

INPLASY

What Are The Factors Associated With Complications In T2DM In Low- and Middle- Income Countries?

INPLASY202560021

doi: 10.37766/inplasy2025.6.0021

Received: 4 June 2025

Published: 4 June 2025

Li, Y; Hulme, C; Medina - Lara, A.

Corresponding author:

Yuwen Li

yl1113@exeter.ac.uk

Author Affiliation:

University of Exeter.

ADMINISTRATIVE INFORMATION**Support** - None.**Review Stage at time of this submission** - Data extraction.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202560021**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 4 June 2025 and was last updated on 4 June 2025.**INTRODUCTION**

Review question / Objective What are the factors associated with chronic complications in type 2 diabetes (T2DM) in low- and middle- income countries?

Rationale Diabetes mellitus, a common chronic metabolic disorder, is a major global public health problem. Approximately 537 million adults have diabetes, and it is predicted this number will reach 783 million, by 2045 (IDF,2021). Three quarters of the world's adults with diabetes live in low- and middle-income countries (LMICs), and the prevalence is rising faster in these countries than in high-income countries (WHO, 2023). In addition, LMICs account for the majority of Type 2 diabetics with complications globally (Dunachie and Chamnan, 2019).

Relevant research in Type 2 diabetes mellitus (T2DM) and complications in LMICs is limited. Risk factors contributing to T2DM and its complications vary across contexts and can be influenced by environment and culture. Issues of effectiveness in

applying evidence from developed countries to LMICs have not been resolved; and, indeed, it may not be possible to replicate interventions designed for high-income countries in LMICs.

This systematic review brings together existing literature in complications in T2DM in LMICs. It focuses on the non-medical factors that influence health outcomes - social determinants of health (SDoH) (WHO, 2008).

AIM: This study aims to systematically understanding the factors associated with complications of T2DM in LMICs.

Condition being studied This systematic review brings together existing literature in complications in T2DM in LMICs. It focuses on the non-medical factors that influence health outcomes - social determinants of health (SDoH) (WHO, 2008).

METHODS

Search strategy Database: Ovid MEDLINE; Web of Science; Scopus.

Search Terms:

type II diabetes; type II diabetics; type 2 diabetes; type 2 diabetics; type 2 diabetes mellitus; non-insulin-dependent diabetes; noninsulin dependent diabetes; T2D; T2DM;

complication* ; comorbidit* ;

risk; factors; risk factor; conditions; determinants; association; development; progression; causes; causes of uncontrolled; factors of uncontrolled; factors of poor control; poor control; uncontrolled; age; sex; lifestyle; social; community; networks; food; education; work* ; occupation; job; employment; unemployment; water; sanitation; health care; hous* ; liv* ; socio-economic; cultur* ; environment*;

Afghanistan; Angola; Albania; Argentina; Armenia;Azerbaijan; Burundi;Benin;Burkina Faso;Bangladesh;Bulgaria;Bosnia and Herzegovina;Belarus;Belize;Bolivia;Brazil;Bhutan;Botswana;Central African Republic;China;Côte d'Ivoire;Cameroon;Congo, Dem. Rep.;Congo, Rep.;Colombia;Comoros;Cabo Verde;Costa Rica;Cuba;Djibouti;Dominica;Dominican Republic;Algeria;Ecuador;Egypt, Arab Rep.;Eritrea;Ethiopia;Fiji;Micronesia, Fed. Sts.;Gabon;Georgia;Ghana;Guinea;Gambia ;Guinea - B i s s a u ; E q u a t o r i a l Guinea;Grenada;Guatemala;Honduras;Haiti;Indonesia;India;Iran ;Iraq;Jamaica;Jordan;Kazakhstan;Kenya;Kyrgyz Republic; Cambodia;Kiribati;Lao PDR; Lebanon; Liberia; Libya; St. Lucia; Sri Lanka; Lesotho; Morocco; Moldova; Madagascar; Maldives; Mexico; Marshall Islands; North Macedonia; Mali; Myanmar; Montenegro; Mongolia; Mozambique; Mauritania; Mauritius; Malawi; Malaysia; Namibia; Niger; Nigeria; Nicaragua; Nepal; Pakistan; Peru; Philippines; Palau; Papua New Guinea; Korea, Dem. People's Rep.; Paraguay; West Bank and Gaza; Russian Federation; Rwanda; Sudan; Senegal; Solomon Islands; Sierra Leone; El Salvador; Somalia; Serbia; South Sudan; São Tomé and Príncipe; Suriname; Eswatini; Syrian Arab Republic; Chad; Togo; Thailand; Tajikistan; Turkmenistan; Timor-Leste; Tonga; Tunisia; Türkiye; Tuvalu; Tanzania; Uganda; Ukraine; Uzbekistan; St. Vincent and the Grenadines; Venezuela, RB; Vietnam; Vanuatu; Samoa; Kosovo; Yemen, Rep.; South Africa; Zambia; Zimbabwe; developing-country; developing-countries; developing-nation; developing-nations; developing-population; developing-populations; developing-worl; less-developed-country; less-developed-countries; less-developed-nation; less-developed-nation;

less-developed-world; lesser-developed-countr; lesser-developed-countrie; lesser-developed-nation; lesser-developed-nations; lesser-developed-world; under-developed-country; under-developed-countries; under-developed-nation; under-developed-nations; under-developed-world; underdeveloped-country; underdeveloped-countries; underdeveloped-nation; underdeveloped-nations; underdeveloped-world; middle-income-country; middle-income-countries; middle-income-nation; middle-income-nations; middle-income-population; middle-income-populations; low-income-country; low-income-countries; low-income-nation; low-income-nations; low-income-population; low-income-populations; lower-income-country; lower-income-countries; lower-income-nation; lower-income-nations; lower-income-population; lower-income-populations; underserved-country; underserved-countries; underserved-nation; underserved-nations; underserved-population; underserved-populations; under-served-population; under-served-populations; under-served-nation; under-served-nations; under-served-population; under-served-populations; deprived-country; deprived-countries; deprived-population; deprived-populations; high-burden-countr* ; high-burden-nation* ; countdown-countr* ; countdown-nation* ; poor-country ; poor-countries; poor-nation ; poor-nations; poor-population; poor-populations; poor-world; poorer-country; poorer-countries; poorer-nation ; poorer-nations; poorer-population; poorer-populations ; poorer-world; developing-economy; developing-economies; less-developed-economy; less-developed-economies; underdeveloped-economy; underdeveloped-economies; under-developed-economy; under-developed-economies; middle-income-economy; middle-income-economies; low-income-economy; low-income-economies; lower-income-economy; lower-income-economies; low-gdp; low-gnp; low-gross-domestic; low-gross-national; lower-gdp; lower-gnp; lower-gross-domestic; lower-gross-national; Imic; Imics ; third-world; lami-country; lami-countries; transitional-country ; transitional-countries; emerging-economy; emerging-economies; emerging-nation; emerging-nations.

Participant or population The population of this study is adults with type 2 diabetes in low- and middle-income countries (according to the World Bank's classification), any other type of diabetics will be excluded.

Intervention Studies including one or more of the complications/comorbidities outlined in NICE guidance (NICE 2025); AND one or more SDoH outlined in Göran and Whitehead (2021) (1. Age,

Sex, and constitutional factors; 2. Individual lifestyle factors; 3. Social and community networks; 4. Living and working conditions: Agriculture and food production, education, work environment, unemployment, water and sanitation, health care service, housing; 5. General socio-economic, cultural and environmental conditions).

Comparator Not essential for this review.

Study designs to be included Any quantitative study design will be included.

Eligibility criteria Inclusion criteria:

1. Studies including one or more of the complications/comorbidities outlined in NICE guidance (NICE 2025); AND one or more SDoH outlined in Göran and Whitehead (2021) (1. Age, Sex, and constitutional factors; 2. Individual lifestyle factors; 3. Social and community networks; 4. Living and working conditions: Agriculture and food production, education, work environment, unemployment, water and sanitation, health care service, housing; 5. General socio-economic, cultural and environmental conditions) ;
2. Studies including only adults (aged 18 years and over) with T2DM in LMICs (LMIC based on World Bank country classification)(World Bank, 2022);
3. Written in English language;
4. Published between 2004 to 2024;
5. Quantitative study design;
6. Full text and abstracts are available.

Exclusion Criteria:

1. Studies only including persons with Type 1 diabetes or gestational diabetes or any non-T2DM;
2. Reports and commentaries, conference abstracts, case reports, qualitative studies;
3. Reviews and systematic reviews (only used to screen for citations).

Information sources Searching sources of database: Ovid MEDLINE; Web of Science; Scopus.

Main outcome(s) Associations between social determinants of health and complications in People with type 2 diabetes in LMICs.

Additional outcome(s) None.

Data management Endnote library will be used for management of papers. Data will be extracted from individual studies in bespoke data extraction forms in Microsoft Excel. Data will be extracted by two independent reviewers on participant characteristics, type of study, sample size, outcome data, exposure data and main results.

Any discrepancies will be resolved by consensus or by a third member of the review team.

Quality assessment / Risk of bias analysis

Critical Appraisal Skills Programme(CASP) checklist will be applied as quality assess tool.

Strategy of data synthesis We do not expect to be able to carry out a meta-analysis due to the high heterogeneity of study design and outcomes chosen, so we will not carry out any statistical test. For this reason, a narrative analysis will be adopted.

Subgroup analysis None planned.

Sensitivity analysis None planned.

Language restriction Written in English language.

Country(ies) involved United Kingdom.

Keywords type 2 diabetes; complications; low- and middle- income countries.

Dissemination plans Journal papers, conference presentation.

Contributions of each author

Author 1 - Yuwen Li - Author 1 developed the research question, developed the search, data extraction, critical appraisal, analysis of results and drafted the manuscript.

Email: yl1113@exeter.ac.uk

Author 2 - Claire Hulme - Author 2 developed the research question, developed the search, data extraction, critical appraisal, analysis of results and drafted the manuscript.

Email: c.t.hulme@exeter.ac.uk

Author 3 - Antonieta Medina-Lara - Author 2 developed the research question, developed the search, read feedback on manuscript.

Email: a.medina-lara@exeter.ac.uk