Electronic Supplementary Material (ESI) for Food & Function.

Appendix:

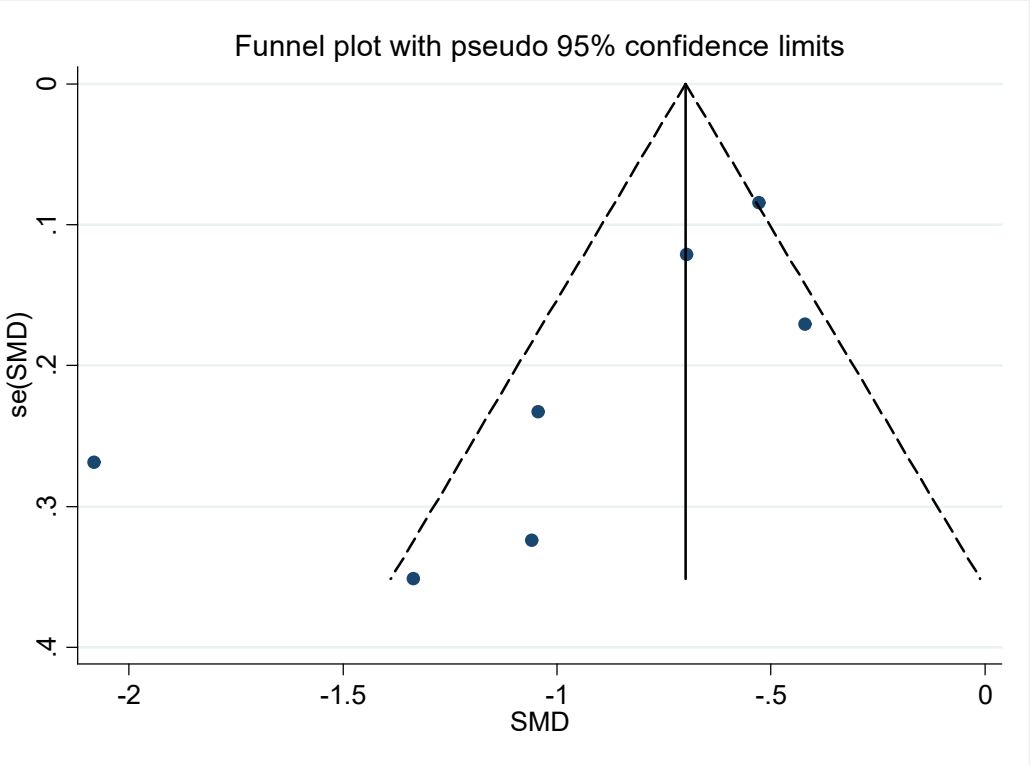

Figure A1. Funnel plot for the meta-analysis of comparing the vitamin A concentrations (ng/mL) between the tuberculosis and control groups.

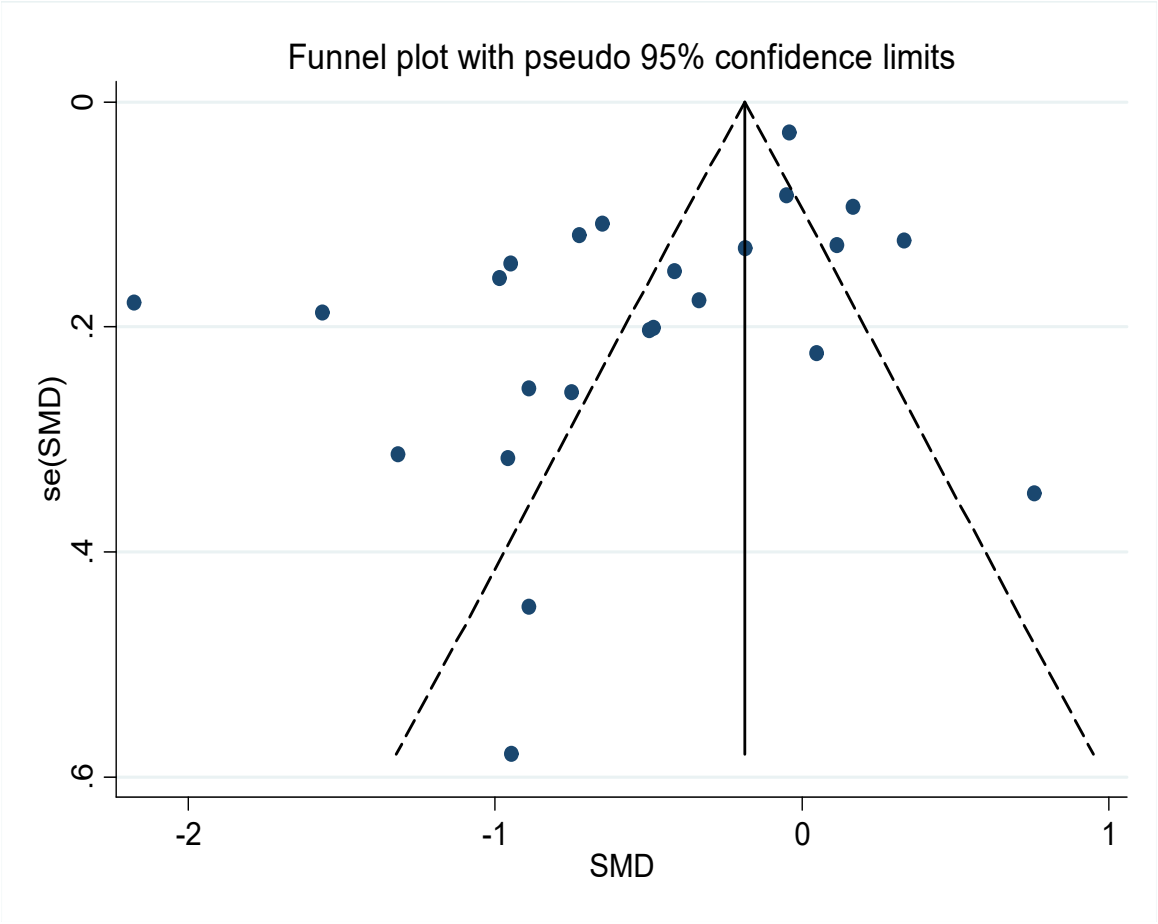

Figure A2. Funnel plot for the meta-analysis of comparing the vitamin D concentrations (ng/mL) between the tuberculosis and control groups.

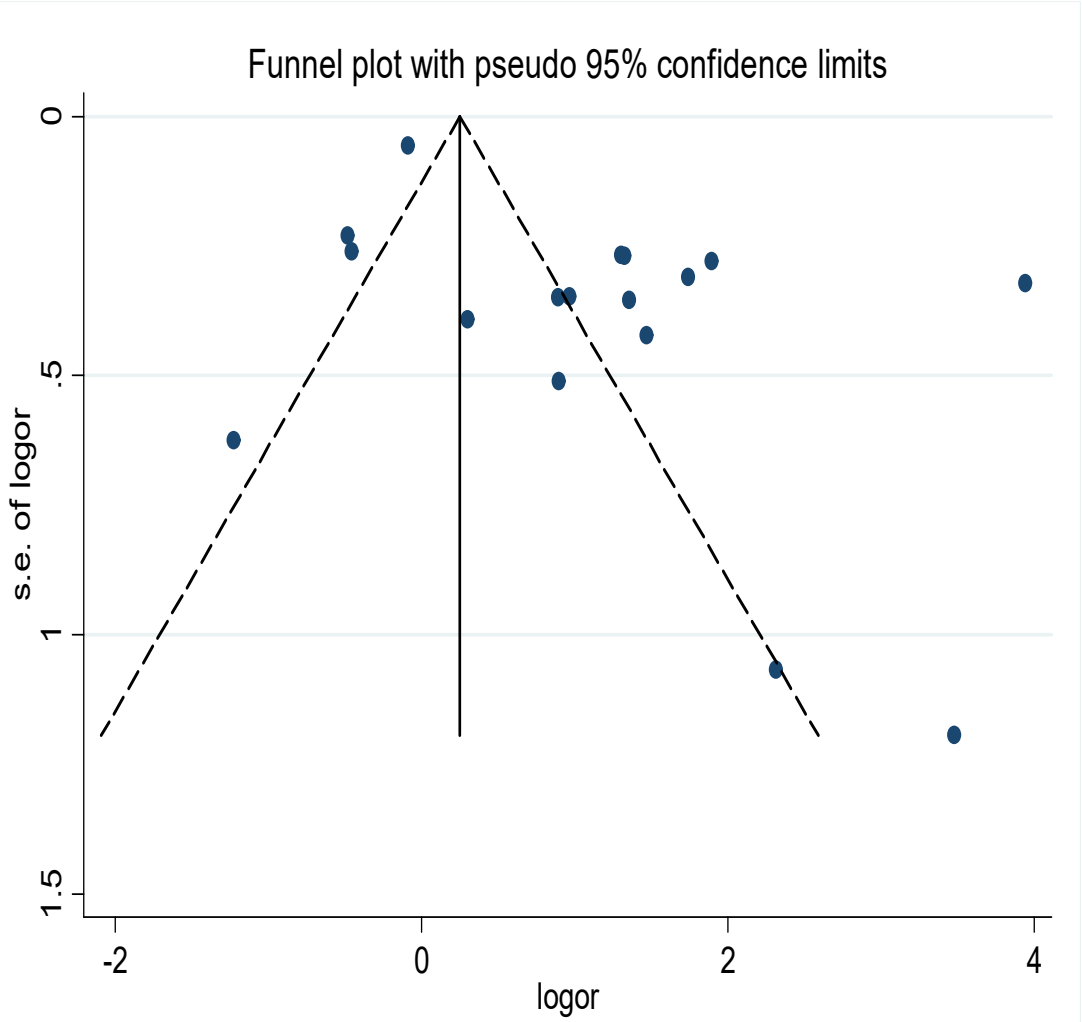

Figure A3. Funnel plot for the meta-analysis of comparing the odds ratios of the participants with vitamin D deficiency in the tuberculosis and control groups.

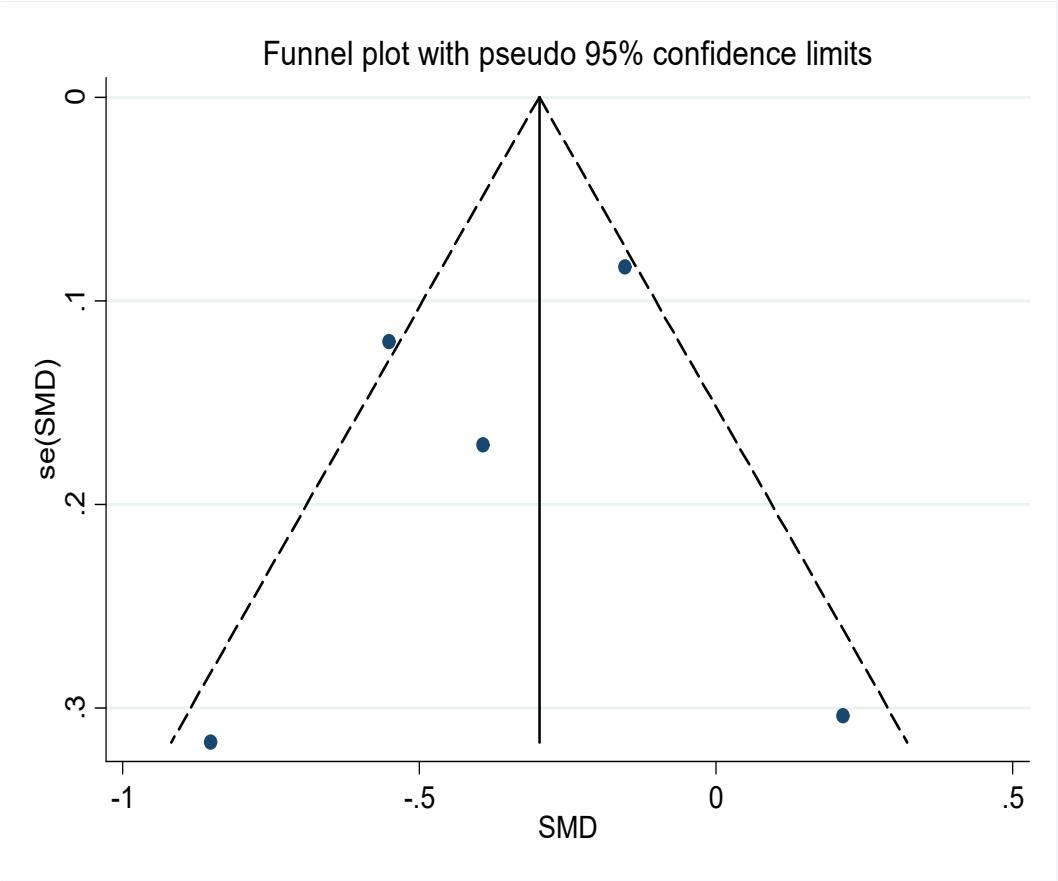

Figure A4. Funnel plot for the meta-analysis of comparing the vitamin E concentrations (ng/mL) between the tuberculosis and control groups.

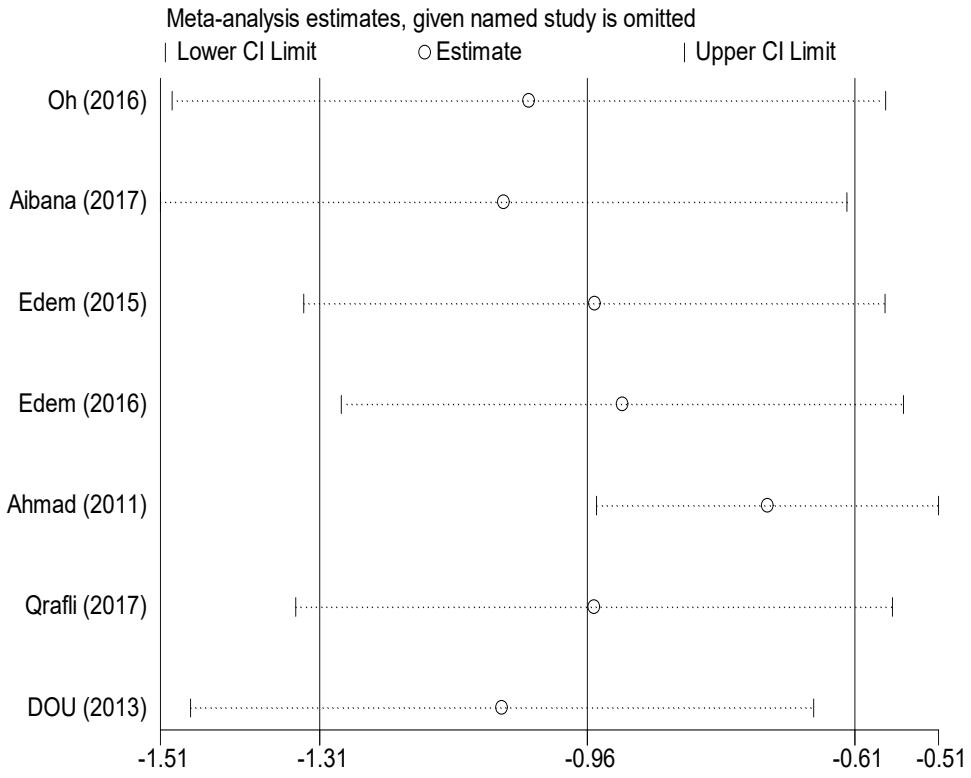

Figure A5. Sensitivity analysis for the meta-analysis of comparing the vitamin A levels (ng/mL) between the tuberculosis and control groups.

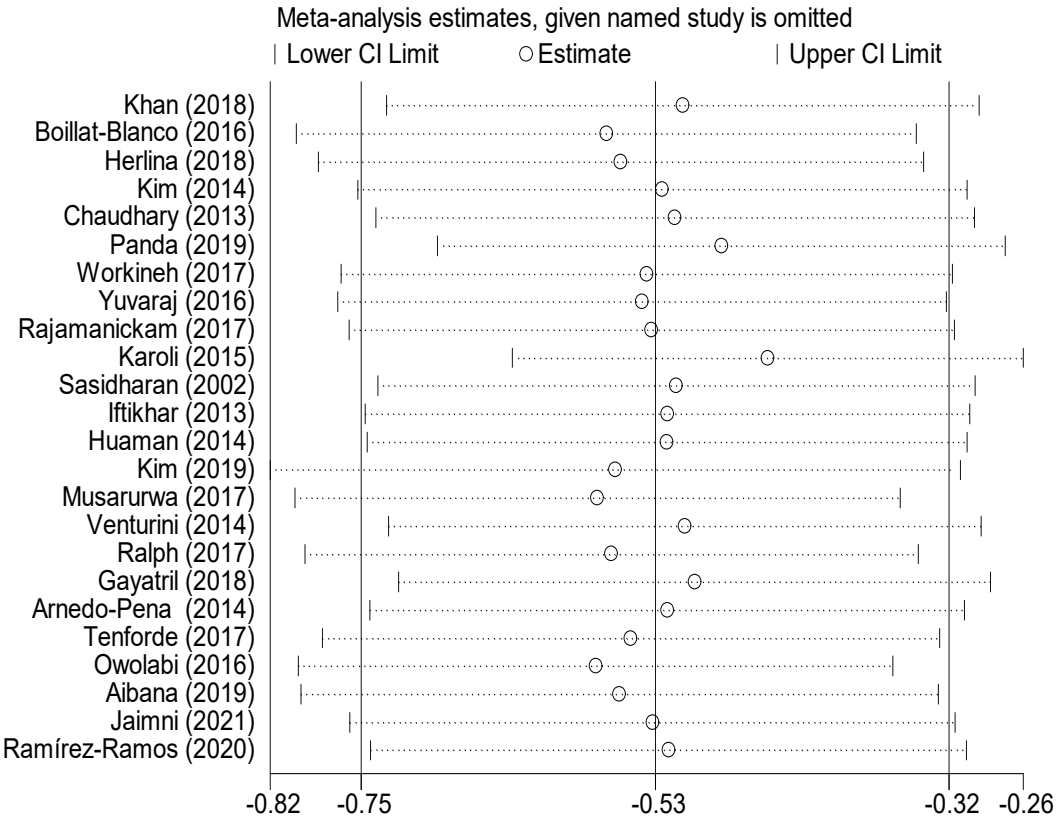

Figure A6. Sensitivity analysis for the meta-analysis of comparing the vitamin D concentrations (ng/mL) between the tuberculosis and control groups.

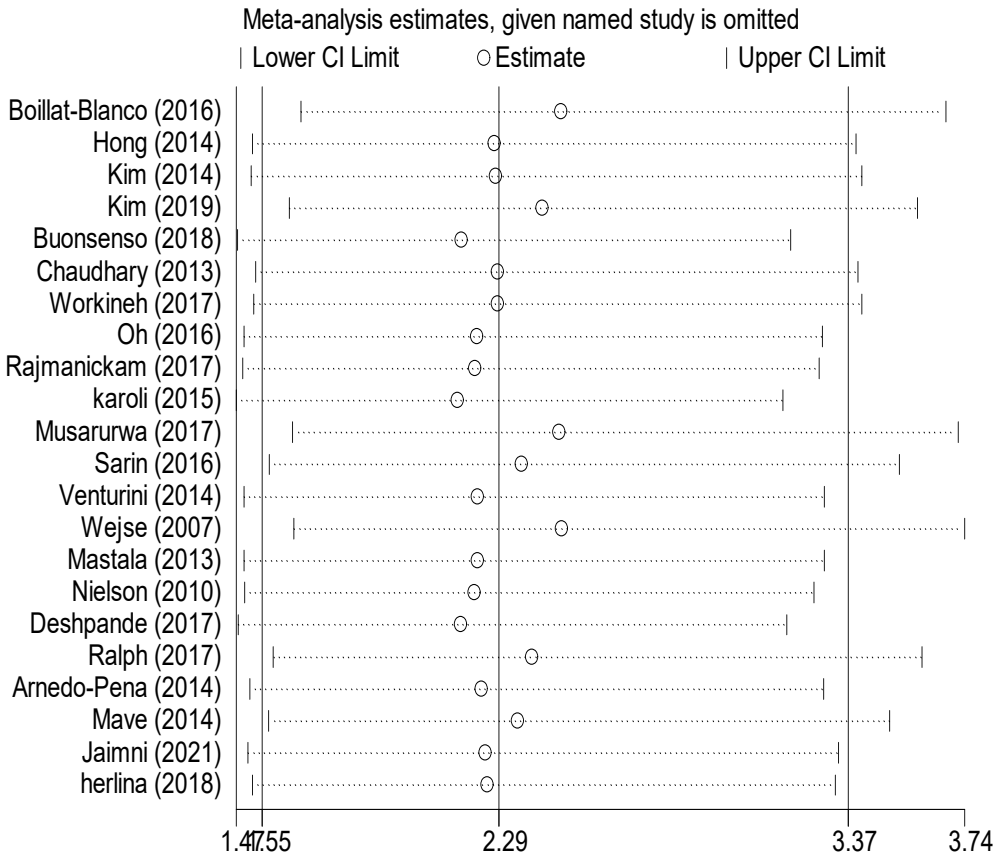

Figure A7. Sensitivity analysis for the meta-analysis of comparing the odds ratios of vitamin D deficiency between the tuberculosis and control groups.

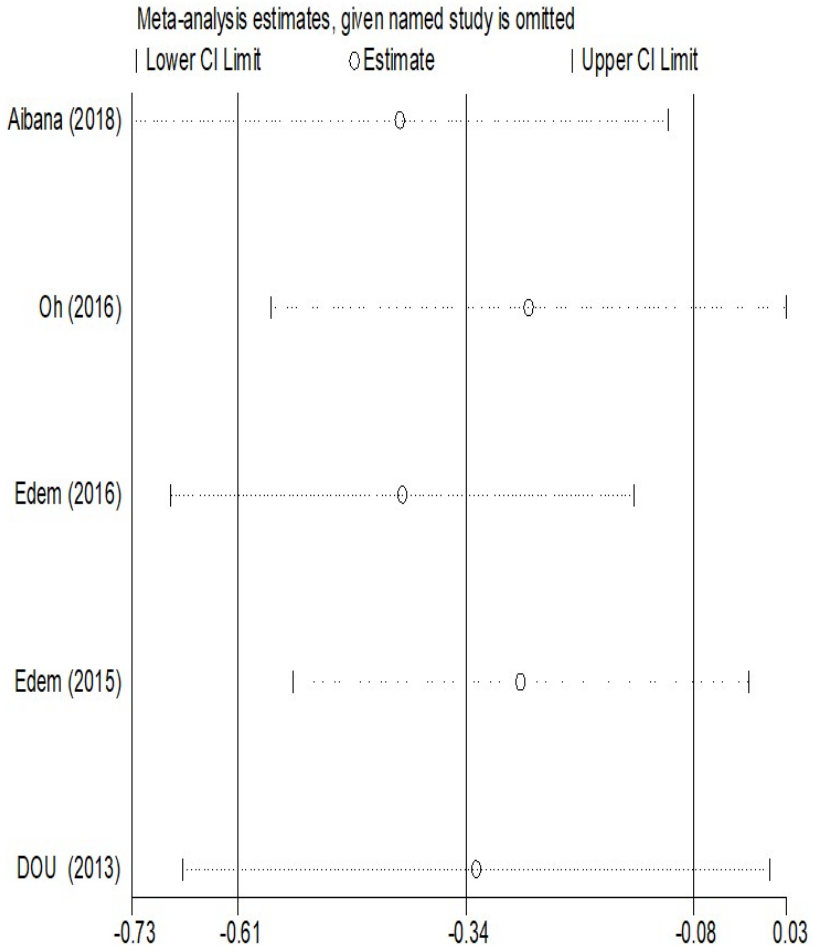

Figure A8. Sensitivity analysis for the meta-analysis of comparing the vitamin E levels (ng/mL) between the tuberculosis and control groups.

Table A1 PRISMA Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3-5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	5
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5-6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5-6
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5-7
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	6-7

Section/topic	**#**	**Checklist item**	**Reported on page #**
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	11
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	11
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	6, 8
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	8

Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	11
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	9-11, 14，68-71
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	9-11, 68-71
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	11
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	11
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-12
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	14
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	14
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	15

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.

Table A2. The search strategy of the three databases (Pubmed, Web of science and Scopus)

database	keywords	Paper number
Pubmed	((((((((((((((((((((vitamin A) OR Aquasol A) OR Retinol) OR vitamin B) OR Cyanocobalamin) OR vitamin B 12) OR Cobalamins) OR Vitamin C) OR Ascorbic Acid) OR Ascorbate) OR Hybrin) OR Vitamin D 2) OR Calciferols) OR Ergocalciferol) OR vitamin D3) OR Cholecalciferol) OR vitaminE) OR Tocopherol) OR E-ferol) OR E-Mulsin) OR Ephynal) OR Aquasol E) AND tuberculosis	5994
Web of science	((vitamin A OR Aquasol A OR Retinol OR vitamin B OR Cyanocobalami OR vitamin B 12 OR Cobalamins OR Vitamin C OR Ascorbic Acid OR Ascorbate OR Hybrin OR Vitamin D 2 OR Calciferols OR Ergocalciferol OR vitamin D3 OR Cholecalciferol ORvitaminE OR Tocophero OR E-ferol OR E-Mulsin OR Ephynal OR Aquasol E)) AND (tuberculosis)	3600
Scopus	((((((((((((((((((((vitamin A) OR Aquasol A) OR Retinol) OR vitamin B) OR Cyanocobalamin) OR vitamin B 12) OR Cobalamins) OR Vitamin C) OR Ascorbic Acid) OR Ascorbate) OR Hybrin) OR Vitamin D 2) OR Calciferols) OR Ergocalciferol) OR vitamin D3) OR Cholecalciferol) OR vitaminE) OR Tocopherol) OR E-ferol) OR E-Mulsin) OR Ephynal) OR Aquasol E) AND tuberculosis	5320

Table A3 Newcastle-Ottawa quality assessment scores of the included case-control studies

Study	Is the case definition adequate	Representativeness of the cases	Selection of Controls	Definition of Controls	Comparability of cases and controls on the basis of the design or analysis	Ascertainment of exposure	Same method of ascertainment for cases and controls	Non-Response rate	NOS score
Oh et.al[29]/ Korea / 2016	1	1	0	1	1	1	1	0	6
Aibana et.al [36]/ Peru / 2017	1	1	0	1	2	1	1	0	7
Edem et.al [37]/ Nigeria / 2015	1	1	1	1	1	0	1	0	6
Edem et.al [63]/ Nigeria / 2016	1	1	0	1	1	1	1	0	6
Ahmad et.al [7]/ India / 2011	1	1	1	1	2	0	1	0	7

Qrafli et.al [64]/ Morocco/2017	1	1	1	1	1	1	1	0	7
DOU et.al [38]/ China/ 2013	1	1	1	1	1	1	1	0	7
Khan et.al [46]/ India/ 2018	1	1	1	1	1	1	1	0	7
Herlina et.al [48] /Indonesia/2018	1	1	1	0	2	1	1	0	7
Boillat-Blanco et.al [47]/ Tanzania/2016	1	1	1	1	2	1	1	0	8
Gayatri1 et.al [26]/ Indonesia/2018	1	1	1	1	2	1	1	0	8

Hong et.al [16]/ South Korea/2014	1	1	1	1	1	1	1	0	7
Huaman et.al [25]/America/2014	1	1	1	1	2	1	1	0	8
Kim et.al [24]/ Korea/2014	1	1	1	1	2	1	1	0	8
Buonsenso et.al [49]/ Italy East Europe Africa South America Asia/2018	1	1	0	1	2	1	1	0	7
Chaudhary et.al [27]/ India/2013	1	1	1	1	2	1	1	0	8
Rajamanickam et.al [1]/ India/2017	1	1	0	1	2	0	1	0	6
Sasidharan et.al [32]/ India/2002	1	1	0	1	2	0	1	0	6
Iftikhar et.al [33]/ Pakistan/2013	1	1	1	1	2	1	1	0	8

Sarin et.al [50]/ Afghanistan/2016	1	1	1	1	2	1	1	0	8
Venturini et.al [34]/ Italy London, United Kingdom/2014	1	1	1	1	1	0	1	0	6
Wejse et.al [35]/ West African/2007	0	1	1	1	1	1	1	0	6
Nielsen et.al [51]/ Denmark/2010	1	1	1	1	1	0	1	0	6
Deshpande et.al [52]/ India/2017	1	1	1	1	1	0	1	0	6
Jaimni et.al [53]/ India/2021	1	1	1	1	1	1	1	0	7

Ramírez-Ramos et.al [54]/ Columbia/2020	1	1	1	1	1	1	1	0	7
Aibana et.al [17]/Lima, Peru/2018	1	1	1	1	1	1	1	0	7

References were available from the reference list in the main text.

Table A4. Modified Newcastle-Ottawa assessment scores for the included cross-sectional studies

Study title	Representativeness of the sample	Sample size	Ascertainment of exposure	Non-respondents	Comparability	Assessment of outcome	Statistical test	NOS score
Kim et.al [22]/ Korea/2019	1	1	1	0	2	1	1	7
Panda et.al [23]/ India/2019	1	1	1	0	2	1	1	7
Workineh et.al [28]/ Ethiopia/2017	1	1	1	0	2	1	1	7
Yuvaraj et.al [30]/ India/2016	1	1	1	0	1	1	1	6
Karoli et.al [31]/ India/2015	1	1	1	0	2	1	1	7

Musarurwa et.al [55]/ Zimbabwe/2017	0	1	1	0	2	1	1	6
Mastala et.al [56]/ Malawi/2013	1	1	1	0	2	1	1	7

References were available from the reference list in the main text.

Table A5. Newcastle-Ottawa quality Assessment scores of the included cohort studies

Study title	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability	Assessment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	NOS score
Ralph et.al [57]/ Malaysia/2017	1	1	1	0	2	1	1	0	7
Arnedo-Pena et.al [58]/ Spain/2014	1	1	1	0	2	1	1	0	7
Mave et.al [62]/ India/2014	1	1	1	0	2	1	1	0	7
Tenforde et.al [59]/ America/ 2017	1	1	1	1	2	1	1	0	8

Owolabi et.al [61]/ Gambia /2016	0	1	1	1	2	1	1	0	7
Aibana et.al [60]/ America/ 2019	1	1	1	1	2	1	1	0	8

References were available from the reference list in the main text.