicable or Noncommunicable or Non-infectious) adj (disease* or condition* or illness*)).mp.	1054
2	exp Chronic Illness/ or ((chronic or long-term) adj (disease* or condition* or illness*)).mp.	48942
3	exp Heart Disorders/ or (heart adj (disease* or disorder* or failure)).mp. or (cardiac adj (disease* or disorder* or failure)).mp.	22461
4	exp Cardiovascular Disorders/ or (cardiovascular adj (disease* or disorder* or failure)).mp.	68973
5	(coronary adj (disease* or disorder* or failure)).mp.	450
6	exp Cerebrovascular Disorders/ or (cerebrovascular adj (disease* or disorder* or insufficienc* or occlusion*)).mp. or (vascular adj (disease* or disorder*)).mp. or (carotid* adj (disease* or disorder*)).mp.	31536
7	(arter* adj (disease* or disorder*)).mp.	2605
8	(heart adj3 (malform* or defect* or congeni*)).mp.	1007
9	exp Thromboses/ or ((deep vein or deep venous) adj thrombos*).mp. or phlebothrombos*.mp.	1070
10	exp Embolisms/ or (pulmonar* adj (thromboembolism* or embolism* or disease* or disorder*)).mp.	3511
11	exp Cerebrovascular Accidents/ or stroke.mp.	36761
12	exp Neoplasms/ or Cancer*.mp. or neoplas*.mp. or tumor*.mp.	83903
13	exp Lung Disorders/ or exp Respiratory Tract Disorders/ or ((lung* or respiratory or pulmonar* or airflow or airway) adj2 (disease* or obstruct* or hypersensitiv*)).mp. or exp Asthma/ or asthma*.mp. or exp Chronic Obstructive Pulmonary Disease/	20498
14	exp Diabetes Mellitus/ or diabet*.mp.	33566
15	((autoimmun* or auto immun* or autoaggress* or auto aggress*) adj (disorder* or disease*)).mp.	2453
16	exp Metabolic Syndrome/ or ((metabolic or insulin resistance) adj (disorder* or disease* or syndrome*)).mp.	5856

17	exp Obesity/ or obes*.mp.	45201
18	exp Osteoporosis/ or osteopor*.mp. or bone loss.mp. or osteolysis.mp. or bone resorption.mp.	2582
19	exp Parkinson's Disease/ or parkinson*.mp. or paralysis agitans.mp.	36257
20	exp Arthritis/ or arthriti*.mp. or polyarthriti*.mp. or rheumarthriti*.mp.	7176
21	exp Kidney Diseases/ or (kidney adj (disease* or disorder*)).mp.	2912
22	exp Liver Disorders/ or (liver adj (disease* or disorder* or dysfunction*)).mp.	5371
23	exp Hypertension/ or high blood pressure*.mp. or hypertens*.mp.	20357
24	(hyperlipem* or hyperlipidem* or lipem* or lipidem*).mp.	1314
25	((high* or elevat*) adj cholesterol*) or hypercholesterem* or hypercholesterolem*).mp.	1637
26	hypertriglyceridem*.mp.	293
27	exp Thyroid Disorders/ or (thyroid adj (disease* or disorder*)).mp. or exp Hyperthyroidism/ or hyperthyroid*.mp. or exp Hypothyroidism/ or hypothyroid*.mp. or ((thyroid-stimulating hormone* or tsh) adj deficien*).mp.	2924
28	exp Nervous System Disorders/ or motor neuron* disease*.mp. or lateral scleros*.mp. or motor system disease*.mp.	319159
29	exp Multiple Sclerosis/ or multiple sclerosis.mp. or disseminated sclerosis.mp.	16491
30	exp Pulmonary Emphysema/ or emphysema*.mp.	285
31	exp Bronchial Disorders/ or bronchit*.mp.	476
32	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31	567022
33	exp Mental Disorders/ or exp Psychosis/ or ((mental* or psychiatr* or psycho*) adj (disorder* or disease* or illness*)).mp.	921435
34	exp Major Depression/ or exp "Depression (Emotion)"/ or Depress*.mp. or MDD.mp.	374034
35	exp Anxiety Disorders/ or exp Anxiety/ or anxi*.mp.	273241

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4	36	exp Phobias/ or phobi*.mp. 24242
5		
6	37	exp Schizophrenia/ or schizophreni*.mp. or hebephreni*.mp. 140371
7		
8		
9	38	exp Somatoform Disorders/ or ((somatoform* or somati* or medically unexplained or briquet or 27313 pain) adj (disorder* or syndrome* or symptom*)).mp.
10		
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13	39	exp Dissociative Disorders/ or (dissociative adj (disorder* or hysteri* or reaction*)).mp. or 24759 dissociation*.mp.
14		
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17	40	exp Hysteria/ or hysteri*.mp. 8253
18		
19	41	exp Affective Disorders/ or ((affective* or mood*) adj (disorder* or disease* or illness* or 170875 symptom*)).mp.
20		
21		
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23		
24	42	exp Posttraumatic Stress Disorder/ or PTSD.mp. or ((post trauma* or posttrauma*) adj (stress* or 51508 neurose*)).mp. or combat disorder*.mp. or war disorder*.mp.
25		
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27		
28	43	exp Cognitive Impairment/ or ((cognitive or cognition or mental or neurocognitive) adj 221483 (dysfunction* or decline* or impairment* or deterioration* or disorder* or illness* or disease*)).mp.
29		
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32	44	exp Personality Disorders/ or personality disorder*.mp. 49598
33		
34	45	exp Impulse Control Disorders/ or impulse control disorder*.mp. or intermittent explosive 2232 disorder*.mp.
35		
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38	46	exp Eating Disorders/ or ((eating or appetite or feeding) adj disorder*).mp. 39055
39		
40		
41	47	exp Bipolar Disorder/ or ((bipolar or mani*) adj (disorder* or illness* or disease*)).mp. 38332
42		
43		
44	48	exp Obsessive Compulsive Disorder/ or OCD*.mp. or ((obsess*-compulsi* or obsess* or 21451 compulsi*) adj (disorder* or illness* or disease* or neuros*)).mp.
45		
46		
47	49	exp Panic Disorder/ or (panic adj (attack* or disorder*)).mp. 13643
48		
49		
50	50	exp Agoraphobia/ or agoraphobi*.mp. 6095
51		
52	51	exp Neurosis/ or neuros*.mp. or neurotic disorder*.mp. or psychoneuros*.mp. 81072
53		
54		
55	52	33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 1284709 or 50 or 51
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4	53	exp Infectious Disorders/ or ((communic* or contag* or transmi* or infect*) adj (disease* or
5		infection* or illness*)).mp.
6		70725
7		
8	54	exp Bacterial Disorders/ or bacteri* infection*.mp.
9		2731
10		
11	55	exp Eye Disorders/ or conjunctivitis.mp.
12		4950
13		
14	56	exp HIV/ or hiv.mp. or Human immuno deficiency virus.mp.
15		57416
16		
17	57	exp AIDS/ or AIDS.mp. or immunodeficiency associated virus.mp. or immun* deficiency
18		associated virus.mp. or acquired immunodeficiency syndrome*.mp. or acquired immun*
19		deficiency syndrome*.mp.
20		48739
21	58	(Bairnsdale or Buruli).mp.
22		7
23		
24	59	onchocer*.mp.
25		47
26		
27	60	hepatitis.mp. or exp Hepatitis/
28		4736
29		
30	61	leishmania*.mp.
31		61
32		
33	62	(lepros* or hansen*).mp.
34		1155
35		
36	63	(elephantias* or filaria*).mp.
37		75
38		
39	64	(egyptian ophthalmia* or trachoma*).mp.
40		309
41		
42	65	(chickungunya or chikungunya).mp.
43		39
44		
45	66	taenia*.mp.
46		160
47		
48	67	cysticercos*.mp.
49		102
50		
51	68	(hydatid* or echinococc*).mp.
52		39
53		
54	69	(trypanosom* or chagas).mp.
55		217
56		
57	70	sleeping sickness.mp.
58		50
59		
60	71	(japanese adj3 encephalitis).mp.
		73
	72	exp Syphilis/ or syphilis.mp.
		1870

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73	53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72	108493
74	exp Tuberculosis/	1223
75	Tuberculos*.mp.	2795
76	TB.mp.	1354
77	koch*.mp.	1045
78	exp Tuberculosis/ or Tuberculos*.mp. or TB.mp. or koch*.mp.	4450
79	(multiple adj (ill* or disease* or condition* or syndrom* or disorder*)).mp.	913
80	((Cooccur* or co-occur* or coexist* or co-exist* or multipl* or concord* or discord* or long-term or physical*) adj3 (disease* or ill* or care or condition* or disorder* or health* or medication* or symptom* or syndrom*)).mp.	116177
81	(comorbid* or multimorbid* or co-occurren* or co-morbid* or multi-morbid* or Multidisease* or multi-disease*).mp.	88147
82	exp Comorbidity/	33088
83	79 or 80 or 81 or 82	192590
84	exp "Systematic Review"/	460
85	"systematic review*".m_titl.	21652
86	exp Meta Analysis/	4825
87	"meta-analys*".m_titl.	18645
88	exp "Systematic Review"/ or "systematic review*".m_titl. or exp Meta Analysis/ or "meta- analys*".m_titl.	37279
89	32 or 52 or 73	1665397
90	(32 or 52 or 73) and 78	3046
91	(32 or 52 or 73) and 78 and 83	362

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92 (32 or 52 or 73) and 78 and 83 and 88

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93 (32 or 52 or 73) and 78 and 88

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For peer review only

Web of Science (October 23rd 2020)

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 5 # [1.03](#) (#74 OR #52 OR #32) AND #82 AND #85
 6
 7 9 [9](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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 9
 10 # [62](#) (#74 OR #52 OR #32) AND #82 AND #78 AND #85
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 12 9 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 13
 14 # [3.33](#) (#74 OR #52 OR #32) AND #82 AND #78
 15 8
 16 6 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 17 8
 18
 19 # [87.8](#) (#74 OR #52 OR #32) AND #82
 20 8
 21 46 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 22 7
 23
 24 # [11.0](#) #74 OR #52 OR #32
 25 8
 26 86.9 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 27 6
 28 31
 29 # [226.](#) #84 OR #83
 30 8
 31 528 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 32 5
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 34 # [134.](#) TI="Meta-analysis"
 35 8
 36 872 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 37 4
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 39 # [147.](#) TI = "Systematic Review"
 40 8
 41 319 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 42 3
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 44 # [234.](#) #81 OR #80 OR #79
 45 8
 46 479 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 47 2
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 49 # [19.3](#) TS=koch*
 50 8
 51 29 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
 52 1
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 54 # [80.7](#) TS=TB
 55 8
 56 79 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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4 # [170](#). TS=Tuberculos*
7 [591](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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- 8
9 # [659](#). #77 OR #76 OR #75
7 [174](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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- 13 # [238](#). TS=(comorbid* or multimorbid* or co-occurren* or co-morbid* or multi-
7 [429](#) morbid* or Multidisease* or multi-disease*)
7 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
- 18 # [325](#). TS=((Cooccur* or co-occur* or coexist* or co-
7 [588](#) exist* or multipl* or concord* or discord* or long-
6 term or physical*) NEAR/3 (disease* or ill* or care or condition* or disorder* or health* or
22 medication* or symptom* or syndrom*))
23 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
- 25 # [191](#). TS=(multiple NEAR (ill* or disease* or condition* or syndrom* or disorder*)))
7 [473](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
5
- 30 # [2.67](#) #73 OR #72 OR #71 OR #70 OR #69 OR #68 OR #67 OR #66 OR #65 OR #64 OR #63 OR #6
7 [7.95](#) 2 OR #61 OR #60 OR #59 OR #58 OR #57 OR #56 OR #55 OR #54 OR #53
4 [6](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
- 35 # [23.3](#) TS=syphilis
7 [89](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
3
- 40 # [5.98](#) TS=(japanese NEAR/3 encephalitis)
7 [1](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
2
- 44 # [4.25](#) TS=sleeping sickness
7 [7](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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- 49 # [50.0](#) TS=trypanosom* or TS=chagas
7 [13](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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- 54 # [19.7](#) TS=hydatid* OR TS=echinococc*
6 [85](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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4 # [4.65](#) TS=cysticercos*

5 6 [7](#)
7 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
8

8 # [8.25](#) TS=taenia*

9 6 [7](#)
10 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
11 7

12
13 # [6.62](#) TS=chickungunya Or TS=chikungunya

14 6 [9](#)
15 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
16 6

17
18 # [19.9](#) TS=trachoma*

19 6 [87](#)
20 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
21 5

22
23 # [5](#) TS=egyptian ophthalmia*

24 6
25 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
26 4

27
28 # [11.2](#) TS=elephantias* OR TS=filaria*

29 6 [57](#)
30 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
31 3

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33 # [30.1](#) TS=lepros* OR TS=hansen*

34 6 [01](#)
35 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
36 2

37
38 # [41.8](#) TS=leishmania*

39 6 [00](#)
40 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
41 1

42
43 # [267.](#) TS=hepatitis

44 6 [930](#)
45 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
46 0

47
48 # [6.45](#) TS=onchocer*

49 5 [3](#)
50 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
51 9

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53 # [1.12](#) TS=Bairnsdale OR TS=Buruli

54 5 [0](#)
55 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
56 8

57 # [640.](#) TS=AIDS OR TS=immunodeficiency associated virus OR TS=immun* deficiency associated vi

58 5 [388](#) rus OR TS=acquired immunodeficiency syndrome* OR TS=acquired immun* deficiency synd
59 7 rome*

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

[374](#). TS=hiv OR TS=Human immuno deficiency virus

5 [418](#)
6 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[10.5](#) TS=conjunctivitis

5 [45](#)
5 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[240](#). TS=bacteri* infection*

5 [625](#)
4 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[1.71](#) TS=((communic* or contag* or transmi* or infect*) NEAR (disease* or infection* or illness*))

5 [0.57](#))
3 [3](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[1.89](#) #51 OR #50 OR #49 OR #48 OR #47 OR #46 OR #45 OR #44 OR #43 OR #42 OR #41 OR #40 OR #39 OR #38 OR #37 OR #36 OR #35 OR #34 OR #33

5 [1.33](#)
2 [6](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[155](#). TS=neuros* OR TS=neurotic disorder* OR TS=psychoneuros*

5 [801](#)
1 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[5.16](#) TS=agoraphobi*

5 [5](#)
0 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[19.4](#) TS=(panic NEAR (attack* or disorder*))

4 [59](#)
9 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[32.5](#) TS=OCD* OR TS=((obsess*- compulsi* or obsess* or compulsi*) NEAR (disorder* or illness* or disease* or neuros*))

8 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[137](#). TS=((bipolar or mani*) NEAR (disorder* or illness* or disease*))

4 [039](#)
7 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

[35.5](#) TS=((eating or appetite or feeding) NEAR disorder*)

4 [73](#)
6 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

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4 # [4.53](#) TS=impulse control disorder* OR TS=intermittent explosive disorder*
5 4 [5](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
6 5
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9 # [52.3](#) TS=personality disorder*
10 4 [84](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
11 4
12
13 # [325](#) TS=((cognitive or cognition or mental or neurocognitive) NEAR (dysfunction* or decline* or
14 4 [105](#) impairment* or deterioration* or disorder* or illness* or disease*)
15 3
16 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
17
18 # [69.0](#) TS=PTSD OR TS=(((post NEAR trauma*) or posttrauma*) NEAR (stress* or neurose*) OR T
19 4 [02](#) S=combat disorder* OR TS=war disorder*
20 2
21 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
22
23 # [73.2](#) TS=((affective* or mood*) NEAR (disorder* or disease* or illness* or symptom*))
24 4 [80](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
25 1
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27 # [6.46](#) TS=hysteri*
28 4 [8](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
29 0
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31
32 # [215](#) TS=(dissociative NEAR (disorder* or hysteri* or reaction*)) OR TS=dissociation*
33 3 [870](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
34 9
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37 # [122](#) TS=((somatoform* or somati* or (medically NEAR unexplained) or briquet or pain) NEAR ()
38 3 [031](#) disorder* or syndrome* or symptom*))
39 8
40 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
41
42 # [200](#) TS=schizophreni* OR TS=hebephreni*
43 3 [099](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
44 7
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46
47 # [19.3](#) TS=phobi*
48 3 [59](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
49 6
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52 # [300](#) TS=anxi*
53 3 [816](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
54 5
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57 # [645](#) TS=Depress* OR TS=MDD
58 3 [434](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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4 # [283](#). TS=((mental* or psychiatr* or psycho*) NEAR (disorder* or disease* or illness*)
5 3 [212](#)
6 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
7 3
- 8 # [7.47](#) #31 OR #30 OR #29 OR #28 OR #27 OR #26 OR #25 OR #24 OR #23 OR #22 OR #21 OR #2
9 3 [9.78](#) 0 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 O
10 2 [0](#) R #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
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12 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
13
- 14 # [20.5](#) TS=bronchit*
15 3 [91](#)
16 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
17 1
18
- 19 # [26.7](#) TS=emphysema*
20 3 [27](#)
21 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
22 0
23
- 24 # [129](#). TS=multiple sclerosis OR TS=disseminated sclerosis
25 2 [081](#)
26 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
27 9
28
- 29 # [67.9](#) TS=motor neuron* disease* OR TS=lateral scleros* OR TS=motor system disease*
30 2 [22](#)
31 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
32 8
33
- 34 # [71.1](#) TS=(thyroid NEAR (disease* or
35 2 [05](#) disorder*) OR TS=hyperthyroid* OR TS=hypothyroid* OR TS=(((thyroid-
36 7 stimulating NEAR hormone*) or tsh) NEAR deficien*)
37 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
38
- 39 # [14.1](#) TS=hypertriglyceridem*
40 2 [11](#)
41 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
42 6
43
- 44 # [113](#). TS=((high* or elevat*) NEAR cholesterol*) Or TS=hypercholesterem* OR TS=hypercholester
45 2 [697](#) olem*
46 5
47 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
48
- 49 # [36.9](#) TS=hyperlipem* OR TS=hyperlipidem* or TS=lipem* OR TS=lipidem*
50 2 [81](#)
51 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
52 4
53
- 54 # [613](#). TS=high blood pressure* OR TS=hypertens*
55 2 [541](#)
56 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
57 3
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4 # [161](#). TS=(liver NEAR (disease* or disorder* or dysfunction*))
5 2 [103](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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8
9 # [125](#). TS=(kidney NEAR (disease* or disorder*))
10 2 [492](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
11 1
12
13 # [278](#). TS=arthriti* OR TS=polyarthriti* OR TS=rheumarthriti*
14 2 [897](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
15 0
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17 # [181](#). TS=parkinson* OR TS=paralysis agitans
18 1 [735](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
19 9
20
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22 # [195](#). TS=osteopor* OR TS=bone loss OR TS=osteolysis or TS=bone resorption
23 1 [021](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
24 8
25
26 # [426](#). TS=obes*
27 1 [882](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
28 7
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31 # [174](#). TS=((metabolic or (insulin near resistance)) NEAR (disorder* or disease* or syndrome*))
32 1 [058](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
33 6
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35 # [109](#). TS=((autoimmun* or (auto NEAR immun*) or autoaggress* or (auto NEAR
36 1 [133](#) aggress*)) NEAR (disorder* or disease*))
37 5 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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41 # [771](#). TS=diabet*
42 1 [913](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
43 4
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45 # [385](#). TS=((lung* or respiratory or pulmonar* or airflow or airway) NEAR/2 (disease* or
46 1 [258](#) obstruct* or hypersensitiv*)) OR TS=asthma*
47 3 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
48
49
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51 # [3.52](#) TS=Cancer* or TS=neoplas* OR TS=tumor*
52 1 [0.63](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
53 2 [1](#)
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55 # [356](#). TS=stroke
56 1 [775](#) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
57 1
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4 # [164](#). TS=(pulmonar* NEAR (thromboembolism* or embolism* or disease* or disorder*)

5 1 [438](#)
6 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
7 0

8 # [34.7](#) TS=(("deep vein" or "deep venous") NEAR thrombos*) OR TS=phlebothrombos*

9 9 [25](#)
10 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
11

12 # [52.9](#) TS=(heart NEAR/3 (malform* or defect* or congeni*)

13 8 [10](#)
14 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
15

16 # [223](#). TS=(arter* NEAR (disease* or disorder*)

17 7 [717](#)
18 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
19

20 # [131](#). TS=(cerebrovascular NEAR (disease* or disorder* or insufficienc* or

21 6 [935](#) occlusion*)) OR TS=(vascular NEAR (disease* or
22 disorder*)) OR TS=(carotid* NEAR (disease* or disorder*))

23 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
24

25 # [260](#). TS=(coronary NEAR (disease* or disorder* or failure))

26 5 [403](#)
27 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
28

29 # [286](#). TS=(cardiovascular NEAR (disease* or disorder* or failure))

30 4 [220](#)
31 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
32

33 # [561](#). TS=(heart NEAR (disease* or disorder* or failure)) OR TS=(cardiac NEAR (disease* or

34 3 [756](#) disorder* or failure))

35 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
36

37 # [500](#). TS=((chronic or long-term) NEAR (disease* or condition* or illness*)

38 2 [606](#)
39 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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41 # [12.4](#) TS=((Non-communicable or Noncommunicable or Non-infectious) NEAR/1 (disease* or

42 1 [03](#) condition* or illness*)

43 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
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Global Index Medicus (October 23rd 2020)

(((("Noncommunicable Diseases" OR (((("Non-communicable" or Noncommunicable or "Non-infectious") AND (disease* or condition* or illness*)))) OR ("Chronic Disease" OR ((chronic or "long-term") AND (disease* or condition* or illness*)))) OR ("Heart Diseases" OR ((heart AND (disease* or disorder* or failure)) or (cardiac AND (disease* or disorder* or failure)))) OR ("Cardiovascular Diseases" OR ((cardiovascular AND (disease* or disorder* or failure)))) OR ("Coronary Disease" OR (coronary AND (disease* or disorder* or failure))) OR ("Cerebrovascular Disorders" OR ((cerebrovascular AND (disease* or disorder* or insufficienc* or occlusion*)) or (vascular AND (disease* or disorder*)) or (carotid* AND (disease* or disorder*)))) OR ("Peripheral Arterial Disease" OR (arter* AND (disease* or disorder*))) OR ("Rheumatic Heart Disease" OR "Heart Defects, Congenital" OR ((heart AND (malform* or defect* or congeni*)))) OR ("Venous Thrombosis" OR ((("deep vein" or "deep venous") AND thrombos*) or phlebothrombos*)) OR ("Pulmonary Embolism" OR ((pulmonar* AND (thromboembolism* or embolism* or disease* or disorder*))) OR ("Stroke" OR (stroke)) OR ("Neoplasms" OR (Cancer* or neoplas* or tumor*)) OR ("Lung Diseases" OR "Respiratory Tract Diseases" OR "Lung Diseases, Obstructive" OR (((lung* or respiratory or pulmonar* or airflow or airway) AND (disease* or obstruct* or hypersensitiv*))) OR "Asthma" OR asthma* OR "Pulmonary Disease, Chronic Obstructive" OR "Respiratory Hypersensitivity") OR ("Diabetes Mellitus" or diabet*) OR ("Autoimmune Diseases" OR ((autoimmun* or (auto AND immun*) or autoaggress* or (auto AND aggress*)) AND (disorder* or disease*))) OR ("Metabolic Syndrome" OR "Metabolic Diseases" OR ((metabolic or "insulin resistance") AND (disorder* or disease* or syndrome*))) OR ("Obesity" OR obes*) OR ("Osteoporosis" OR (osteoporo* or "bone loss" or "Osteolysis" or osteolysis or "bone resorption")) OR ("Parkinson Disease" OR (parkinson* or "paralysis agitans")) OR ("Arthritis" OR (arthriti* or polyarthriti* or rheumarthriti*)) OR ("Kidney Diseases" OR ((kidney AND (disease* or disorder*))) OR ("Liver Diseases" OR (liver AND (disease* or disorder* or dysfunction*))) OR ("Hypertension" OR ("high blood pressure" or hypertens*)) OR ("Hyperlipidemias" OR (hyperlipem* or hyperlipidem* or lipem* or lipidem*)) OR ("Hypercholesterolemia" OR (((high* or elevat*) AND cholesterol*) or hypercholesterem* or hypercholesterolem*)) OR ("Hypertriglyceridemia" OR (hypertriglyceridem*)) OR ("Thyroid Diseases" OR (thyroid AND (disease* or disorder*)) OR "Hyperthyroidism" OR (hyperthyroid*) OR "Hypothyroidism" OR (hypothyroid*) OR ((("thyroid-stimulating hormone" or tsh) AND deficien*)) OR ("Motor Neuron Disease" OR ("motor neuron disease") OR (lateral AND scleros*) OR ("motor system disease")) OR ("Multiple Sclerosis" OR ("multiple sclerosis" or "disseminated sclerosis")) OR ("Emphysema" OR emphysema*) OR ("Bronchitis" OR bronchit*) OR ((("Mental Disorders" OR "Psychotic Disorders" OR ((mental* or psychiatr* or psycho*) AND (disorder* or disease* or illness*))) OR ("Depressive Disorder, Major" OR "Depression" OR (Depress* or MDD)) OR ("Anxiety Disorders" OR "Anxiety" OR anxi*) OR ("Phobic Disorders" OR phobi*) OR ("Schizophrenia" Or (schizophreni* or hebephreni*)) OR ("Somatoform Disorders" OR "Medically Unexplained Symptoms" OR ((somatoform* or somati* or (medically AND unexplained) or briquet or pain) AND (disorder* or syndrome* or symptom*))) OR ("Dissociative Disorders" OR (dissociative AND (disorder* or hysteri* or reaction*)) or dissociation*) OR ("Hysteria" or hysteri*) OR ("Mood Disorders" OR ((affective* or mood*) AND (disorder* or disease* or illness* or symptom*))) OR ("Stress Disorders, Post-Traumatic" OR (PTSD or ((posttrauma* or trauma*) AND (stress* or neurose*)) or "combat disorder" or "war disorder")) OR ("Cognition Disorders" OR ((cognitive or cognition or mental or neurocognitive) AND (dysfunction* or decline* or impairment* or deterioration* or disorder* or illness* or disease*))) OR ("Personality Disorders" OR "personality disorder") OR ("Disruptive, Impulse Control, and Conduct Disorders" OR ("impulse control disorder" or "intermittent explosive disorder")) OR ("Feeding and Eating Disorders" OR ((eating or appetite or feeding) AND disorder*)) OR ("Bipolar Disorder" OR ((bipolar or mani*) AND (disorder* or illness* or disease*))) OR ("Obsessive-Compulsive Disorder" OR OCD* or ((obsess* or compulsi*) AND (disorder* or illness* or disease*

or neuros*)) OR ("Panic Disorder" OR ((panic AND (attack* or disorder*))) OR ("Agoraphobia" OR agoraphobi*) OR ("Neurotic Disorders" OR (neuros* or "neurotic disorder" or psychoneuros*)) OR ("Communicable Diseases" OR (((communic* or contag* or transmi* or infect*) AND (disease* or infection* or illness*))) OR ("Bacterial Infections" OR (bacteri* infection*)) OR ("Conjunctivitis") OR ("HIV" OR "Human immuno deficiency virus") OR ("Acquired Immunodeficiency Syndrome" OR (AIDS or "immunodeficiency associated virus" or (immun* deficiency associated virus) or (acquired immunodeficiency syndrome*) or (acquired immun* deficiency syndrome*))) OR ("Buruli Ulcer" OR (Bairnsdale or Buruli)) OR ("Onchocerciasis" OR (onchocer*)) OR ("Hepatitis B" OR "Hepatitis C" OR (hepatitis)) OR ("Leishmaniasis" OR (leishmania*)) OR ("Leprosy" OR (lepros* or hansen*)) OR ("Elephantiasis, Filarial" OR (elephantias* or filaria*)) OR ("Trachoma" OR ((egyptian ophthalmia*) or trachoma*)) OR ("Chikungunya Fever" OR (chikungunya or chikungunya)) OR ("Taeniasis" OR taenia*) OR ("Cysticercosis" OR cysticercos*) OR ("Echinococcosis" OR (hydatid or echinococc*)) OR ("Chagas Disease" OR (trypanosom* or chagas)) OR ("Trypanosomiasis" OR ("sleeping sickness")) OR ("Encephalitis, Japanese" OR (japanese encephalitis)) OR ("Syphilis")) AND ("Tuberculosis" OR Tuberculos* OR TB OR koch*)) AND ("Systematic Review" OR (systematic AND review*) OR "Meta-Analysis" OR meta-analys*)

131

OpenGrey (23/10/2020)

(((((("Noncommunicable Diseases" OR (((("Non-communicable" or Noncommunicable or "Non-infectious") AND (disease* or condition* or illness*))) OR ("Chronic Disease" OR ((chronic or "long-term") AND (disease* or condition* or illness*))) OR ("Heart Diseases" OR ((heart AND (disease* or disorder* or failure)) or (cardiac AND (disease* or disorder* or failure)))) OR ("Cardiovascular Diseases" OR ((cardiovascular AND (disease* or disorder* or failure)))) OR ("Coronary Disease" OR (coronary AND (disease* or disorder* or failure)) OR ("Cerebrovascular Disorders" OR ((cerebrovascular AND (disease* or disorder* or insufficienc* or occlusion*)) or (vascular AND (disease* or disorder*)) or (carotid* AND (disease* or disorder*))) OR ("Peripheral Arterial Disease" OR (arter* AND (disease* or disorder*))) OR ("Rheumatic Heart Disease" OR "Heart Defects, Congenital" OR ((heart AND (malform* or defect* or congeni*))) OR ("Venous Thrombosis" OR (("deep vein" or "deep venous") AND thrombos*) or phlebothrombos*)) OR ("Pulmonary Embolism" OR ((pulmonar* AND (thromboembolism* or embolism* or disease* or disorder*))) OR ("Stroke" OR (stroke)) OR ("Neoplasms" OR (Cancer* or neoplas* or tumor*)) OR ("Lung Diseases" OR "Respiratory Tract Diseases" OR "Lung Diseases, Obstructive" OR (((lung* or respiratory or pulmonar* or airflow or airway) AND (disease* or obstruct* or hypersensitiv*))) OR "Asthma" OR asthma* OR "Pulmonary Disease, Chronic Obstructive" OR "Respiratory Hypersensitivity") OR ("Diabetes Mellitus" or diabet*) OR ("Autoimmune Diseases" OR ((autoimmun* or (auto AND immun*) or autoaggress* or (auto AND aggress*)) AND (disorder* or disease*))) OR ("Metabolic Syndrome" OR "Metabolic Diseases" OR ((metabolic or "insulin resistance") AND (disorder* or disease* or syndrome*))) OR ("Obesity" OR obes*) OR ("Osteoporosis" OR (osteoporo* or "bone loss" or "Osteolysis" or osteolysis or "bone resorption")) OR ("Parkinson Disease" OR (parkinson* or "paralysis agitans")) OR ("Arthritis" OR (arthriti* or polyarthriti* or rheumarthriti*)) OR ("Kidney Diseases" OR ((kidney AND (disease* or disorder*))) OR ("Liver Diseases" OR (liver AND (disease* or disorder* or dysfunction*))) OR ("Hypertension" OR ("high blood pressure" or hypertens*)) OR ("Hyperlipidemias" OR (hyperlipem* or hyperlipidem* or lipem* or lipidem*)) OR ("Hypercholesterolemia" OR (((high* or elevat*) AND cholesterol*) or hypercholesterem* or hypercholesterolem*)) OR ("Hypertriglyceridemia " OR (hypertriglyceridem*)) OR ("Thyroid Diseases" OR (thyroid AND (disease* or disorder*)) OR

"Hyperthyroidism " OR (hyperthyroid*) OR "Hypothyroidism" OR (hypothyroid*) OR (("thyroid-stimulating hormone" or tsh) AND deficien*)) OR ("Motor Neuron Disease" OR ("motor neuron disease") OR (lateral AND scleros*) OR ("motor system disease")) OR ("Multiple Sclerosis" OR ("multiple sclerosis" or "disseminated sclerosis")) OR ("Emphysema" OR emphysema*) OR ("Bronchitis" OR bronchit*) OR ("Mental Disorders" OR "Psychotic Disorders" OR ((mental* or psychiatr* or psycho*) AND (disorder* or disease* or illness*))) OR ("Depressive Disorder, Major" OR "Depression" OR (Depress* or MDD)) OR ("Anxiety Disorders" OR "Anxiety" OR anx*) OR ("Phobic Disorders" OR phobi*) OR ("Schizophrenia" Or (schizophreni* or hebephreni*)) OR ("Somatoform Disorders" OR "Medically Unexplained Symptoms" OR ((somatoform* or somati* or (medically AND unexplained) or briquet or pain) AND (disorder* or syndrome* or symptom*))) OR ("Dissociative Disorders" OR (dissociative AND (disorder* or hysteri* or reaction*) or dissociation*) OR ("Hysteria" or hysteri*) OR ("Mood Disorders" OR ((affective* or mood*) AND (disorder* or disease* or illness* or symptom*))) OR ("Stress Disorders, Post-Traumatic" OR (PTSD or ((posttrauma* or trauma*) AND (stress* or neurose*)) or "combat disorder" or "war disorder") OR ("Cognition Disorders" OR ((cognitive or cognition or mental or neurocognitive) AND (dysfunction* or decline* or impairment* or deterioration* or disorder* or illness* or disease*))) OR ("Personality Disorders" OR "personality disorder") OR ("Disruptive, Impulse Control, and Conduct Disorders" OR ("impulse control disorder" or "intermittent explosive disorder")) OR ("Feeding and Eating Disorders" OR ((eating or appetite or feeding) AND disorder*)) OR ("Bipolar Disorder" OR ((bipolar or mani*) AND (disorder* or illness* or disease*)) OR ("Obsessive-Compulsive Disorder" OR OCD* or ((obsess* or compulsi*) AND (disorder* or illness* or disease* or neuros*)) OR ("Panic Disorder" OR ((panic AND (attack* or disorder*))) OR ("Agoraphobia" OR agoraphobi*) OR ("Neurotic Disorders" OR (neuros* or "neurotic disorder" or psychoneuros*)) OR ("Communicable Diseases" OR (((communic* or contag* or transmi* or infect*) AND (disease* or infection* or illness*))) OR ("Bacterial Infections" OR (bacteri* infection*)) OR ("Conjunctivitis") OR ("HIV" OR "Human immuno deficiency virus") OR ("Acquired Immunodeficiency Syndrome" OR (AIDS or "immunodeficiency associated virus" or (immun* deficiency associated virus) or (acquired immunodeficiency syndrome*) or (acquired immun* deficiency syndrome*))) OR ("Buruli Ulcer" OR (Bairnsdale or Buruli)) OR ("Onchocerciasis" OR (onchocer*)) OR ("Hepatitis B" OR "Hepatitis C" OR (hepatitis)) OR ("Leishmaniasis" OR (leishmania*)) OR ("Leprosy" OR (lepros* or hansen*)) OR ("Elephantiasis, Filarial" OR (elephantias* or filaria*)) OR ("Trachoma" OR ((egyptian ophthalmia*) or trachoma*)) OR ("Chikungunya Fever" OR (chickungunya or chikungunya)) OR ("Taeniasis" OR taenia*) OR ("Cysticercosis" OR cysticercos*) OR ("Echinococcosis" OR (hydatid or echinococc*)) OR ("Chagas Disease" OR (trypanosom* or chagas)) OR ("Trypanosomiasis" OR ("sleeping sickness")) OR ("Encephalitis, Japanese" OR (japanese encephalitis)) OR ("Syphilis")) AND ("Tuberculosis" OR Tuberculos* OR TB OR koch*) AND ("Systematic Review" OR (systematic AND review*) OR "Meta-Analysis" OR meta-analys*)

3

PROSPERO (07/10/2020)

(((((Non-communicable or Noncommunicable or Non-infectious) AnD (disease* or condition* or illness*))) oR ((MeSH DESCRIPTOR Chronic Disease EXPLODE ALL TREES) or ((chronic or long-term) AnD (disease* or condition* or illness*))) oR ((MeSH DESCRIPTOR Heart Diseases EXPLODE ALL TREES) or ((heart AnD (disease* or disorder* or failure)) or (cardiac AnD (disease* or disorder* or failure)))) oR ((MeSH DESCRIPTOR Cardiovascular Diseases EXPLODE ALL TREES) OR ((cardiovascular AnD (disease* or disorder* or failure)))) oR ((MeSH DESCRIPTOR Coronary Disease EXPLODE ALL TREES) OR ((coronary AnD (disease* or disorder* or failure)))) oR ((MeSH DESCRIPTOR Cerebrovascular Disorders EXPLODE ALL TREES) OR ((cerebrovascular AnD (disease* or disorder* or insufficienc* or occlusion*))) OR (vascular AnD (disease* or disorder*)) OR ((carotid* AnD (disease* or disorder*))) oR ((MeSH DESCRIPTOR Peripheral Arterial Disease EXPLODE ALL TREES) OR ((arter* AnD (disease* or disorder*))) oR ((MeSH DESCRIPTOR Rheumatic Heart Disease EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Heart Defects, Congenital EXPLODE ALL TREES) or ((heart AnD (malform* or defect* or congeni*))) oR ((MeSH DESCRIPTOR Venous Thrombosis EXPLODE ALL TREES) OR (((deep vein or deep venous) AnD thrombos*) OR (phlebothrombos*)) oR ((MeSH DESCRIPTOR Pulmonary Embolism EXPLODE ALL TREES) OR ((pulmonar* AnD (thromboembolism* or embolism* or disease* or disorder*))) oR ((MeSH DESCRIPTOR Stroke EXPLODE ALL TREES) OR (stroke)) oR ((MeSH DESCRIPTOR Neoplasms EXPLODE ALL TREES) OR (Cancer*) OR (neoplas*) OR (tumor*)) oR ((MeSH DESCRIPTOR Lung Diseases EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Respiratory Tract Diseases EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Lung Diseases, Obstructive EXPLODE ALL TREES) OR (((lung* or respiratory or pulmonar* or airflow or airway) AnD (disease* or obstruct* or hypersensitiv*))) OR (MeSH DESCRIPTOR Asthma EXPLODE ALL TREES) Or (asthma*) OR (MeSH DESCRIPTOR Pulmonary Disease, Chronic Obstructive EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Respiratory Hypersensitivity EXPLODE ALL TREES)) oR ((MeSH DESCRIPTOR Diabetes Mellitus EXPLODE ALL TREES) OR (diabet*)) oR ((MeSH DESCRIPTOR Autoimmune Diseases EXPLODE ALL TREES) OR (((autoimmun* or auto immun* or autoaggress* or auto aggress*) AnD (disorder* or disease*))) oR ((MeSH DESCRIPTOR Metabolic Syndrome X EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Metabolic Diseases EXPLODE ALL TREES) OR (((metabolic or insulin resistance) AnD (disorder* or disease* or syndrome*))) oR ((MeSH DESCRIPTOR Obesity EXPLODE ALL TREES) OR (obes*)) oR ((MeSH DESCRIPTOR Osteoporosis EXPLODE ALL TREES) OR (osteoporo* or bone loss) OR (MeSH DESCRIPTOR Osteolysis EXPLODE ALL TREES) OR (osteolysis or "bone resorption")) oR ((MeSH DESCRIPTOR Parkinson Disease EXPLODE ALL TREES) OR (parkinson* or "paralysis agitans")) oR ((MeSH DESCRIPTOR Arthritis EXPLODE ALL TREES) OR (arthriti* or polyarthriti* or rheumarthriti*)) oR ((MeSH DESCRIPTOR Kidney Diseases EXPLODE ALL TREES) OR ((kidney AnD (disease* or disorder*))) oR ((MeSH DESCRIPTOR Liver Diseases EXPLODE ALL TREES) OR ((liver AnD (disease* or disorder* or dysfunction*))) oR ((MeSH DESCRIPTOR Hypertension EXPLODE ALL TREES) OR (high blood pressure* or hypertens*)) oR ((MeSH DESCRIPTOR Hyperlipidemias EXPLODE ALL TREES) OR (hyperlipem* or hyperlipidem* or lipem* or lipidem*)) oR ((MeSH DESCRIPTOR Hypercholesterolemia EXPLODE ALL TREES) OR (((high* or elevat*) AnD cholesterol*)) OR (hypercholesterem* or hypercholesterolem*)) oR ((MeSH DESCRIPTOR Hypertriglyceridemia EXPLODE ALL TREES) OR (hypertriglyceridem*)) oR ((MeSH DESCRIPTOR Thyroid Diseases EXPLODE ALL TREES) OR ((thyroid AnD (disease* or disorder*))) OR (MeSH DESCRIPTOR Hyperthyroidism EXPLODE ALL TREES) OR (hypothyroid*) OR (((thyroid-stimulating hormone* or tsh) AnD deficien*)) oR ((MeSH DESCRIPTOR Motor Neuron Disease EXPLODE ALL TREES) OR (motor neuron* disease*) Or (lateral scleros*) OR (motor system disease*)) oR ((MeSH DESCRIPTOR Multiple Sclerosis EXPLODE ALL TREES) OR ("multiple sclerosis" or

"disseminated sclerosis")) oR ((MeSH DESCRIPTOR Emphysema EXPLODE ALL TREES) OR (emphysema*)) oR ((MeSH DESCRIPTOR Bronchitis EXPLODE ALL TREES) OR (bronchit*))) OR (((MeSH DESCRIPTOR Mental Disorders EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Psychotic Disorders EXPLODE ALL TREES) OR (((mental* or psychiatr* or psycho*) AnD (disorder* or disease* or illness*))) oR ((MeSH DESCRIPTOR Depressive Disorder, Major EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Depression EXPLODE ALL TREES) OR (Depress* or MDD)) oR ((MeSH DESCRIPTOR Anxiety Disorders EXPLODE ALL TREES) oR (MeSH DESCRIPTOR Anxiety EXPLODE ALL TREES) OR (anxi*)) oR ((MeSH DESCRIPTOR Phobic Disorders EXPLODE ALL TREES) OR (phobi*)) oR ((MeSH DESCRIPTOR Schizophrenia EXPLODE ALL TREES) OR (schizophreni* or hebephreni*)) oR ((MeSH DESCRIPTOR Somatoform Disorders EXPLODE ALL TREES) OR (((somatoform* or somati* or "medically unexplained" or briquet or pain) AnD (disorder* or syndrome* or symptom*))) or (MeSH DESCRIPTOR Medically Unexplained Symptoms EXPLODE ALL TREES)) oR ((MeSH DESCRIPTOR Dissociative Disorders EXPLODE ALL TREES) OR ((dissociative AnD (disorder* or hysteri* or reaction*))) OR (dissociation*)) oR ((MeSH DESCRIPTOR Hysteria EXPLODE ALL TREES) OR (hysteri*)) oR ((MeSH DESCRIPTOR Mood Disorders EXPLODE ALL TREES) OR (((affective* or mood*) AnD (disorder* or disease* or illness* or symptom*))) oR ((MeSH DESCRIPTOR Stress Disorders, Post-Traumatic EXPLODE ALL TREES) or (PTSD) OR (((post trauma* or posttrauma*) AnD (stress* or neurose*)) or ("combat disorder") OR ("war disorder")) oR ((MeSH DESCRIPTOR Cognition Disorders EXPLODE ALL TREES) OR (((cognitive or cognition or mental or neurocognitive) AnD (dysfunction* or decline* or impairment* or deterioration* or disorder* or illness* or disease*))) oR ((MeSH DESCRIPTOR Personality Disorders EXPLODE ALL TREES) OR ("personality disorder") OR ("personality disorders")) oR ((impulse control disorder*) OR (intermittent explosive disorder*)) oR ((MeSH DESCRIPTOR Feeding and Eating Disorders EXPLODE ALL TREES) OR (((eating or appetite or feeding) AnD disorder*)) oR ((MeSH DESCRIPTOR Bipolar Disorder EXPLODE ALL TREES) OR (((bipolar or mani*) AnD (disorder* or illness* or disease*))) oR ((MeSH DESCRIPTOR Obsessive-Compulsive Disorder EXPLODE ALL TREES) OR (OCD*) OR ((obsess*-compulsi* or obsess* or compuls*) AnD (disorder* or illness* or disease* or neuros*))) oR ((MeSH DESCRIPTOR Panic Disorder EXPLODE ALL TREES) OR ((panic AnD (attack* or disorder*))) oR ((MeSH DESCRIPTOR Agoraphobia EXPLODE ALL TREES) OR (agoraphobi*)) oR ((MeSH DESCRIPTOR Neurotic Disorders EXPLODE ALL TREES) OR (neuros* or "neurotic disorder" or psychoneuros*)) OR (((MeSH DESCRIPTOR Communicable Diseases EXPLODE ALL TREES) OR ((communic* or contag* or transmi* or infect*) AnD (disease* or infection* or illness*))) oR ((MeSH DESCRIPTOR Bacterial Infections EXPLODE ALL TREES) OR (bacteri* infection*)) oR ((MeSH DESCRIPTOR Conjunctivitis EXPLODE ALL TREES) OR (conjunctivitis)) oR ((MeSH DESCRIPTOR HIV EXPLODE ALL TREES) OR (hiv or "Human immuno deficiency virus")) oR ((MeSH DESCRIPTOR Acquired Immunodeficiency Syndrome EXPLODE ALL TREES) OR (AIDS) OR ("immunodeficiency associated virus") OR (immun* AND "deficiency associated virus") OR ("acquired immunodeficiency syndrome")) oR ((MeSH DESCRIPTOR Buruli Ulcer EXPLODE ALL TREES) OR (Bairnsdale or Buruli)) oR ((MeSH DESCRIPTOR Onchocerciasis EXPLODE ALL TREES) OR (onchocer*)) oR ((MeSH DESCRIPTOR Hepatitis B EXPLODE ALL TREES) OR (MeSH DESCRIPTOR Hepatitis C EXPLODE ALL TREES) OR (hepatitis)) oR ((MeSH DESCRIPTOR Leishmaniasis EXPLODE ALL TREES) OR (leishmania*)) oR ((MeSH DESCRIPTOR Leprosy EXPLODE ALL TREES) OR (lepros* or hansen*)) oR ((MeSH DESCRIPTOR Elephantiasis, Filarial EXPLODE ALL TREES) OR (elephantias* or filaria*)) oR ((MeSH DESCRIPTOR Trachoma EXPLODE ALL TREES) OR ("egyptian ophthalmia" or trachoma*)) oR ((MeSH DESCRIPTOR Chikungunya Fever EXPLODE ALL TREES) OR (chikungunya or chikungunya)) oR ((MeSH DESCRIPTOR Taeniasis EXPLODE ALL TREES) OR taenia*) oR ((MeSH DESCRIPTOR Cysticercosis EXPLODE ALL TREES) OR (cysticercos*)) oR ((MeSH DESCRIPTOR Echinococcosis EXPLODE ALL TREES)

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4 OR (hydatid* or echinococc*) oR ((MeSH DESCRIPTOR Chagas Disease EXPLODE
5 ALL TREES) OR (trypanosom* or chagas) oR ((MeSH DESCRIPTOR Trypanosomiasis
6 EXPLODE ALL TREES) OR ("sleeping sickness") oR ((MeSH DESCRIPTOR
7 Encephalitis, Japanese EXPLODE ALL TREES) OR (japanese AnD encephalitis)) oR
8 ((MeSH DESCRIPTOR Syphilis EXPLODE ALL TREES) OR (syphilis)))) AND ((MeSH
9 DESCRIPTOR Tuberculosis EXPLODE ALL TREES) OR (Tuberculos*) OR (TB) OR
10 (koch*))

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For peer review only

APPENDIX 1: References of included studies

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PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	(meta-review)
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	page 2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	p.3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	4
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	3-4
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supplement
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	5
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	5
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	5
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	5
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	4
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	5
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	5
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	5
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	5
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	5
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	None
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	NA
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	5 (AMSTAR2)



PRISMA 2020 Checklist

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Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	5, Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	STable 1
Study characteristics	17	Cite each included study and present its characteristics.	Table 1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table 1, STable 4
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	STable 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	NA
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	AMSTAR2
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	17-18
	23b	Discuss any limitations of the evidence included in the review.	18
	23c	Discuss any limitations of the review processes used.	18
	23d	Discuss implications of the results for practice, policy, and future research.	18
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	3
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	3
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	4
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	5, 19
Competing interests	26	Declare any competing interests of review authors.	19
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	19

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

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