**Appendices**

**Appendix 1**: Systematic search strategy used to identify studies on the diagnostic and care pathway for tuberculosis in high burden countries

|  |  |  |  |
| --- | --- | --- | --- |
| **Set** | **Medline (Pubmed)** | **Embase (OVID)** | **CINAHL (EBSCOHost)** |
| 1 | Angola or Bangladesh or Brazil or China or Korea or “Democratic Republic of Congo” or DRC or Ethiopia or India or Indonesia or Kenya or Mozambique or Myanmar or Nigeria or Pakistan or Philippines or “Russian Federation” or “South Africa” or Thailand or Tanzania or “Viet Nam” or Vietnam or Cambodia or “Central African Republic” or Congo or Lesotho or Liberia or Namibia or “Papua New Guinea” or “Sierra Leone” or Zambia or Zimbabwe or Cameroon or Malawi or Uganda or Botswana or Chad or Ghana or “Guinea-Bissau” or Swaziland or Kazakhstan or Ukraine or Uzbekistan or Azerbaijan or Belarus or Kyrgyzstan or Peru or Moldova or Somalia or Tajikistan)) [Title/Abstract] | (Angola or Bangladesh or Brazil or China or Korea or “Democratic Republic of Congo” or DRC or Ethiopia or India or Indonesia or Kenya or Mozambique or Myanmar or Nigeria or Pakistan or Philippines or “Russian Federation” or “South Africa” or Thailand or Tanzania or “Viet Nam” or Vietnam or Cambodia or “Central African Republic” or Congo or Lesotho or Liberia or Namibia or “Papua New Guinea” or “Sierra Leone” or Zambia or Zimbabwe or Cameroon or Malawi or Uganda or Botswana or Chad or Ghana or “Guinea-Bissau” or Swaziland or Kazakhstan or Ukraine or Uzbekistan or Azerbaijan or Belarus or Kyrgyzstan or Peru or Moldova or Somalia or Tajikistan).mp | AB Angola or Bangladesh or Brazil or China or Korea or “Democratic Republic of Congo” or DRC or Ethiopia or India or Indonesia or Kenya or Mozambique or Myanmar or Nigeria or Pakistan or Philippines or “Russian Federation” or “South Africa” or Thailand or Tanzania or “Viet Nam” or Vietnam or Cambodia or “Central African Republic” or Congo or Lesotho or Liberia or Namibia or “Papua New Guinea” or “Sierra Leone” or Zambia or Zimbabwe or Cameroon or Malawi or Uganda or Botswana or Chad or Ghana or “Guinea-Bissau” or Swaziland or Kazakhstan or Ukraine or Uzbekistan or Azerbaijan or Belarus or Kyrgyzstan or Peru or Moldova or Somalia or Tajikistan |
| 2 | tuberculosis or TB | (tuberculosis or TB).mp. | TI ( tuberculosis or tb ) OR AB ( tuberculosis or tb ) |
| 3 | 1 and 2 | 1 and 2 | 1 and 2 |
| 4 | ("standardised patient\*" [Title/Abstract] OR “simulated patient\*”[Title/Abstract])  or "mystery client\*" [Title/Abstract]) | ("standardised patient\*" or "standardised patient\*" or "simulated patient\*").ab. or ("standardised patient\*" or "standardised patient\*" or "simulated patient\*").ti. | TX ( "standardised patient\*" or "standardised patient\*" or "simulated patient\*" ) OR "mystery client" |
| 5 | “ Pretreatment loss to follow-up” or PTLFU\* [Title/Abstract] or cascade [Title/Abstract] or attrition [Title/Abstract] | "mystery client\*".af. or missed.ti or ("missed diagnosis" or misdiagnosis).mp. | AB "diagnostic error\*" or "missed diagnos\*" |
| 6 | "symptom screening” or "diagnostic testing" or pathway\* or default\* or misdiagnosis or "missed diagnosis" [Title/Abstract] | diagnostic error/ or diagnostic error\*.mp. | AB misdiagnosis or misdiagnosed |
| 7 | "Interview" [Publication Type] OR "Interviews as Topic"[Mesh] or interview\* [Title/Abstract] | interview\*.mp. or interview/ | AB ( defaulter\* or unsuccessful or cascade ) OR AB ( attrition or pathway\* ) OR AB ( "symptom screening" or "symptom assessment" ) |
| 8 | "Diagnostic Errors"[Mesh] | (defaulter\* or unsuccessful or cascade).ti. or (defaulter\* or unsuccessful or cascade).ab. | TX " Pretreatment loss to follow-up" or PTLFU |
| 9 | 4 or 5 or 6 or 7 or 8 | attrition.mp. or "symptom screening".mp. or symptom assessment/ or pathway\*.ti. | (MH "Interviews+") |
| 10 | 3 and 9 | (" Pretreatment loss to follow-up" or PTLFU).ti. or (" Pretreatment loss to follow-up" or PTLFU).ab. | 4 or 5 or 6 or 7 or 8 or 9 |
| 11 | Filters: Publication date from 2000/01/01 | 4 or 5 or 6 or 7 or 8 or 9 or 10 | 3 and 10 |
| 12 |  | 3 and 11 | limit 11 to 20000101-present |
| 13 |  | limit 12 to yr="2000 -Current" |  |

**Appendix 2**: risk of bias tool

|  |  |  |  |
| --- | --- | --- | --- |
| **Domain** | **Patient selection** | **Classifying TB symptoms** | **Diagnosing TB** |
| **Risk of bias** | Could the selection of patients (or the way in which standardised patients were presented) have introduced bias? | Could the way in which TB symptoms were defined or elicited have introduced bias? | Could the way in which TB was diagnosed have introduced bias? |
| **Signalling questions** | If patients were recruited:  was a consecutive or random sample of patients enrolled?  did the study avoid inappropriate exclusions?  If standardised patients were used:  Were the characteristics of the standardised patients fixed in advance?  Are the characteristics f the standardised patients consistent with a TB suspect? | Are TB symptoms defined in a way that is likely to capture all patients with TB?  (if patients were recruited) Was the presence or absence of TB symptoms elicited in a standardised way? | Was the same diagnostic strategy carried out for all TB suspects?  Are the study definitions of TB likely to correctly classify patients with TB? |
| **Risk of bias** | In each domain: if all questions answered ‘yes’ – low risk of bias. If one or more questions answered ‘no’ – high risk of bias. If any question answered ‘unclear’ – unclear risk of bias | | |

**Appendix 3: Data and R-code**

**library**(tidyverse)

## -- **Attaching packages** --------

## v ggplot2 3.2.1 v purrr 0.3.3

## v tibble 2.1.3 v dplyr 0.8.3

## v tidyr 1.0.0 v stringr 1.4.0

## v readr 1.3.1 v forcats 0.4.0

## -- **Conflicts** -------------

## x dplyr::filter() masks stats::filter()

## x dplyr::lag() masks stats::lag()

**library**(metafor)

## Loading required package: Matrix

##

## Attaching package: 'Matrix'

## The following objects are masked from 'package:tidyr':

##

## expand, pack, unpack

## Loading 'metafor' package (version 2.1-0). For an overview

## and introduction to the package please type: help(metafor).

**library**(meta)

## Loading 'meta' package (version 4.9-7).

## Type 'help(meta)' for a brief overview.

##

## Attaching package: 'meta'

## The following objects are masked from 'package:metafor':

##

## baujat, forest, funnel, funnel.default, labbe, radial,

## trimfill

**Enter the data.**

df <- **tribble**(**~**study, **~**n, **~**N,

"christian",119,143,

"daniels",21,42,

"kwan",807,1762,

"miller",150,333,

"vu",59,138,

"sylvia",112,274,

"singh",93,242,

"chihota",818,2130,

"classens",2,4,

"Kweza", 61,134,

"satyanarayana",96,599,

"das", 22,150,

"rojpibulstit",3,70)

**Estimate the median of proportions**

df **%>%**

**mutate**(prop = n**/**N) **%>%**

**summarise**(median = **median**(prop))

## # A tibble: 1 x 1

## median

## <dbl>

## 1 0.428

**Here estimate pooled estimate of proportion using the double-arcsine transformation**

ies <- **escalc**(xi=n, ni=N, data=df, measure="PFT", add=0)

pes.da <- **rma**(yi, vi, data=ies)

pes <- **predict**(pes.da, transf=transf.ipft.hm, targ=**list**(ni=df**$**N))

**print**(pes)

##

## pred ci.lb ci.ub cr.lb cr.ub

## 0.3786 0.2590 0.5057 0.0339 0.8169