Can type 2 diabetes and its associated complications be prevented or delayed in people with intermediate hyperglycaemia?

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WHO HEALTH EVIDENCE NETWORK SYNTHESIS REPORT, 80

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World Health Organization

European Region

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HEN Health Evidence Network
EVIDENCE FOR DECISION-MAKERS

World Health Organization
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Abstract

Diabetes affects one in 11 adults in the WHO European Region. It is a key risk factor for cardiovascular diseases, kidney failure, vision loss and nerve damage. Intermediate hyperglycaemia is a state in which blood glucose levels are above the normal range but below the threshold for diabetes. It is associated with an increased risk for type 2 diabetes, obesity, cardiovascular diseases and mortality. This review assessed the effects of interventions for people with intermediate hyperglycaemia. Results from randomized controlled trials indicate that the risk of developing type 2 diabetes in people with intermediate hyperglycaemia is reduced by lifestyle and (some) pharmacological interventions. Most of the available evidence did not find a difference in mortality or other serious health outcomes for either pharmacological or lifestyle interventions. However, the follow-up periods may have been too short for health outcomes to have emerged. The current evidence suggests that the risk of developing type 2 diabetes is reduced through intervention at the point of intermediate hyperglycaemia, but that the effects of these interventions on long-term health outcomes are unclear.

Keywords

SYSTEMATIC REVIEW, DIABETES MELLITUS TYPE 2/PREVENTION & CONTROL, POPULATION, PUBLIC HEALTH PRACTICE, RANDOMIZED CONTROL TRIAL

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ABBREVIATIONS

CI	confidence interval
HbA1c	haemoglobin A1c
RCT	randomized controlled trial
T2DM	type 2 diabetes mellitus
USPSTF	United States Preventive Services Task Force

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Authors

Chris Stinton
Senior Research Fellow, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Deshani Herath
Consultant Community Physician, Ministry of Health, Sri Lanka

Janette Parr
Research Associate, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Alice Mansbridge
Research Project Manager, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Hannah Williams
Research Project Manager, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Oxana Rotar
Head of Laboratory of Noncommunicable Diseases, Almazov National Medical Research Centre and WHO Collaborating Centre on Cardiovascular Diseases, eHealth and Value-based Care, St Petersburg, Russian Federation

Amy Grove
Professor of Health Technology Assessment and Implementation Science, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Lena Al-Khudairy
Associate Professor in Public Health and Health Technology Assessment, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Laura Kudrna
Assistant Professor in Health Research Methods, Institute of Applied Health Research, University of Birmingham, Birmingham, United Kingdom

Samantha A. Johnson
Research and Academic Support Librarian, University of Warwick Library, University of Warwick, Coventry, United Kingdom

Oyinlola Oyebode
Professor of Public Health, Queen Mary University of London, London, United Kingdom

Sian Taylor-Phillips
Professor of Population Health, Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom

Peer reviewers

Kamlesh Khunti
Professor of Primary Care Diabetes and Vascular Medicine, College of Life Sciences, University of Leicester, Leicester, United Kingdom

Sarah Wild
Professor of Epidemiology, Usher Institute, University of Edinburgh, Edinburgh, United Kingdom

Editorial team, WHO Regional Office for Europe

Noncommunicable Diseases Management unit

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Nino Berdzuli, former Director, Division of Country Health Programmes

Jill Farrington, Regional Medical Officer, Cardiovascular Diseases and Diabetes

Stefanie Gissing, Consultant, Noncommunicable Diseases

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SCREENING TERMINOLOGY

The following definitions of technical terms on screening are those used in the guide (1–5), while recognizing that they may not always align with definitions that appear in other texts.

Case-finding. This activity is conducted in daily clinical practice and involves finding cases by assessing patients who are indicated to be at risk of a condition when they seek help from the health system. It is an integral part of the health system (not an organized, systematic programme) and does not involve health authorities actively inviting people to participate.

Opportunistic screening. This is non-systematic screening that occurs when a screening test is offered to an individual (i) during service user–service provider interactions or (ii) on demand or on an ad hoc basis, or (iii) to individuals outside the eligible group. In practice, it is used when patients are in contact with the health system for a reason other than experiencing symptoms for the disease being screened for (if they are symptomatic, it is not screening) or if they request the screening test.

Population-level screening programme. An organized, systematic public health programme to reduce the burden of disease in society by identifying and managing preclinical disease or the risk factors of disease among asymptomatic people. A predefined eligible population (based on age and/or sex) is actively invited to participate in a quality-assured screening pathway that includes diagnosis and treatment.

Targeted screening. An organized, systematic screening programme that aims to improve health outcomes in people with the condition being screened for, among people identified as being at high risk of a specific condition (because of lifestyle factors, genetic variants or having another health condition). This is a form of population-level screening (see the definition above) and, similarly, involves actively inviting a predefined eligible population to participate in a quality-assured screening pathway that includes diagnosis and treatment. The difference is that targeted screening aims to identify groups of people with a higher risk of a specific condition beyond demographic factors such as age or sex. Examples include lung cancer screening for individuals who smoke or retinopathy screening for people with diabetes.

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SUMMARY

The issue

Diabetes mellitus (referred to as diabetes in this report) is a chronic health condition that affects one in 11 adults in the WHO European Region. Lesser degrees of hyperglycaemia that do not reach the threshold for diagnosis of diabetes (referred to as intermediate hyperglycaemia) can be associated with an increased risk of developing diabetes. In general, the risk of developing diabetes increases with time but risk will vary depending on how intermediate hyperglycaemia is defined. Intermediate hyperglycaemia is additionally linked to a heightened susceptibility to cardiovascular diseases and mortality. However, this risk too varies depending on how intermediate hyperglycaemia is defined. Treatment of intermediate hyperglycaemia may be important for preventing type 2 diabetes mellitus (T2DM) and its complications. The effectiveness of interventions in individuals with intermediate hyperglycaemia was explored in this report.

The synthesis question

The overall objective of this report was to evaluate the benefits and harms of interventions for people who have intermediate hyperglycaemia detected through any method.

Types of evidence

This report builds on a broad review published in 2021 that covered questions relating to screening, available interventions and the natural history of T2DM and intermediate hyperglycaemia. Four questions from this review were updated using a rapid review approach and a selected grey literature search. Searches were carried out in English and Russian between June and September 2022 for randomized controlled trials (RCTs) of interventions for intermediate hyperglycaemia. A total of 72 papers, reporting on 51 trials, were identified: 12 examined pharmacological interventions, 34 examined lifestyle interventions and five examined both. Thirty-four trials were identified in the previous review, and an additional 17 new trials were found in the updated search carried out for the present review.

Results

Meta-analyses indicated that, compared with a control group, the incidence of T2DM was lower among participants taking some pharmacological interventions (e.g. metformin vs placebo or standard care; thiazolidinediones vs placebo with/without diabetes education/lifestyle modification, alpha glucosidase inhibitors vs placebo or lifestyle modification). Meta-analyses of results from lifestyle interventions indicated that such interventions are associated with a lower risk of T2DM than comparators such as no intervention, standard care or general advice about healthy living. Most of the available evidence did not find a difference in mortality or other serious health outcomes for either pharmacological or lifestyle interventions. However, the duration of studies may have been too short for such longer-term outcomes to have emerged (range: 0.9–6 years).

The control arms of five RCTs in which participants received no active intervention indicated that 3–32% of people with intermediate hyperglycaemia returned to normoglycaemia during follow-up. The intervention arms of 19 RCTs reported some harms/adverse events that may be associated with interventions for intermediate hyperglycaemia in adults. Types of adverse event varied widely across studies and were not necessarily attributed to the study intervention.

Policy considerations

Based on the review findings, Member States of the WHO European Region could:

- exercise caution when specifically targeting people with intermediate hyperglycaemia using lifestyle interventions to reduce or delay the risk of T2DM given the uncertainty of the available evidence and fluctuations from intermediate hyperglycaemia to normoglycaemia and T2DM that can occur over time;
- exercise caution in promoting pharmacological interventions to reduce or delay T2DM for people with intermediate hyperglycaemia given the limitations in the evidence and the finding that pharmacological interventions did not reduce negative health outcomes;

- ensure that data are collected to support evaluation of the long-term impacts of any interventions that are planned or in place to reduce or delay T2DM for people with intermediate hyperglycaemia; and
- consider alternative approaches to delaying or reducing the risk of T2DM in the general population, such as primary prevention strategies and efforts to reduce sugar intake and obesity and to increase physical activity across the population that do not rely on the identification of intermediate hyperglycaemia in order to initiate action for the prevention of T2DM.

1. INTRODUCTION

1.1 Background

1.1.1 Intermediate hyperglycaemia and T2DM

Diabetes mellitus (referred to as diabetes in this report) is a chronic disorder of glucose metabolism caused by insufficient production of insulin or an inability of cells to respond adequately to insulin. It is a key risk factor for cardiovascular diseases, kidney failure, vision loss and nerve damage, and it can lead to amputations. Other consequences may include cancer, infections and liver disease (1). There are three main types of diabetes: type 1, type 2 (T2DM) and gestational diabetes.

Impaired glucose tolerance and impaired fasting glucose are not clinical entities but denote a state in which blood glucose levels are above the normal range while remaining below the diagnostic threshold for T2DM. This state is sometimes called intermediate hyperglycaemia or prediabetes (2). In general, the risk of developing diabetes for those with blood glucose levels above the normal range increases with time but varies with the definition used to define intermediate hyperglycaemia (i.e. the cut-off points used) (3–5). Diabetes and intermediate hyperglycaemia are detected by measuring plasma glucose during a fasting state (fasting plasma glucose), glucose tolerance (2 hours after a 75-g oral load of glucose has been consumed) or glycated haemoglobin (haemoglobin A1c; HbA1c). Fasting plasma glucose and the glucose tolerance test reflect blood glucose at the time of testing, while HbA1c reflects average blood glucose values over the previous 2–3 months. According to WHO and the International Diabetes Federation, a definition of impaired glucose tolerance requires both fasting plasma glucose of <7 mmol/L *and* 2-hour plasma glucose of 7.8–11.0 mmol/L detected through an oral glucose tolerance test (2). For a definition of impaired fasting glucose, WHO and the International Diabetes Federation use 6.1–6.9 mmol/L, while the American Diabetes Association uses a broader range of 5.6–6.9 mmol/L (6). The incidence of T2DM generally increases over time among people with intermediate hyperglycaemia, albeit with considerable variability in estimates (5). In addition to being associated with an increased risk for developing T2DM, intermediate hyperglycaemia is also associated with obesity and an increased risk for cardiovascular diseases and for mortality (7). Therefore, a question arises of whether early detection and treatment of intermediate hyperglycaemia may be considered important for preventing T2DM and its complications.

1.1.2 Intermediate hyperglycaemia and T2DM in the WHO European Region

There are an estimated 61 million people living with diabetes in the WHO European Region, and the number is expected to reach around 67 million by 2030 and 69 million by 2045 (8). Rates of intermediate hyperglycaemia are reported to be increasing (9), but accurate data are lacking (10). More than 70% of people with intermediate hyperglycaemia are reported to live in low- and middle-income countries: the lowest rates of intermediate hyperglycaemia are seen in the International Diabetes Federation's Europe Region (11).

1.1.3 WHO previous work on intermediate hyperglycaemia

There is limited prior WHO work specifically on intermediate hyperglycaemia. WHO has published guidelines for the diagnosis and classification of diabetes since 1965 (2,12–16), with thresholds for determining intermediate hyperglycaemia according to fasting plasma glucose (6.1–6.9 mmol/L) and glucose tolerance (7.8–11.0 mmol/L) being added in 2006 (2). A more recent WHO publication considered the value of HbA1c in the diagnosis of T2DM (12). It concluded that a threshold of 38.9 mmol/mol could be used as a cut-off to diagnose T2DM, but that no recommendation could be made on how to interpret HbA1c levels below 48 mmol/mol (6.5%) (12).

Although explicit guidance on the management of intermediate hyperglycaemia has not yet been produced by WHO, it is considered indirectly in documents concerning the prevention of noncommunicable diseases. For example, resolutions have been made regarding the prevention and control of T2DM and the implementation of policies and strategies to target the key risk factors for T2DM (17). Most Member States of the WHO European Region have national policies in place regarding T2DM, and surveys of national capacity to prevent noncommunicable diseases (including but not limited to diabetes) indicate that most of these Member States (90%) have a national policy to address diet and physical activity, of which around 80% are operational (18). The impact of these on intermediate hyperglycaemia is not currently known.

1.1.4 Context of this review

Several recent reviews have considered the effectiveness of interventions for intermediate hyperglycaemia (19–21). The present report builds on the most comprehensive of these, conducted by the United States Preventive Services Task Force (USPSTF) (21). The USPSTF review covered 23 questions relating to T2DM and intermediate hyperglycaemia, including the benefits and harms of interventions

for intermediate hyperglycaemia. It is the most comprehensive review to date on the topic. Searches were conducted up to September 2019 (with ongoing targeted surveillance up to May 2021) for studies that were conducted in countries with medium or higher values on the Human Development Index (22). Only studies that were published in English and were rated as being of fair or good quality were included in the review.

This report expands and updates three of the key questions from the USPSTF review on intermediate hyperglycaemia (regardless of its method of detection) to ensure that data relevant to the WHO European Region were captured. The current report incorporated evidence published after the formal USPSTF search was completed (September 2019), adding evidence from any country regardless of Human Development Index category (22) and not excluding evidence because of study quality.

This report focuses on the effectiveness of interventions for intermediate hyperglycaemia detected through any means. A companion Health Evidence Network synthesis report examines the evidence on population screening of asymptomatic adults for T2DM and intermediate hyperglycaemia (23).

1.1.5 Objectives of this report

The overall objective of this report was to evaluate the evidence on the effectiveness of interventions for intermediate hyperglycaemia by examining the following questions:

Q1. Do interventions for people with intermediate hyperglycaemia:

(a) delay or prevent development of T2DM, or

(b) affect mortality or serious health outcomes?

Q2. What proportion of people with intermediate hyperglycaemia will return to normoglycaemic levels without intervention?

Q3. What are the harms of intervention for intermediate hyperglycaemia?

1.2 Methodology

An enhanced rapid evidence assessment (24) was conducted between June and September 2022 in English and Russian. A systematic literature search was undertaken in the PubMed and Cochrane (reviews, trials and protocol) databases,

using terms relating to diabetes and intermediate hyperglycaemia, interventions for these conditions and population screening. The search was limited to RCTs and systematic reviews of RCTs. A start date of 2019 was applied to the search for RCTs to identify additional studies published since the USPSTF review (21). No date limit was applied to the systematic review search. References of included studies and relevant systematic reviews were assessed for additional trials. It was assumed that all information in the USPSTF review was correct and none of the studies in that review was reassessed for accuracy. Q1 was examined using data from RCTs. Q2 and Q3 were examined using data from the control arm (Q2) and intervention arm (Q3) of studies that were included in Q1. Full details of the search strategies, review methods and eligibility criteria can be found in Annex 1.

The search retrieved 2879 records in English after removal of duplicates and 185 records in Russian after removal of inappropriate records. Of these, 828 (819 in English and nine in Russian) articles were selected for full-text assessment. In total, 18 RCTs (reported in 19 papers) fulfilled the inclusion criteria. Data were also included from 34 trials (reported in 50 papers) identified in the USPSTF review (21) and three trials identified through scrutiny of prior systematic reviews. Annex 2 provides details of the studies excluded after full-text appraisal and Annex 3 of the data abstracted from the included references (25–96).

2. RESULTS

Section 2.1 presents the characteristics of the studies included in this review. Section 2.2 presents the evidence on whether interventions for people who have intermediate hyperglycaemia prevent or delay T2DM and section 2.3 presents the evidence regarding the effect of such interventions on serious health outcomes or mortality. Section 2.4 presents the evidence on the proportion of people with intermediate hyperglycaemia whose blood glucose levels return to normal without intervention. Section 2.5 presents the data on the harms of interventions for intermediate hyperglycaemia. Meta-analyses were conducted where it was meaningful to pool data: that is, where at least three similar studies assessed the same outcome and there was minimal clinical and methodological heterogeneity. Most results are presented in narrative form.

2.1 Study characteristics

Fifty-one trials (reported in 72 relevant papers) assessed interventions for people with intermediate hyperglycaemia: 12 examined pharmacological interventions, 34 examined lifestyle interventions and five examined both. The USPSTF review identified 34 trials and an additional 17 new trials were found in the updated search. For some trials, the same outcomes were presented in multiple papers. In such cases, data were reported from the paper with the longest follow-up.

The trials were conducted in Australia (69), Bangladesh (41), Canada (30), China (31,33–37,60,68,91,92,95), China, Hong Kong SAR (89,90), Denmark (64), Finland (54–56), India (38,39,61,62), Japan (63,65,88,94), the Netherlands (Kingdom of the) (32,82), the Russian Federation (52), Saudi Arabia (28), Spain (40), Sweden (58,59,67,75), Thailand (27), the United Kingdom (England (53,66,76,77,79,93), Scotland (29)), the United States of America (25,26,42–48,57,70,78,80,86,87) and across multiple countries (49–51,71–74,81,83–85). Most trials enrolled participants with a mean (or median) age between 50 and 60 years and included both men and women.

In the trials examining lifestyle interventions, the majority (34/39) included diet and physical activity components, such as education or advice on T2DM, diet and exercise; motivational interviewing to increase physical activity and reduce calorie intake; advice on diet and exercise with supervised exercise classes; and one trial involved a residential course in which participants' meals were made for them. The remaining five trials focused on physical activity alone (e.g. exercise classes or advice

to increase physical activity) (31,59,70,93) or diet alone (e.g. nutritional education) (40). The content and delivery of the lifestyle interventions varied widely between studies. For example, 31 studies were high contact (i.e. more than 360 minutes of contact time with the deliverer of interventions); three were medium contact (31–360 minutes of contact time with the deliverer of interventions); three were low contact (30 minutes or less of contact time with the deliverer of interventions) (41,71,89,90) and two had an unclear amount of contact (91,95). The interventions were delivered in group settings in 13 studies (26,27,31,38,41,57,59,64,66,76,78,79,93), individually in 14 studies (42,43,54,60,65,68–71,77,82,91,94,95), both individually and in groups in seven studies (28,33–37,40,53,63,86,87), through texts/e-mails in three studies (41,89,90,96), with family members in one study (29), or were not specified (61,67). A range of health-care professionals were involved in delivering the interventions, including nurses, dietitians, nutritionists, physiotherapists, physicians and life coaches. The study duration of trials of lifestyle interventions ranged from 6 months to 10 years, with a median duration of 2 years.

In the trials of pharmacological interventions, the following medications were assessed: metformin alone (39,45,52,61,78,80), insulin followed by metformin (80), acarbose (32,52,84,85), glimepiride (75), liraglutide alone (81), liraglutide with metformin (80), nateglinide (72), pioglitazone (25,61,68), ramipril (49–51), rosiglitazone (30,49–51), semaglutide (83), valsartan (73) and voglibose (88). The duration of pharmacological intervention studies ranged from 6 months to 15 years, with a median duration of 3 years.

2.2 Q1a. Do interventions for people with intermediate hyperglycaemia delay or prevent the development of T2DM?

This section deals with the effects of pharmacological or lifestyle interventions for progression to T2DM. Risks of bias were present in the majority of studies (Annex 3, Table A3.1).

2.2.1 Pharmacological interventions

Results for progression to T2DM among people with intermediate hyperglycaemia who received pharmacological interventions are shown in Table 1 and include meta-analyses of studies of metformin, thiazolidinediones and alpha glucosidase inhibitors.

Table 1. Progression to T2DM in trials of pharmacological interventions among people with intermediate hyperglycaemia

Pharmacological intervention	No. trials	Percentage with T2DM		RR (95% CI)[a]
		Intervention	Control	
Metformin (47,52,61,78,80)	5	43.1	50.0	**Pooled RR: 0.82 (0.70–0.96), I^2 = 20%**
Thiazolidinediones (25,50,62,68)	4	11.7	23.4	**Pooled RR: 0.59 (0.35–0.99), I^2 = 93%**
Alpha glucosidase inhibitors (32,52,84,85,88)	4	17.2	25.0	**Pooled RR: 0.63 (0.44–0.92), I^2 = 66%**
Glimepiride (75)	1	30.1	39.9	0.76 (0.55–1.05)
Liraglutide (81)	1	1.7	6.1	**0.28 (0.18–0.45)**
Metformin + lifestyle (39)	1	26.0	35.0	0.79 (0.60–1.32)
Nateglinide (72)	1	36.0	33.9	**1.06 (1.01–1.12)**
Ramipril (49)	1	17.1	18.5	0.93 (0.83–1.04)
Rosiglitazone + metformin (30)	1	13.6	39.4	**0.35 (0.20–0.59)**
Semaglutide (83)	1	0	4.0	0.20 (0.01–4.66)
Valsartan (73)	1	33.1	36.8	**0.90 (0.85–0.95)**

CI: confidence interval; RR: relative risk.

[a] Statistically significant results in bold.

Meta-analyses indicate that, compared with controls, the incidence of T2DM was lower among participants prescribed metformin (45,52,61,78,80), thiazolidinediones (either pioglitazone or rosiglitazone) (25,50,62,68) or alpha glucosidase inhibitors (either acarbose or voglibose) (32,52,84,85,88). There was substantial heterogeneity in the pooled estimates for thiazolidinediones and alpha glucosidase inhibitors. Evidence for pharmacological interventions with data only available from single trials suggested that the incidence of T2DM is lower than in controls for people prescribed liraglutide (81), valsartan (73), rosiglitazone combined with metformin (30)

or metformin combined with lifestyle intervention (39). Conversely, the risk of T2DM was higher among people taking nateglinide than in those taking a placebo (72). No difference in risk of T2DM was observed for single trials of ramipril (49), glimepiride (75) or semaglutide (83).

2.2.2 Lifestyle interventions

Meta-analysis of 38 RCTs indicated that lifestyle interventions (overall) were associated with a lower risk of T2DM than comparators such as no intervention, standard care or general advice about healthy living (Table 2). There was substantial heterogeneity, however, so this should be interpreted with caution.

Table 2. Progression to T2DM in trials of lifestyle interventions among people with intermediate hyperglycaemia

Lifestyle intervention	No. trials	Percentage with T2DM		Pooled RR (95% CI)[a]
		Intervention	Control	
All lifestyle	38	16.7	19.3	**0.73 (0.65–0.83), I^2 = 67%**
Level of contact				
High (26–29, 31,33,38,41,42,52,54,57,59, 61,63–69,76–79,82,86,87,93)	30	13.9	16.5	**0.73 (0.63–0.84), I^2 = 71%**
Medium (60,70,93,96)	4	4.1	11.7	**0.42 (0.19–0.90), I^2 = 53%**
Low (41,71,90)	3	19.9	21.0	0.95 (0.83–1.08), I^2 = 0%
Study duration				
<1 year (69,93,95)	3	5.6	7.3	0.29 (0.02–3.71), I^2 = 81%
1–2 years (26–28,31,38,40,41,60,64,70,71,76–78,86,87,91,96)	18	11.3	13.9	**0.68 (0.54–0.86), I^2 = 62%**

Table 2. contd

Lifestyle intervention	No. trials	Percentage with T2DM		Pooled RR (95% CI)[a]
		Intervention	Control	
>2 years (29,33,42,54,57,59,61,63,65–68,81,82,90,94)	17	17.5	19.6	**0.76 (0.65–0.89), I^2 = 73%**
Method of intervention delivery				
Group (26,27,31,38,41,57,59,64,66,76,78,79,93)	13	10.5	11.8	**0.76 (0.61–0.96), I^2 = 60%**
Individual (43,54,60,65,68,69,70,77,82,91,94,95)	12	11.4	19.6	**0.69 (0.52–0.91), I^2 = 72%**
Baseline body mass index (kg/m^2)				
<25.0 (41,60,63,65,95,96)	6	9.7	12.3	**0.52 (0.33–0.82), I^2 = 78%**
25.0–25.9 (26,33,38,40,61,68,69,71,79,82,90,91,93,94)	14	17.7	17.5	0.88 (0.76–1.01), I^2 = 50%
≥30.0 (26,28,29,42,53,54,57,59,64,66,67,70,76,78,86,87)	16	12.3	19.7	**0.68 (0.56–0.82), I^2 = 40%**

CI: confidence interval; RR: relative risk.

[a] Statistically significant results in bold.

Subgroup analyses suggested some differences in the efficacy of lifestyle interventions (Table 2). For example, the risk of T2DM was significantly lower in intervention groups than control groups in studies that were conducted over 1 year or longer but not in groups analysed at less than one1 year; in studies of people with a baseline body mass index of < 25.0 or ≥30.0 kg/m^2 but not among people with baseline body mass index of 25.0–25.9 kg/m^2; and in studies in which participants had medium or high contact with study deliverers but not low levels of contact. Both individual and group delivery of lifestyle interventions appeared to reduce the risk of T2DM compared with control groups. Caution is warranted in the interpretation of these results as heterogeneity was moderate to substantial across all subgroup analyses.

2.3 Q1b. Do interventions for people with intermediate hyperglycaemia affect mortality or serious health outcomes?

Summary results of the review and meta-analyses for mortality and serious health outcomes are shown in Table 3. Detailed results are reported in Table A3.2 (Annex 3). Risks of bias were present in the majority of studies (Annex 3, Table A3.1).

Table 3. Mortality and serious health outcomes in trials of interventions among people with intermediate hyperglycaemia

Health outcome	Significant effect in favour of the intervention was observed[a]	No significant effect of the intervention was observed
All-cause mortality	Lifestyle (37)	Acarbose (32), glimepiride (75), liraglutide (81), metformin (61), metformin + lifestyle (39,42,61), nateglinide + lifestyle (72), pioglitazone (62), ramipril (49), rosiglitazone (50), valsartan + lifestyle (73), voglibose (88), lifestyle (42,55,59,61,64,70,94)
Cardiovascular mortality	Lifestyle (37)	Glimepiride (75), liraglutide (81), metformin + standard lifestyle (44), nateglinide + lifestyle (72), ramipril (51), rosiglitazone (51), valsartan + lifestyle (73)
Non-fatal stroke	None	Liraglutide (81)
Non-fatal myocardial infarction	None	Liraglutide (81), pioglitazone (25)
End-stage renal disease	None	Valsartan (74)
Amputation	None	Nateglinide (72), valsartan (74)
Revascularization	None	Nateglinide (72), valsartan (73)

Table 3. contd

Health outcome	Significant effect in favour of the intervention was observed[a]	No significant effect of the intervention was observed
Retinopathy	None	Lifestyle (37)
Nephropathy	None	Lifestyle (37)
Neuropathy	None	Lifestyle (37)

None: no trial with this outcome showed a significant result.

2.3.1 Pharmacological interventions

The available evidence did not show a statistically significant difference in all-cause mortality (32,39,42,49,50,61,62,72,73,75,81,88), cardiovascular mortality (44,51,72,73,75,81), non-fatal stroke (81), non-fatal myocardial infarction (25,81), end-stage renal disease (74), amputations (72,74) or revascularization (72,73) between pharmacological intervention and control groups (no drug trial has looked at retinopathy, nephropathy, neuropathy). In general for each medication, data were only available from a single trial, the outcomes were rare and the duration of studies may have been too short for longer-term clinical outcomes to have emerged (range: 0.9–6.0 years). These limit the extent to which reliable conclusions can be drawn.

2.3.2 Lifestyle interventions

In most trials (six out of seven), the follow-up period was too short (median: 3 years) to allow differences to develop in all-cause mortality, and no association was found between lifestyle intervention and a reduction in all-cause mortality (55,59,61,64,70,94). While the general approach to intervention was similar across the studies (i.e. to increase physical activity and/or reduce calorie intake), the precise content varied (e.g. advice and encouragement to increase physical activity (61), advice on health promotion (64), advice to reduce calories and increase physical activity (55,94), a home-based exercise programme (70) and taught group exercises (59)). A significantly lower incidence of all-cause mortality was observed in the much longer Da Qing trial (30 years),[1] which included taught exercises, a calorie-controlled diet, and group

1. Full title: Da Qing Diabetes Prevention Outcome Study.

and individual counselling conducted over 6 years (37). Caution is required in the interpretation of this trial because of risks of bias (such as unclear randomization and differences in baseline characteristics between the groups) and lack of information on whether the lifestyle recommendations were continued after the initial 6-year period. Long-term follow-up of the DPP trial[2] found no difference (14.5% vs 13.2%) in all-cause mortality at a median of 21 years between participants in the intensive lifestyle intervention arm (which included access to a lifestyle coach for each participant, supervised physical activity sessions, taught sessions on behavioural management and frequent contact) and those in the standard care arm (advice about preventing T2DM) (47). However, randomization was not maintained during the follow-up period as all participants were offered the lifestyle intervention. No between-group differences were observed in incidence of retinopathy, nephropathy or neuropathy at 30-year follow-up in the Da Qing study (37).

2.4 Q2. What proportion of people with intermediate hyperglycaemia return to normoglycaemic levels without intervention?

The control arms of five RCTs in which participants received no active intervention (waiting list, placebo or no intervention) indicated that 3–32% of people with intermediate hyperglycaemia returned to normoglycaemia at follow-up. In the DPP trial, 24% of participants in the placebo arm experienced at least one episode of return to normal glucose tolerance at 3 years, although the study did not report how long this was maintained (21). In the STEP 6 trial,[3] 32% of participants (8/25) in the placebo arm were normoglycaemic at 68 weeks (83). In the Healthy Living Course trial, 26% of people in the waiting list arm were normoglycaemic at 6-month follow-up (69). Zhou (2011) reported that 3% of participants (2/58) in the control arm (no intervention) were normoglycaemic at 6 months (95). Finally, Oldroyd et al. (2006) reported that 13% of participants who received no intervention (4/32) were normoglycaemic at 2 years (77). No information was provided about the characteristics of those who returned to normoglycaemia without intervention in any of the five trials.

2. Full title: Diabetes Prevention Program (long-term follow-up is Diabetes Prevention Program Outcomes Study).
3. Full title: Semaglutide Treatment Effect in People with Obesity.

2.5 Q3. What are the harms of intervention for intermediate hyperglycaemia?

The intervention arm of 14 RCTs (20 papers) reported some harms/adverse events. The types of adverse event varied widely across studies and were not necessarily attributed to the study intervention.

2.5.1 Musculoskeletal events

The majority of lifestyle interventions reported musculoskeletal events such as sprains requiring medical attention (4.3 events/100 patient-years) (45), arthritis in knee causing pain in walking (1/83; 1.2%) (29), overall musculoskeletal symptoms (24.1 events/100 patient-years over 15 years of follow-up) (45), knee pain and musculoskeletal injury to lower back and leg (1/450; 0.22%) (57) and overall musculoskeletal problems (4/1333; 0.3%) (96).

2.5.2 Hypoglycaemic events

One study with a lifestyle intervention arm reported hypoglycaemic symptoms among four participants (0.8%) that might be related to the intervention (68).

Three RCTs of pharmacotherapy (72–74) (nateglinide or valsartan) and four trials of a combination of pharmacotherapy (liraglutide, pioglitazone, rosiglitazone and metformin) and a lifestyle intervention delivered in the same drug arm (30,48,68,81) reported hypoglycaemic events. Forms of hypoglycaemia varied across studies. Trials reported the severity of events as "serious" (0/1073 participants taking metformin (48)), "nonserious" (7/1073 participants taking metformin (48)), "mild" (676/4645 participants taking nateglinide (72)), "moderate" (214/4645 participants taking nateglinide (72)), "severe" (no participants taking liraglutide (81) and 21/4645 participants taking nateglinide (72)). Other studies reported any hypoglycaemic event with no further definitions/cut-offs (30,72–74).

2.5.3 Gastrointestinal adverse events

In studies of pharmacological interventions, gastrointestinal events were reported for 10 trials as follows:

- valsartan (diarrhoea in 612 (13.2%) participants) (73);
- nateglinide (diarrhoea in 593 (13%) participants) (72);

- liraglutide (nausea in 614 (41%) participants, diarrhoea in 379 (41%) participants and pancreatitis in 10 (0.6%) participants) (81);
- pioglitazone (unspecified digestive system events in 13 (4.3%) participants (25) and abdominal pain in 0–1 (0.2%) participants (68));
- acarbose (any gastrointestinal event in 597 (83%) participants (84), flatulence in 486 (68%) participants (84) and 15.9% of participants (number not specified) (33), diarrhoea in 229 (32%) participants (84) and 9.5% of participants (number not specified) (33), and enlarged abdomen in 13.5% of participants (number not specified) (33)); and
- metformin plus rosiglitazone (any gastrointestinal event in 37 (35.9%) participants (30), diarrhoea in 16 (16%) participants (30)), metformin (any gastrointestinal event in 29 (8%) participants (78) and gastrointestinal symptoms in the past year in 259 (28%) participants (48)).

2.5.4 Drug-related study withdrawals

Withdrawals from trials due to drug-specific adverse events were reported in three trials: one participant (3.4%) withdrew due to metformin side-effects (78), 46 participants (5%) withdrew due to voglibose side-effects (88) and four participants (2%) withdrew due to rosiglitazone side-effects (30).

2.5.5 Adverse event study withdrawals

A higher dose of acarbose (100 mg three times a day) was discontinued by 136 participants (19%) due to adverse events (84,85). A lower dose of acarbose (50 mg three times a day) was discontinued due to adverse events by 22 participants (36.7%) (32) and by two participants (1.6%) (33). Discontinuation due to adverse events was reported for 62 participants (7%) taking voglibose (88), 199 participants (13%) taking liraglutide (81), 520 participants (11.2%) taking nateglinide (72) and 556 participants (12.0%) taking valsartan (73). Unspecified adverse events were reported in 14 participants (17.1%) taking part in the HELP PD trial (57).[4]

2.5.6 Withdrawals due to weight gain

Nine participants (3%) randomized to pioglitazone withdrew due to weight gain (25), and 50 participants (1.9%) randomized to rosiglitazone (49–51) withdrew due to weight gain.

4. Full title: Healthy Living Partnerships to Prevent Diabetes.

2.5.7 Other reasons for withdrawals

Other reasons for study withdrawals were given in the DREAM[5] trial for participants receiving ramipril over 3 years; the most common reason for discontinuation of ramipril was patient's decision in 456 participants (17.4%), cough in 255 participants (9.7%), physician advice in 61 participants (2.3%), and peripheral oedema in 25 participants (1%) and angiooedema in three (0.1%) (49). In participants taking rosiglitazone, withdrawal due to oedema was reported in 439 participants (4.8%), physician advice in 50 participants (1.9%) and patient refusal in 503 participants (18.9%) (50).

5. Diabetes REduction Assessment with ramipril and rosiglitazone Medication.

3. DISCUSSION

3.1 Strengths and limitations of this review

An important strength of this review is that, first, it builds on the most comprehensive review to date on the benefits and harms of screening for T2DM and intermediate hyperglycaemia (16). Therefore, the evidence presented here is both appropriately broad and up to date. Secondly, the focus was on clinical outcomes, rather than intermediate outcomes. While there are more papers on intermediate outcomes such as blood pressure, weight loss and body mass index, a focus on these could lead to erroneous conclusions being drawn about the benefits of interventions on health outcomes. Thirdly, searches were conducted in both English and Russian, languages that are widely used in the WHO European Region.

This review has several limitations. First, it employed rapid evidence synthesis methods (24). While this approach is frequently used by policy-makers across the world to make decisions, it places the burden of assessment onto a single reviewer. While the first reviewer conducts all elements of the review, the second reviewer only reviews 20% of studies. Therefore, any mistakes relating to the 80% of tasks not reviewed by the second reviewer would go undetected. Secondly, not all possible clinical outcomes that were reported in the included papers were assessed, such as composite cardiovascular events, mixed fatal/non-fatal stroke or ischaemic heart disease. Thirdly, searches were limited to publications in English or Russian. A small number of studies in other languages were identified because their abstracts were in English, but relevant papers in other languages may exist but were not identified. Fourthly, the papers in languages other than English or Russian that were identified were translated using an online translation tool, and so the accuracy of these translations cannot be confirmed. Fifthly, there was substantial heterogeneity in the meta-analyses of the effect of thiazolidinediones, alpha glucosidase inhibitors and lifestyle interventions on T2DM. Therefore, caution is needed in the interpretation of these results. This is particularly important as a prior review of interventions (diet/physical activity) for intermediate hyperglycaemia reported the overall quality of the evidence to be "very low" (for mortality) and "very low" to "moderate" (for T2DM) using the GRADE (Grading of Recommendations, Assessment, Development and Evaluations) system, suggesting that the true effect of interventions may be different to the effects estimated in the trials (97).

3.2 Summary of results

The results of this review suggest that the risk of developing T2DM is reduced or delayed for people with intermediate hyperglycaemia who are assigned to interventions with metformin, thiazolidinediones, alpha glucosidase inhibitors, liraglutide or valsartan. No effect on T2DM was observed in trials of glimepiride, nateglinide, ramipril or semaglutide. Most evidence came from single trials of interventions. In relation to health outcomes, none of the included trials found evidence that pharmacological interventions reduce all-cause mortality, cardiovascular mortality, non-fatal stroke, non-fatal myocardial infarction, end-stage renal disease, amputations or revascularization. However, sample sizes may have been too small to detect statistically significant differences between intervention and control groups, and follow-up periods may not have been long enough for these types of outcome to have emerged.

There is also evidence that participating in a range of lifestyle interventions, such as those that include education or advice on T2DM, diet and exercise (with or without structured exercise classes) or motivational interviewing to increase physical activity and reduce calorie intake, is beneficial in delaying or reducing the risk of T2DM. Evidence of this effect was observed in studies conducted over 1 year or longer, but not in those covering less than 1 year); for individuals with a body mass index of more than 30 kg/m^2; or where there is at least a medium level of contact (31 minutes or more) between participants and deliverers of interventions. Delivery of these interventions appears to be helpful whether via groups or to individuals. However, due to the high level of heterogeneity, there is some uncertainty in these results. Participation in lifestyle interventions (education on diet and physical activity, with a high level of contact with deliverers of interventions and conducted over 2.8 years or more) was found to reduce cardiovascular mortality in one RCT (37). No effect was observed on retinopathy, nephropathy or neuropathy. In relation to all-cause mortality, most trials (five out of seven) found no effect but may have had insufficient follow-up (55,59,61,64,70); one trial found no effect but had contamination during follow-up (47), and one trial over a longer time period but at high risk of bias found a reduction in all-cause mortality (37).

Caution is warranted in extrapolating the results of the trials to real-world settings due to the definitions and methods used in the studies to determine intermediate hyperglycaemia. Most of the studies included people with impaired glucose tolerance (detected using the oral glucose tolerance test). This raises two main issues. First, in clinical practice, most people with intermediate hyperglycaemia would be detected

using a fasting plasma glucose or HbA1c test rather than the oral glucose tolerance test, so it is less likely that impaired glucose tolerance would be found. Secondly, as the risk of developing T2DM varied by how intermediate hyperglycaemia was defined in the studies, it is not clear if the effects observed in the trials of people with largely impaired glucose tolerance would be observed in people with intermediate hyperglycaemia of a different definition. Thirdly, people in RCTs may have blood glucose testing more often than those in the real-world setting.

Data from the intervention arms of RCTs included in Q1 indicated a range of harms, including musculoskeletal problems (e.g. sprains, knee pain), symptoms of hypoglycaemia or gastrointestinal problems (e.g. diarrhoea, nausea). Data from the control arm of five RCTs included in Q1 indicated that 3–32% (median: 24) of study participants returned to normoglycaemia without intervention over relatively short periods (study follow-up periods were 6 months to 3 years).

3.3 Comparison with previous reviews

Although somewhat different eligibility criteria were employed across the reviews, the results of the present review are broadly comparable to those of prior reviews (19–21,98,99). In terms of T2DM diagnosis, the reviews indicate that rates of T2DM are lower among people with intermediate hyperglycaemia who are allocated to treatment with metformin (19–21,98), alpha glucosidase inhibitors (acarbose, voglibose) (20,21,99), thiazolidinediones (pioglitazone, rosiglitazone) (20,21), liraglutide (21) or valsartan (21,100), and in those who participate in lifestyle interventions (diet plus exercise) (19–21) compared with those who do not. Mixed evidence has been found for metformin combined with lifestyle interventions (98). The current and previous reviews agree that there is no evidence that ramipril (20,21) or glimepiride (20,21) reduces progression to T2DM. A review by the Cochrane Collaboration concluded that there is currently insufficient evidence on whether insulin secretagogues (including but not limited to glimepiride) reduce the risk of developing T2DM, compared with placebo (100). Another Cochrane review reported no firm evidence regarding the risk of T2DM and dipeptidyl-peptidase-4 inhibitors or glucagon-like peptide-1 analogues (101).

In relation to other health outcomes, the present review is consistent with other reviews in that there was some evidence for a benefit of lifestyle interventions on cardiovascular mortality (21). However, there was little evidence that pharmacological or lifestyle interventions are associated with a reduction in health outcomes such as non-fatal stroke or myocardial infarction, end-stage renal disease, retinopathy

or neuropathy (21,97,99). Most studies had insufficient follow-up to properly evaluate health outcomes.

The types and frequencies of harms in the present review were similar to those reported in the USPSTF review (21). However, while the present review only looked at harms in the intervention arms, the USPSTF review included a comparison of harms between intervention and controls arms in 21 trials. It found no significant group differences for hypoglycaemia (sitagliptin, metformin, nateglinide, and rosiglitazone plus metformin), few differences for musculoskeletal problems (lifestyle interventions) and mixed results for gastrointestinal problems (no difference for pioglitazone, sitagliptin, nateglinide or valsartan; significantly greater in intervention groups for metformin, acarbose or liraglutide) and withdrawals due to adverse events (no difference for metformin, sitagliptin, nateglinide, valsartan, or rosiglitazone plus metformin; significantly greater in intervention groups for pioglitazone, ramipril, rosiglitazone, voglibose or liraglutide; and inconsistent results for acarbose).

The proportion of people who returned to normoglycaemia without intervention (3–32%; median: 24) was somewhat lower than the rates reported in a more comprehensive systematic review of cohort studies by the Cochrane Collaboration (5). In that review, the proportion of people who transitioned from intermediate hyperglycaemia to normoglycaemia was 33–59% in studies with 1–5 years of follow-up and 17–42% in studies with 6–11 years of follow-up. The differences in results may derive from the differing approaches of the two reviews; evidence in the Cochrane review was taken from prospective cohort studies that in general had longer follow-up, while evidence in the present review came from the control arms of RCTs that in general had shorter follow-up.

As indicated in section 1.1.4, a complementary review has been conducted in parallel to the present work (23). That review examined the effectiveness of population screening for T2DM and intermediate hyperglycaemia, using direct and indirect evidence. Whereas direct evidence refers to studies in which an applicable population is randomized to an offer of screening or no offer of screening and are followed up for health outcomes, indirect evidence refers to studies that have assessed different parts of the screening pathway that are combined to estimate what direct evidence might show. That review found no evidence (either direct or indirect) on population screening for intermediate hyperglycaemia, and no direct evidence of benefit of population screening for T2DM (from a single, biased and underpowered study) (23).

The results of the present review suggest that some types of lifestyle intervention (e.g. education on diet and exercise with or without structured exercises, with at least a medium level of contact with deliverers of interventions and conducted over at least 1 year) and pharmacological intervention (metformin, alpha glucosidase inhibitors or thiazolidinediones) may be effective in reducing progression to T2DM in people who have intermediate hyperglycaemia, with uncertainty on their long-term effects. However, this does not mean that a screening programme to identify and treat people with intermediate hyperglycaemia would be effective in reducing mortality or micro- and macrovascular health outcomes. This is because the effectiveness of screening is not determined by the presence of an effective intervention alone. It also relies on other factors, for example the availability of treatment, the accuracy of the screening test and an understanding of the natural history of a disease (102). The natural history of intermediate hyperglycaemia is not well understood, with up to 42% of people returning to normal glycaemic levels over 6–11 years of follow-up without any formal intervention taking place. Further, the applicability of studies of interventions for intermediate hyperglycaemia to real life is unclear. Finally, the spectrum of intermediate hyperglycaemia that would be detected by screening is not known, nor if the effects of interventions observed in people with screen-detected intermediate hyperglycaemia would be the same as those observed in the study cohorts who were not detected via screening.

3.4 Intermediate hyperglycaemia in the WHO European Region

Many of the single-country studies included in this review were conducted in settings within the WHO European Region, including Denmark, Finland, the Netherlands (Kingdom of the), the Russian Federation, Spain, Sweden and the United Kingdom. Of the multicountry studies included in the review, all but one used populations from within the WHO European Region. This means that the findings are likely to be applicable to high-income and upper-middle-income countries of the WHO European Region. However, it is less clear about the transferability of the evidence to low- or lower-middle-income countries in the Region.

The complementary review (23) examined country-level screening for intermediate hyperglycaemia and T2DM in the WHO European Region (23), where current practice regarding intermediate hyperglycaemia varied. Some countries are currently recommending or implementing approaches for detecting intermediate hyperglycaemia (e.g. assessment of blood glucose in general health checks or

through walk-in services, as well as case-finding among people at high risk of T2DM), while others do not have a strategy for detecting intermediate hyperglycaemia. Those people who are identified as having intermediate hyperglycaemia may be recommended or referred for behavioural intervention, in line with the European Association for the Study of Diabetes Guidelines (103) and the guidelines of the European Society of Cardiology (104). It is not clear whether or, if so, where pharmacological treatment is being offered routinely for those with intermediate hyperglycaemia within the WHO European Region.

3.5 Future research

First, most evidence reported outcomes after relatively short follow-up periods. Complications associated with T2DM (such as micro- and macrovascular problems) may take many years to emerge, beyond the duration of the study periods. Studies with longer follow-up are required to improve our understanding of the potential benefits and harms of interventions for people who have intermediate hyperglycaemia. Secondly, studies on lifestyle interventions in this review were conducted in many different ways. For example, some were conducted via groups, others with individuals; some lifestyle interventions involved a lot of contact or input with the intervention deliverers, other involved only a small amount of contact (or no direct contact); and some interventions focused on diet, some on exercise and some on both. Future research could be conducted to find out what the important parts of these interventions are. Thirdly, given that the most common definition of intermediate hyperglycaemia in the trials was impaired glucose tolerance, further research is required to clarify the impact of interventions for people with impaired fasting glucose and moderately elevated HbA1c. Fourthly, the natural history of intermediate hyperglycaemia is not well understood. While there is evidence that some people who have intermediate hyperglycaemia will return to normoglycaemia without intervention, it is not clear which people or why. Research on the characteristics of people who return to normoglycaemia from intermediate hyperglycaemia without intervention is required to understand this. Fifthly, the available evidence is derived from a relatively small number of high-income and upper-middle-income European countries (with only Denmark, Finland, the Netherlands (Kingdom of), the Russian Federation, Spain, Sweden and the United Kingdom represented). Therefore, results might not generalize to low- or lower-middle-income countries within the WHO European Region, or to those with different population demographics, prevalence of intermediate hyperglycaemia or health systems. Studies conducted in other Member States of the Region are required to understand if and/or how these differences affect the

benefits and harms of interventions in intermediate hyperglycaemia. Finally, a review based on searches in languages other than English or Russian might identify evidence from a broader range of countries.

3.6 Policy considerations

Based on the review findings, Member States of the WHO European Region could:

- exercise caution when specifically targeting people with intermediate hyperglycaemia using lifestyle interventions to reduce or delay the risk of T2DM given the uncertainty of the available evidence and fluctuations from intermediate hyperglycaemia to normoglycaemia and T2DM that can occur over time;
- exercise caution in promoting pharmacological interventions to reduce or delay T2DM for people with intermediate hyperglycaemia given the limitations in the evidence and the finding that pharmacological interventions did not reduce negative health outcomes;
- ensure that data are collected to support evaluation of the long-term impacts of any interventions that are planned or in place to reduce or delay T2DM for people with intermediate hyperglycaemia; and
- consider alternative approaches to delaying or reducing the risk of T2DM in the general population, such as primary prevention strategies and efforts to reduce sugar intake, obesity and to increase physical activity across the population that do not rely on the identification of intermediate hyperglycaemia in order to initiate action for the prevention of T2DM.

4. CONCLUSIONS

Intermediate hyperglycaemia is associated with an increased risk for developing T2DM, cardiovascular diseases and mortality. Nonetheless, the risk fluctuates based on the definition of intermediate hyperglycaemia applied. The present review assessed the RCT evidence on whether interventions for intermediate hyperglycaemia reduce these risks, and considered the harms of these interventions and the proportion of people who return to normoglycaemia without intervention. The results suggest that metformin, thiazolidinediones, alpha glucosidase inhibitors, liraglutide, valsartan and lifestyle interventions are associated with a reduced risk of developing T2DM. The impact of interventions on long-term health outcomes is unclear. There was some evidence of an association between lifestyle interventions and reduced risk of cardiovascular mortality, but no significant benefit of intervention was observed for other health outcomes, although follow-up periods may not have been long enough for these to become apparent. A range of harms were reported for pharmacological and lifestyle interventions, including musculoskeletal problems, hypoglycaemia and gastrointestinal problems. Between 3% and 32% of study participants returned to normoglycaemia without intervention. Further research is needed to establish the long-term benefits and harms of interventions for people who have intermediate hyperglycaemia.

ANNEX 1. SEARCH STRATEGY

One systematic literature search was undertaken to cover all review questions. The search was adapted from that used in the USPSTF review (21) and used terms relating to diabetes and intermediate hyperglycaemia, interventions for these conditions and population screening. The search was limited to RCTs and systematic reviews of RCTs. A data limit of 2019 was applied to the search for RCTs to identify studies published since the USPSTF review (21). No date limit was applied to the search for systematic reviews. The search was conducted in the MEDLINE and Cochrane (reviews, trials and protocol) databases.

Search terms

English

Search terms and combinations in English were used for a search carried out on 21 June 2022 in MEDLINE (Ovid MEDLINE ALL <1946 to 20 June 2022>) (Table A1.1) and in the Cochrane Library (Table A1.2). The search strategy also included scrutiny of the references in the included RCTs and relevant systematic reviews.

Table A1.1. English search terms and combinations for the search in MEDLINE

ID	Search term	Hits
1	exp Diabetes Mellitus, Type 2/	158 870
2	glucose tolerance.af.	64 060
3	impaired glucose tolerance.af.	11 875
4	igt.af.	5 405
5	impaired fasting glucose.af.	4 281
6	ifg.af.	4 556
7	exp Glucose Intolerance/	9 594
8	glucose intolerance.af.	17 743
9	exp Prediabetic State/	8 358
10	prediabetic state.af.	8 630

Table A1.1. contd

ID	Search term	Hits
11	prediabet*.af.	13 274
12	"pre diabetes".af.	2 248
13	diabetes mellitus type 2.af.	160 452
14	type 2 diabetes mellitus.af.	55 823
15	or/1–14	246 031
16	exp Blood Glucose/	177 790
17	blood glucose.ti,ab.	80 054
18	exp Glucose Tolerance Test/	36 624
19	ogtt.ti,ab.	9 515
20	glucose tolerance test.ti.	1 978
21	exp Glycated Hemoglobin A/	40 345
22	hemoglobin A1c.af.	22 106
23	hba1c.af.	41 793
24	fasting plasma glucose.ti,ab.	14 196
25	or/16–24	276 179
26	"hba(1c)".ti,ab.	4 599
27	hba1.ti,ab.	1 880
28	hba1c.ti,ab.	41 326
29	"hba 1c".ti,ab.	4 599
30	((glycosylated or glycated) and hemoglobin).ti,ab.	19 047
31	or/26–30	57 316
32	25 or 31	281 200

Table A1.1. contd

ID	Search term	Hits
33	15 and 32	107 707
34	exp Mass Screening/	140 749
35	screen*.ti,ab.	883 679
36	34 or 35	927 040
37	33 and 36	7 135
38	exp Pregnancy/ or gestation*.mp.	1 059 973
39	37 not 38	5 325
40	limit 39 to English language	4 933
41	limit 40 to "all adult (19 plus years)"	3 138
42	exp animals/ not humans.sh.	5 019 716
43	41 not 42	3 138
44	((randomised or randomized) and controlled and trial).ti,ab.	215 411
45	(controlled and trial).ti,ab.	245 439
46	controlled clinical trial.pt.	94 915
47	randomized controlled trial.pt.	571 201
48	exp Single-Blind Method/	32 010
49	exp Double-Blind Method/	172 183
50	exp Random Allocation/	106 855
51	or/44–50	869 286
52	43 and 51	446
53	limit 52 to yr="2019-Current"	99
54	review.pt. and systematic.ti,ab.	163 778

Table A1.1. contd

ID	Search term	Hits
55	systematic review.af.	261 880
56	exp "Review Literature as Topic"/ and systematic.ti,ab.	12 001
57	meta-analysis.pt.	162 528
58	exp Meta-Analysis as Topic/	25 161
59	meta-analysis.af.	247 257
60	meta synthesis.ti.	859
61	systematic literature review.ti.	5 416
62	this systematic review.tw.	43 346
63	"cochrane database of systematic reviews".jn.	15 888
64	or/54–63	425 781
65	51 and 64	27 791
66	43 and 65	13
67	53 or 66	105

Table A1.2. English search terms and combinations for the search in Cochrane Library

ID	Search	Hits
#1	MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees	19 976
#2	("glucose tolerance"):ti,ab,kw	9 474
#3	("impaired glucose tolerance"):ti,ab,kw	3 292
#4	("IGT"):ti,ab,kw	1 069
#5	(impaired fasting glucose):ti,ab,kw	2 407

Table A1.2. contd

ID	Search	Hits
#6	(ifg):ti,ab,kw	592
#7	MeSH descriptor: [Glucose Intolerance] explode all trees	1 239
#8	("glucose intolerance"):ti,ab,kw	2 100
#9	MeSH descriptor: [Prediabetic State] explode all trees	1 244
#10	("prediabetic state"):ti,ab,kw	1 303
#11	(prediabet*):ti,ab,kw	3 138
#12	("pre-diabetes"):ti,ab,kw	743
#13	("diabetes mellitus type 2"):ti,ab,kw	21 319
#14	("type 2 diabetes mellitus"):ti,ab,kw	13 385
#15	#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	38 882
#16	MeSH descriptor: [Blood Glucose] explode all trees	17 430
#17	"blood glucose":ti,ab	18 835
#18	MeSH descriptor: [Glucose Tolerance Test] explode all trees	2 127
#19	ogtt:ti,ab	2 525
#20	"glucose tolerance test":ti	158
#21	MeSH descriptor: [Glycated Hemoglobin A] explode all trees	6 401
#22	("hemoglobin A1c"):ti,ab,kw	8 045
#23	("HbA1c"):ti,ab,kw	19 903
#24	"fasting plasma glucose":ti,ab	5 345
#25	#16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24	50 718
#26	(hba(1c)):ti,ab	2 644

Table A1.2. contd

ID	Search	Hits
#27	hba1:ti,ab	325
#28	hba1c:ti,ab	19 903
#29	"hba 1c":ti,ab	1 506
#30	((Glycosylated or glycated) and hemoglobin):ti,ab	7 190
#31	#26 or #27 or #28 or #29 or #30	25 695
#32	#25 or #31	53 097
#33	#15 and #32	21 604
#34	MeSH descriptor: [Mass Screening] explode all trees	4 112
#35	screen*:ti,ab	80 956
#36	#34 or #35	81 872
#37	#33 and #36	1 943
#38	(gestation*):ti,ab,kw	27 874
#39	MeSH descriptor: [Pregnancy] explode all trees	24 542
#40	#38 or #39	45 537
#41	#37 not #40	1 753
#42	(adult*):ti,ab,kw	736 012
#43	#41 and #42	744
#44	MeSH descriptor: [Humans] explode all trees	647 921
#45	#43 and #44	324
#46	MeSH descriptor: [Animals] explode all trees	647 954
#47	#43 not #46	420
#48	#45 or #47	744

Russian

The following search terms and combinations in Russian were used for a search carried out from May to July 2023: диспансеризация, ежегодные профилактические осмотры, скрининг, популяционный скрининг, сахарный диабет, глюкоза сыворотки, глюкоза плазмы, промежуточная гипергликемия, ранние нарушения углеводного обмена, преддиабет, гипергликемия натощак, нарушенная толерантность к глюкозе, гликированный гемоглобин, гликозилированный гемоглобин, школа пациентов.

Study selection

Inclusion criteria

Studies that satisfied the criteria outlined under the patient/population, intervention, comparison and outcomes model with a duration of at least 6 months of follow-up were included (Table A1.3).

Table A1.3. Study inclusion criteria using the patient/population, intervention, comparison and outcomes model

Component	Criteria
Population	All questions: adults diagnosed with intermediate hyperglycaemia according to WHO (16) or American Diabetes Association (6) criteria Where data permit, subgroup analyses conducted according to the method of detection of intermediate hyperglycaemia (e.g. screen detection, clinical detection)
Intervention	Q1: any physical, dietary, pharmacological or psychological intervention Q2: no intervention Q3: any physical, dietary, pharmacological or psychological intervention
Comparators	Q1: no intervention, placebo, usual care or interventions with different treatment targets Q2: not applicable Q3: not applicable

Table A1.3. contd

Component	Criteria
Outcomes	Q1: T2DM, mortality, cardiovascular mortality, non-fatal myocardial infarction, non-fatal stroke, non-traumatic amputation, revascularization, nephropathy (chronic kidney disease), neuropathy (peripheral, autonomic, proximal, mononeuropathy), retinopathy (moderate/severe non-proliferative diabetic retinopathy, proliferative diabetic retinopathy), macular oedema, reduced visual acuity, blindness, foot ulcers Q2: normoglycaemia according to WHO (16) or American Diabetes Association (6) criteria Q3: harms of interventions
Study type	Q1: RCT Q2: control arm population of RCTs from Q1 Q3: intervention arm population of RCTs from Q1

Exclusion criteria

The following exclusion criteria were used:

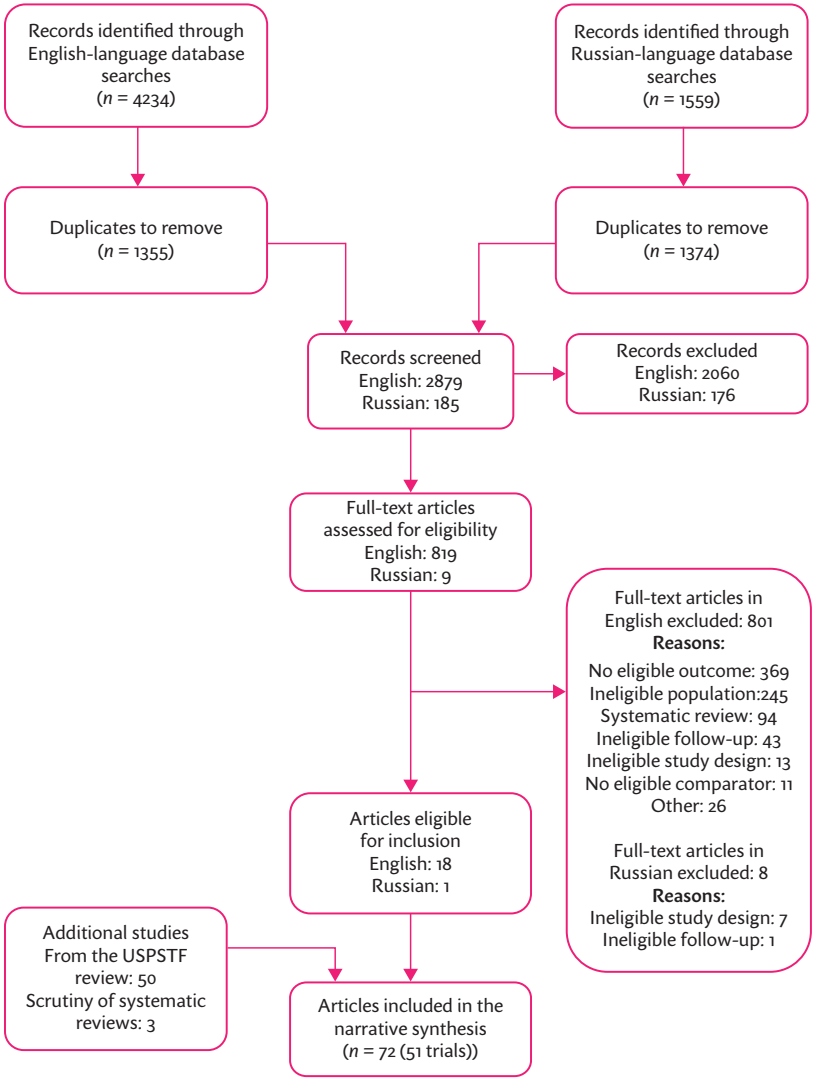
- studies on people:
  - younger than 18 years;
  - with T2DM;
  - who are pregnant;
  - with a recent hospitalization or myocardial infarction;
  - with known cardiovascular diseases or severe chronic kidney disease;
  - taking antipsychotic drugs or glucocorticoids;
  - living in an institution; and
  - with medical conditions limiting their applicability to primary-care-based populations (e.g. those with acute illness);
- studies where intermediate hyperglycaemia is self-reported or diagnosed according to methods other than HbA1c, fasting plasma glucose or oral glucose tolerance test;

- qualitative studies, modelling studies, case series, case reports, uncontrolled observational studies, retrospective cohort studies, any other non-RCT design;
- comparative effectiveness (head-to-head) trials of medications or behavioural counselling without another eligible control group;
- studies not generalizable to primary care (e.g. inpatient hospital, emergency departments, nursing homes, other institutional settings, school-based programmes or occupational settings);
- studies in which more than 10% of the sample do not meet the inclusion criteria; and
- letters, editorials, communications, conference abstracts and publications that contain no numerical outcomes data.

Selection process

An enhanced rapid evidence assessment approach was taken. Titles and abstracts of records identified by the searches were screened by one reviewer. A second reviewer then independently assessed a random 20% sample of the titles/abstracts. The search retrieved 2879 records in English after removal of duplicates and 185 records in Russian after removal of inappropriate records. The full publications of those papers considered potentially relevant by either reviewer (819 English and nine Russian) were then sourced, although outcomes were not considered at this stage. The full text of these articles was then assessed against the inclusion/exclusion criteria by one reviewer, with a random 20% sample assessed independently by a second reviewer. Disagreements were resolved by consensus or through discussion with a third reviewer. In total, 18 RCTs (reported in 19 papers) fulfilled the inclusion criteria. Data were also included from 34 trials (reported in 50 papers) identified in the USPSTF review (Fig. A1.1) **(21)** and three trials (reported in three papers) identified through the scrutiny of other systematic reviews. In total, data were available from 51 RCTs. Annex 2 lists the studies that were excluded following full-text screening with the reasons for exclusion.

Fig. A1.1. Study selection process



Quality appraisal

Risk of bias was assessed using the Cochrane Risk of Bias tool 2, which considers the risk of bias across five domains: (i) the randomization process, (ii) deviation from the intended intervention, (iii) missing outcome data, (iv) measurement of outcomes, and (v) selection of the reported results (105). Quality appraisal was conducted by one reviewer, with a random 20% assessed independently by a second reviewer. Disagreements were resolved by consensus or through discussion with a third reviewer. Annex 3 contains results from the risk of bias assessment.

Data extraction

The following data were extracted from all included studies: design; setting; country; duration; age and sex of participants; condition (type of intermediate hyperglycaemia: impaired fasting glucose or impaired glucose tolerance); diagnostic test used and criteria; number of participants screened, randomized and included in the analysis; and intervention and numbers in the intervention and control arm. The following data were extracted from the study results for both the intervention and control arm, recording the absolute numbers and hazard ratios and confidence intervals (CIs) for the data: number of people with T2DM and intermediate hyperglycaemia, all-cause mortality, cardiovascular mortality, non-fatal myocardial infarction, non-fatal stroke, non-traumatic amputation, revascularization, nephropathy (chronic kidney disease), neuropathy (general), neuropathy (specific subtypes: peripheral, autonomic, proximal, mononeuropathy), vision (moderate/severe non-proliferative diabetic retinopathy, proliferative diabetic retinopathy, macular oedema, reduced visual acuity), foot ulcers and harms (any).

Data were extracted by one reviewer, with a random 20% checked by a second reviewer. All data extracted were entered into a piloted electronic data collection form. Any disagreements were resolved by consensus or discussion with a third reviewer.

Methods of analysis and synthesis

Findings of studies were summarized in text and tables. As all outcomes were binary (did occur/did not occur), relative risks (with 95% CI values) were calculated using the numbers available in the papers, with the baseline number as denominator. Where multiple papers reported the same outcome, the one with the longest follow-up period was included. Where studies had multiple intervention arms, these were combined where it was reasonable to do so (e.g. they were more- or less-intensive versions of the same type of intervention). Meta-analyses were conducted using

Revman (106) where at least three similar studies were available. Random-effects models using the inverse-variance weighted method (DerSimonian and Laird method) were used to estimate pooled effects (107). A narrative summary was provided for all studies that could not be meta-analysed. Subgroup analyses were conducted in line with those of the USPSTF review and the same definitions for categorizing participants into subgroups was employed.

ANNEX 2. STUDIES EXCLUDED AFTER FULL-TEXT REVIEW

Table A2.1 lists the 801 articles that were excluded after full-text review in the English language searches and Table A2.2 the eight Russian language articles.

Table A2.1. Articles in the English language search that were excluded after full-text review

Reference	Reason for exclusion
Abbasnezhad A, Falahi E, Gonzalez MJ, Kavehi P, Fouladvand F, Choghakhori R. Effect of different dietary approaches compared with a regular diet on systolic and diastolic blood pressure in patients with type 2 diabetes: a systematic review and meta-analysis. Diabetes Res Clin Pract. 2020;163:108108. doi: 10.1016/j.diabres.2020.108108.	Systematic review
Abdelgani S, Puckett C, Adams J, Triplitt C, DeFronzo RA, Abdul-Ghani M. Insulin secretion is a strong predictor for need of insulin therapy in patients with new-onset diabetes and HbA1c of more than 10%: a post hoc analysis of the EDICT study. Diabetes Obes Metab. 2021;23(7):1631–9. doi: 10.1111/dom.14383.	No eligible outcome
Abdelgani S, Puckett C, Adams J, Triplitt C, DeFronzo RA, Abdul-Ghani M. Insulin secretion predicts the response to antidiabetic therapy in patients with new-onset diabetes. J Clin Endocrinol Metab. 2021;106(12):3497–504. doi: 10.1210/clinem/dgab403.	No eligible outcome
Abdul-Ghani M, Puckett C, Adams J, Khattab A, Baskoy G, Cersosimo E et al. Durability of triple combination therapy versus stepwise addition therapy in patients with new-onset T2DM: 3-year follow-up of EDICT. Diabetes Care. 2021;44(2):433–9. doi: 10.2337/dc20-0978.	No eligible comparator
Abdul-Ghani M, Migahid O, Megahed A, DeFronzo RA, Al-Ozairi E, Jayyousi A. Combination therapy with pioglitazone/exenatide improves beta-cell function and produces superior glycaemic control compared with basal/bolus insulin in poorly controlled type 2 diabetes: a 3-year follow-up of the Qatar study. Diabetes Obes Metab. 2020;22(12):2287–94. doi: 10.1111/dom.14153.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Abdullah F, Sattar A, Shaukat K, Ahmad S, Nawaz S, Maryam B. To compare the efficacy of dapagliflozin and metformin vs sitagliptin and metformin in newly diagnosed type 2 diabetic patients. Pak J Med Health Sci. 2021;15(1):85–6.	No eligible outcome
Abildgaard J, Johansen MY, Skov-Jeppesen K, Andersen LB, Karstoft K, Hansen KB et al. Effects of a lifestyle intervention on bone turnover in persons with type 2 diabetes: a post hoc analysis of the U-TURN Trial. Med Sci Sports Exerc. 2022;54(1):38–46. doi: 10.1249/MSS.0000000000002776.	No eligible outcome
Abreu M, Tumyan A, Elhassan A, Peicher K, Papacostea O, Dimachkie P et al. A randomized trial comparing the efficacy and safety of treating patients with type 2 diabetes and highly elevated HbA1c levels with basal-bolus insulin or a glucagon-like peptide-1 receptor agonist plus basal insulin: the SIMPLE study. Diabetes Obes Metab. 2019;21(9):2133–41. doi: 10.1111/dom.13794.	No eligible outcome
Abu-Saad K, Murad H, Barid R, Olmer L, Ziv A, Younis-Zeidan N et al. Development and efficacy of an electronic, culturally adapted lifestyle counseling tool for improving diabetes-related dietary knowledge: randomized controlled trial among ethnic minority adults with type 2 diabetes mellitus. J Med Internet Res. 2019;21(10):e13674. doi: 10.2196/13674.	No eligible outcome
Adam TC, Drummen M, Macdonald I, Jalo E, Siig-Vestentoft P, Martínez JA et al. Association of psychobehavioral variables with HOMA-IR and BMI differs for men and women with prediabetes in the PREVIEW lifestyle intervention. Diabetes Care. 2021;44(7):1491–8. doi: 10.2337/dc21-0059.	No eligible outcome
Aekplakorn W, Tantayotai V, Numsangkul S, Tatsato N, Luckanajantachote P, Himathongkam T. Evaluation of a community-based diabetes prevention program in Thailand: a cluster randomized controlled trial. J Prim Care Community Health. 2019;10:2150132719847374. doi: 10.1177/2150132719847374.	Already included in USPSTF review

Table A2.1. contd

Reference	Reason for exclusion
Agarwal P, Mukerji G, Desveaux L, Ivers NM, Bhattacharyya O, Hensel JM et al. Mobile app for improved self-management of type 2 diabetes: multicenter pragmatic randomized controlled trial. JMIR Mhealth Uhealth. 2019;7(1):e10321. doi: 10.2196/10321.	No eligible outcome
Agbaje OF, Coleman RL, Hattersley AT, Jones AG, Pearson ER, Shields BM et al. Predicting post one-year durability of glucose-lowering monotherapies in patients with newly-diagnosed type 2 diabetes mellitus: a MASTERMIND precision medicine approach (UKPDS 87). Diabetes Res Clin Pract. 2020;166:108333. doi: 10.1016/j.diabres.2020.108333.	No eligible outcome
Ahern AL, Griffin SJ, Wheeler GM, Sharp SJ, Aveyard P, Boyland EJ et al. The effect of referral to an open-group behavioural weight-management programme on the relative risk of normoglycaemia, non-diabetic hyperglycaemia and type 2 diabetes: secondary analysis of the WRAP trial. Diabetes Obes Metab. 2020;22(11):2069–76. doi: 10.1111/dom.14123.	No eligible comparator
Åkerblom A, Oldgren J, Latva-Rasku A, Johansson L, Lisovskaja V, Karlsson C et al. Effects of DAPAgliflozin on CARDiac substrate uptake, myocardial efficiency, and myocardial contractile work in type 2 diabetes patients: a description of the DAPACARD study. Ups J Med Sci. 2019;124(1):59–64. doi: 10.1080/03009734.2018.1515281.	No eligible outcome
Al-Aubaidy HA, Dayan A, Deseo MA, Itsiopoulos C, Jamil D, Hadi NR et al. Twelve-week Mediterranean diet intervention increases citrus bioflavonoid levels and reduces inflammation in people with type 2 diabetes mellitus. Nutrients. 2021;13(4):1133. doi: 10.3390/nu13041133.	No eligible outcome
Alfawaz H, Naeef AF, Wani K, Khattak MNK, Sabico S, Alnaami AM et al. Improvements in glycemic, micronutrient, and mineral indices in Arab adults with pre-diabetes post-lifestyle modification program. Nutrients. 2019;11(11)2775. doi: 10.3390/nu11112775.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Al-Ghafri TS, Al-Harthi S, Al-Farsi Y, Craigie AM, Bannerman E, Anderson AS. Changes in self-efficacy and social support after an intervention to increase physical activity among adults with type 2 diabetes in Oman: a 12-month follow-up of the MOVEdiabetes trial. Sultan Qaboos Univ Med J. 2021;21(1):e42–9. doi: 10.18295/squmj.2021.21.01.006.	No eligible outcome
Al-Hamdan R, Avery A, Salter A, Al-Disi D, Al-Daghri NM, McCullough F. Identification of education models to improve health outcomes in Arab women with pre-diabetes. Nutrients. 2019;11(5):1113. doi: 10.3390/nu11051113.	No eligible outcome
Al-Hamdan R, Avery A, Al-Disi D, Sabico S, Al-Daghri NM, McCullough F. Efficacy of lifestyle intervention program for Arab women with prediabetes using social media as an alternative platform of delivery. J Diabetes Investig. 2021;12(10):1872–80. doi: 10.1111/jdi.13531.	No eligible outcome
Alison C, Anselm S. The effectiveness of diabetes medication therapy adherence clinic to improve glycaemic control among patients with type 2 diabetes mellitus: a randomised controlled trial. Med J Malaysia. 2020;75(3):246–53. PMID: 32467540.	No eligible outcome
Alonso-Dominguez R, García-Ortiz L, Patino-Alonso MC, Sánchez-Aguadero N, Gomez-Marcos MA, Recio-Rodriguez JI. Effectiveness of a multifactorial intervention in increasing adherence to the Mediterranean diet among patients with diabetes mellitus type 2: a controlled and randomized study (EMID study). Nutrients. 2019;11(1):162. doi: 10.3390/nu11010162.	No eligible outcome
Alonso-Dominguez R, Patino-Alonso MC, Sánchez-Aguadero N, García-Ortiz L, Recio-Rodriguez JI, Gomez-Marcos MA. Effect of a multifactorial intervention on the increase in physical activity in subjects with type 2 diabetes mellitus: a randomized clinical trial (EMID study). Eur J Cardiovasc Nurs. 2019;18(5):399–409. doi: 10.1177/1474515119835048.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Alshehri MM, Alenazi AM, Alothman SA, Rucker JL, Phadnis MA, Miles JM et al. Using cognitive behavioral therapy for insomnia in people with type 2 diabetes, pilot RCT Part I: sleep and concomitant symptom. Behav Sleep Med. 2021;19(5):652–71. doi: 10.1080/15402002.2020.1831501.	No eligible outcome
Álvarez C, Ramirez-Campillo R, Lucia A, Ramirez-Velez R, Izquierdo M. Concurrent exercise training on hyperglycemia and comorbidities associated: non-responders using clinical cutoff points. Scand J Med Sci Sports. 2019;29(7):952–67. doi: 10.1111/sms.13413.	No eligible outcome
Álvarez-Canales MFL, Salazar-López SS, Farfán-Vázquez D, Martínez-López YE, Gonzalez-Mena JN, Jiménez-Ceja LM et al. Effect of linagliptin on glucose metabolism and pancreatic beta cell function in patients with persistent prediabetes after metformin and lifestyle. Sci Rep. 2021;11(1):8750. doi: 10.1038/s41598-021-88108-8.	Ineligible population
Andreadis P, Karagiannis T, Malandris K, Avgerinos I, Liakos A, Manolopoulos A et al. Semaglutide for type 2 diabetes mellitus: a systematic review and meta-analysis. Diabetes Obes Metab. 2018;20(9):2255–63. doi: 10.1111/dom.13361.	Systematic review
Andreae SJ, Andreae LJ, Cherrington AL, Richman JS, Johnson E, Clark D et al. Peer coach delivered storytelling program improved diabetes medication adherence: a cluster randomized trial. Contemp Clin Trials. 2021;104:106358. doi: 10.1016/j.cct.2021.106358.	No eligible outcome
Ang L, Kidwell KM, Dillon B, Reiss J, Fang F, Leone V et al. Dapagliflozin and measures of cardiovascular autonomic function in patients with type 2 diabetes (T2D). J Diabetes Complications. 2021;35(8):107949. doi: 10.1016/j.jdiacomp.2021.107949.	No eligible outcome
Angellotti E, D'Alessio D, Dawson-Hughes B, Chu Y, Nelson J, Hu P et al. Effect of vitamin D supplementation on cardiovascular risk in type 2 diabetes. Clin Nutr. 2019;38(5):2449–53. doi: 10.1016/j.clnu.2018.10.003.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Angwin C, Jenkinson C, Jones A, Jennison C, Henley W, Farmer A et al. TriMaster: randomised double-blind crossover study of a DPP4 inhibitor, SGLT2 inhibitor and thiazolidinedione as second-line or third-line therapy in patients with type 2 diabetes who have suboptimal glycaemic control on metformin treatment with or without a sulfonylurea – A MASTERMIND study protocol. BMJ Open. 2020;10(12):e042784. doi: 10.1136/bmjopen-2020-042784.	No eligible outcome
Anirban M, Soumyabrata RC, Debmalya S, Bhattacharjee K. Liraglutide: Indian experience. Indian J Endocrinol Metab. 2019;22(6):818–26. doi: 10.4103/ijem.IJEM_187_18.	Systematic review
Apolzan JW, Venditti EM, Edelstein SL, Knowler WC, Dabelea D, Boyko EJ et al. Long-term weight loss with metformin or lifestyle intervention in the Diabetes Prevention Program Outcomes Study. Ann Intern Med. 2019;170(10):682–90. doi: 10.7326/M18-1605.	Already included in USPSTF review
Araki E, Yamashita S, Arai H, Yokote K, Satoh J, Inoguchi T et al. Efficacy and safety of pemafibrate in people with type 2 diabetes and elevated triglyceride levels: 52-week data from the PROVIDE study. Diabetes Obes Metab. 2019;21(7):1737–44. doi: 10.1111/dom.13686.	Ineligible population
Araki E, Terauchi Y, Watada H, Deenadayalan S, Christiansen E, Horio H et al. Efficacy and safety of oral semaglutide in Japanese patients with type 2 diabetes: a post hoc subgroup analysis of the PIONEER 1, 3, 4 and 8 trials. Diabetes Obes Metab. 2021;23(12):2785–94. doi: 10.1111/dom.14536.	Ineligible population
Arguedas JA, Leiva V, Wright JM. Blood pressure targets for hypertension in people with diabetes mellitus. Cochrane Database Syst Rev. 2013;(10):CD008277. doi: 10.1002/14651858.CD008277.pub2.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Aroda VR, Christophi CA, Edelstein SL, Perreault L, Kim C, Golden SH et al. Circulating sex hormone binding globulin levels are modified with intensive lifestyle intervention, but their changes did not independently predict diabetes risk in the Diabetes Prevention Program. BMJ Open Diabetes Res Care. 2020;8(2):e001841. doi: 10.1136/bmjdrc-2020-001841.	No eligible outcome
Aroda VR, Rosenstock J, Terauchi Y, Altuntas Y, Lalic NM, Morales Villegas EC et al. PIONEER 1: randomized clinical trial of the efficacy and safety of oral semaglutide monotherapy in comparison with placebo in patients with type 2 diabetes. Diabetes Care. 2019;42(9):1724–32. doi: 10.2337/dc19-0749.	Ineligible population
Aronson R, Umpierrez G, Stager W, Kovatchev B. Insulin glargine/lixisenatide fixed-ratio combination improves glycaemic variability and control without increasing hypoglycaemia. Diabetes Obes Metab. 2019;21(3):726–31. doi: 10.1111/dom.13580.	Ineligible population
Arslanian SA, El Ghormli L, Kim JY, Tjaden AH, Barengolts E, Caprio S et al. OGTT glucose response curves, insulin sensitivity, and beta-cell function in RISE: comparison between youth and adults at randomization and in response to interventions to preserve beta-cell function. Diabetes Care. 2021;44(3):817–25. doi: 10.2337/dc20-2134.	Ineligible population
Attridge M, Creamer J, Ramsden M, Cannings-John R, Hawthorne K. Culturally appropriate health education for people in ethnic minority groups with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2014;(9):CD006424. doi: 10.1002/14651858.CD006424.pub3.	Systematic review
Ayers D, Kanters S, Goldgrub R, Hughes M, Kato R, Kragh N. Network meta-analysis of liraglutide versus dipeptidyl peptidase-4 inhibitors for the treatment of type 2 diabetes in Japanese patients. Curr Med Res Opin. 2017;33(9):1653–61. doi: 10.1080/03007995.2017.1345730.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Bacha F, El Ghormli L, Arslanian S, Zeitler P, Laffel LM, Levitt Katz LE et al. Predictors of response to insulin therapy in youth with poorly-controlled type 2 diabetes in the TODAY trial. Pediatr Diabetes. 2019;20(7):871–9. doi: 10.1111/pedi.12906.	No eligible outcome
Baer HJ, Rozenblum R, De La Cruz BA, Orav EJ, Wien M, Nolido NV et al. Effect of an online weight management program integrated with population health management on weight change: a randomized clinical trial. JAMA. 2020;324(17):1737–46. doi: 10.1001/jama.2020.18977.	No eligible outcome
Bajaj HS, Brown RE, Jiandani D, Venn K, Al-Asaad H, Khandwala H et al. Goal achievement of HbA1c and LDL-cholesterol in a randomized trial comparing colesevelam with ezetimibe: GOAL-RCT. Diabetes Obes Metab. 2020;22(10):1722–8. doi: 10.1111/dom.14084.	Ineligible population
Baker MK, Simpson K, Lloyd B, Bauman AE, Singh MAF. Behavioral strategies in diabetes prevention programs: a systematic review of randomized controlled trials. Diabetes Res Clin Pract. 2011;91(1):1–12. doi: 10.1016/j.diabres.2010.06.030.	Systematic review
Balducci S, Haxhi J, Sacchetti M, Orlando G, Cardelli P, Vitale M et al. Relationships of changes in physical activity and sedentary behavior with changes in physical fitness and cardiometabolic risk profile in individuals with type 2 diabetes: the Italian Diabetes and Exercise Study 2 (IDES_2). Diabetes Care. 2022;45(1):213–21. doi: 10.2337/dc21-1505.	No eligible outcome
Balducci S, D'Errico V, Haxhi J, Sacchetti M, Orlando G, Cardelli P et al. Effect of a behavioral intervention strategy on sustained change in physical activity and sedentary behavior in patients with type 2 diabetes: the IDES_2 randomized clinical trial. JAMA. 2019;321(9):880–90. doi: 10.1001/jama.2019.0922.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Baldwin PA, Sanatkar S, Clarke J, Fletcher S, Gunn J, Wilhelm K et al. A web-based mental health intervention to improve social and occupational functioning in adults with type 2 diabetes (the Springboard Trial): 12-month outcomes of a randomized controlled trial. J Med Internet Res. 2020;22(12):e16729. doi: 10.2196/16729.	No eligible outcome
Ballin M, Nordström P. Does exercise prevent major non-communicable diseases and premature mortality? A critical review based on results from randomized controlled trials. J Intern Med. 2021;290(6):1112–19. doi: 10.1111/joim.13353.	Systematic review
Bancks MP, Chen H, Balasubramanyam A, Bertoni AG, Espeland MA, Kahn SE et al. Type 2 diabetes subgroups, risk for complications, and differential effects due to an intensive lifestyle intervention. Diabetes Care. 2021;44(5):1203–10. doi: 10.2337/dc20-2372.	Ineligible population
Barengo NC, Acosta T, Arrieta A, Ricaurte C, Smits D, Florez K et al. Early lifestyle interventions in people with impaired glucose tolerance in northern Colombia: the DEMOJUAN Project. Int J Environ Res Public Health. 2019;16(8):1403. doi: 10.3390/ijerph16081403.	Ineligible population
Basterra-Gortari FJ, Ruiz-Canela M, Martínez-Gonzalez MA, Babio N, Sorli JV, Fito M et al. Effects of a Mediterranean eating plan on the need for glucose-lowering medications in participants with type 2 diabetes: a subgroup analysis of the PREDIMED Trial. Diabetes Care. 2019;42(8):1390–7. doi: 10.2337/dc18-2475.	No eligible outcome
Battelino T, Bergenstal RM, Rodriguez A, Fernandez Lando L, Bray R, Tong Z et al. Efficacy of once-weekly tirzepatide versus once-daily insulin degludec on glycaemic control measured by continuous glucose monitoring in adults with type 2 diabetes (SURPASS-3 CGM): a substudy of the randomised, open-label, parallel-group, phase 3 SURPASS-3 trial. Lancet Diabetes Endocrinol. 2022;10(6):407–17. doi: 10.1016/S2213-8587(22)00077-8.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Bauman V, Ariel-Donges AH, Gordon EL, Daniels MJ, Xu D, Ross KM et al. Effect of dose of behavioral weight loss treatment on glycemic control in adults with prediabetes. BMJ Open Diabetes Res Care. 2019;7(1):e000653. doi: 10.1136/bmjdrc-2019-000653.	No eligible comparator
Baviskar MP, Rangari S, Mishra S, Mohanta BS. Assessment of a group-based comprehensive diabetes management program to improve glycemic control, quality of life and self-care behavior in patients with type 2 diabetes mellitus in a primary healthcare setting of a metropolitan city in India: CDMP MUM Trial. Int J Diabetes Dev Ctries. 2021;41(1):156–63. doi: 10.1007/s13410-020-00828-1.	No eligible outcome
Belcher G, Lambert C, Goh KL, Edwards G, Valbuena M. Cardiovascular effects of treatment of type 2 diabetes with pioglitazone, metformin and gliclazide. Int J Clin Pract. 2004;58(9):833–7. doi: 10.1111/j.1742-1241.2004.00291.x.	Ineligible population
Benham JL, Booth JE, Dunbar MJ, Doucette S, Boule NG, Kenny GP et al. Significant dose–response between exercise adherence and hemoglobin A1c change. Med Sci Sports Exerc. 2020;52(9):1960–5. doi: 10.1249/MSS.0000000000002339.	No eligible outcome
Benson GA, Sidebottom A, Hayes J, Miedema MD, Boucher J, Vacquier M et al. Impact of ENHANCED (diEtitiaNs Helping pAtieNts CarE for Diabetes) telemedicine randomized controlled trial on diabetes optimal care outcomes in patients with type 2 diabetes. J Acad Nutr Diet. 2019;119(4):585–98. doi: 10.1016/j.jand.2018.11.013.	No eligible outcome
Ben-Yacov O, Godneva A, Rein M, Shilo S, Kolobkov D, Koren N et al. Personalized postprandial glucose response-targeting diet versus Mediterranean diet for glycemic control in prediabetes. Diabetes Care. 2021;44(9):1980–91. doi: 10.2337/dc21-0162.	No eligible comparator

Table A2.1. contd

Reference	Reason for exclusion
Bergenstal RM, Mullen DM, Strock E, Johnson ML, Xi MX. Randomized comparison of self-monitored blood glucose (BGM) versus continuous glucose monitoring (CGM) data to optimize glucose control in type 2 diabetes. J Diabetes Complications. 2022;36(3):108106. doi: 10.1016/j.jdiacomp.2021.108106.	No eligible outcome
Bergenstal RM, Johnson M, Passi R, Bhargava A, Young N, Kruger DF et al. Automated insulin dosing guidance to optimise insulin management in patients with type 2 diabetes: a multicentre, randomised controlled trial. Lancet. 2019;393(10176):1138–48. doi: 10.1016/S0140-6736(19)30368-X.	Ineligible population
Bergenstal RM, Peyrot M, Dreon DM, Aroda VR, Bailey TS, Brazg RL et al. Implementation of basal-bolus therapy in type 2 diabetes: a randomized controlled trial comparing bolus insulin delivery using an insulin patch with an insulin pen. Diabetes Technol Ther. 2019;21(5):273–85. doi: 10.1089/dia.2018.0298.	Ineligible population
Berger SE, Huggins GS, McCaffery JM, Jacques PF, Lichtenstein AH. Change in cardiometabolic risk factors associated with magnitude of weight regain 3 years after a 1-year intensive lifestyle intervention in type 2 diabetes mellitus: the Look AHEAD Trial. J Am Heart Assoc. 2019;8(20):e010951. doi: 10.1161/JAHA.118.010951.	No eligible outcome
Bergmark BA, Bhatt DL, McGuire DK, Cahn A, Mosenzon O, Steg PG et al. Metformin use and clinical outcomes among patients with diabetes with or without heart failure or kidney dysfunction: observations from the SAVOR-TIMI 53 Trial. Circulation. 2019;140(12):1004–14. doi: 10.1161/CIRCULATIONAHA.119.040144.	Ineligible population
Berkowitz SA, Chang Y, Porneala B, Cromer SJ, Wexler DJ, Delahanty LM. Does the effect of lifestyle intervention for individuals with diabetes vary by food insecurity status? A preplanned subgroup analysis of the REAL HEALTH randomized clinical trial. BMJ Open Diabetes Res Care. 2020;8(1):e001514. doi: 10.1136/bmjdrc-2020-001514.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Bessell E, Fuller NR, Markovic TP, Lau NS, Burk J, Hendy C et al. Effects of alpha-cyclodextrin on cholesterol control and hydrolyzed ginseng extract on glycemic control in people with prediabetes: a randomized clinical trial. JAMA Netw Open. 2020;3(11):e2023491. doi: 10.1001/jamanetworkopen.2020.23491.	No eligible comparator
Bethel MA, Mentz RJ, Merrill P, Buse JB, Chan JC, Goodman SG et al. Microvascular and cardiovascular outcomes according to renal function in patients treated with once-weekly exenatide: insights from the EXSCEL trial. Diabetes Care. 2020;43(2):446–52. doi: 10.2337/dc19-1065.	Ineligible population
Bethel MA, Stevens SR, Buse JB, Choi J, Gustavson SM, Iqbal N et al. Exploring the possible impact of unbalanced open-label drop-in of glucose-lowering medications on EXSCEL outcomes. Circulation. 2020;141(17):1360–70. doi: 10.1161/CIRCULATIONAHA.119.043353.	Ineligible population
Bharmal SH, Cho J, Alarcon Ramos GC, Ko J, Cameron-Smith D, Petrov MS. Acute nutritional ketosis and its implications for plasma glucose and glucoregulatory peptides in adults with prediabetes: a crossover placebo-controlled randomized trial. J Nutr. 2021;151(4):921–9. doi: 10.1093/jn/nxaa417.	No eligible outcome
Biessels GJ, Verhagen C, Janssen J, van den Berg E, Wallenstein G, Zinman B et al. Effects of linagliptin vs glimepiride on cognitive performance in type 2 diabetes: results of the randomised double-blind, active-controlled CAROLINA-COGNITION study. Diabetologia. 2021;64(6):1235–45. doi: 10.1007/s00125-021-05393-8.	No eligible outcome
Billings LK, Agner BFR, Altuntas Y, Gron R, Halladin N, Klonoff DC et al. The benefit of insulin degludec/liraglutide (IDegLira) compared with basal-bolus insulin therapy is consistent across participant subgroups with type 2 diabetes in the DUAL VII randomized trial. J Diabetes Sci Technol. 2021;15(3):636–45. doi: 10.1177/1932296820906888.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Birudaraju D, Cherukuri L, Kinninger A, Dahal S, Lakshmanan S, Rezvanizadeh V et al. Prevalence of normal coronary arteries by coronary computed tomography angiography (CCTA) in patients with type 2 diabetes mellitus from Semaglutide Treatment on Coronary Plaque Progression (STOP) trial. J Diabetes Complications. 2021;35(3):107840. doi: 10.1016/j.jdiacomp.2020.107840.	No eligible outcome
Bizino MB, Jazet IM, Westenberg JJM, van Eyk HJ, Paiman EHM, Smit JWA et al. Effect of liraglutide on cardiac function in patients with type 2 diabetes mellitus: randomized placebo-controlled trial. Cardiovasc Diabetol. 2019;18(1):55. doi: 10.1186/s12933-019-0857-6.	No eligible outcome
Bizino MB, Jazet IM, de Heer P, van Eyk HJ, Dekkers IA, Rensen PCN et al. Placebo-controlled randomised trial with liraglutide on magnetic resonance endpoints in individuals with type 2 diabetes: a pre-specified secondary study on ectopic fat accumulation. Diabetologia. 2020;63(1):65–74. doi: 10.1007/s00125-019-05021-6.	No eligible outcome
Blonde L, Fainberg U, Kaltoft MS, Mosenzon O, Ramesh C, Rea R. Efficacy of liraglutide added to sodium-glucose cotransporter-2 inhibitors in type 2 diabetes, stratified by baseline characteristics: post-hoc analysis of LIRA-ADD2SGLT2i. Diabetes Obes Metab. 2021;23(10):2234–41. doi: 10.1111/dom.14464.	No eligible outcome
Bock BC, Thind H, Fava JL, Dunsiger S, Guthrie KM, Stroud L et al. Feasibility of yoga as a complementary therapy for patients with type 2 diabetes: the Healthy Active and in Control (HA1C) study. Complement Ther Med. 2019;42:125–31. doi: 10.1016/j.ctim.2018.09.019.	No eligible outcome
Bohm M, Slawik J, Brueckmann M, Mattheus M, George JT, Ofstad AP et al. Efficacy of empagliflozin on heart failure and renal outcomes in patients with atrial fibrillation: data from the EMPA-REG OUTCOME trial. Eur J Heart Fail. 2020;22(1):126–35. doi: 10.1002/ejhf.1663.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Bonadonna RC, Giaccari A, Buzzetti R, Aimaretti G, Cucinotta D, Avogaro A et al. Italian Titration Approach Study (ITAS) with insulin glargine 300 U/mL in insulin-naïve type 2 diabetes: design and population. Nutr Metab Cardiovasc Dis. 2019;29(5):496–503. doi: 10.1016/j.numecd.2019.01.011.	No eligible outcome
Bonadonna RC, Yale JF, Brulle-Wohlhueter C, Boelle-Le Corfec E, Choudhary P, Bailey TS. Hypoglycaemia as a function of HbA1c in type 2 diabetes: insulin glargine 300 U/mL in a patient-level pooled analysis of EDITION 1, 2 and 3. Diabetes Obes Metab. 2019;21(3):715–19. doi: 10.1111/dom.13578.	No eligible outcome
Bonora BM, Avogaro A, Fadini GP. Effects of exenatide long-acting release on cardiovascular events and mortality in patients with type 2 diabetes: a systematic review and meta-analysis of randomized controlled trials. Acta Diabetol. 2019;56(9):1051–60. doi: 10.1007/s00592-019-01347-0.	Systematic review
Bonora E, Frías JP, Tinahones FJ, Van J, Malik RE, Yu Z et al. Effect of dulaglutide 3.0 and 4.5 mg on weight in patients with type 2 diabetes: exploratory analyses of AWARD-11. Diabetes Obes Metab. 2021;23(10):2242–50. doi: 10.1111/dom.14465.	No eligible outcome
Boonthongkaew C, Tong-Un T, Kanpetta Y, Chaungchot N, Leelayuwat C, Leelayuwat N. Vitamin C supplementation improves blood pressure and oxidative stress after acute exercise in patients with poorly controlled type 2 diabetes mellitus: a randomized, placebo-controlled, cross-over study. Chin J Physiol. 2021;64(1):16–23. doi: 10.4103/cjp.cjp_95_20.	No eligible outcome
Bracken K, Keech A, Hague W, Kirby A, Robledo KP, Allan C et al. Telephone call reminders did not increase screening uptake more than SMS reminders: a recruitment study within a trial. J Clin Epidemiol. 2019;112:45–52. doi: 10.1016/j.jclinepi.2019.04.009.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Branch M, German C, Bertoni A, Yeboah J. Incremental risk of cardiovascular disease and/or chronic kidney disease for future ASCVD and mortality in patients with type 2 diabetes mellitus: ACCORD trial. J Diabetes Complications. 2019;33(7):468–72. doi: 10.1016/j.jdiacomp.2019.04.004.	Ineligible population
Brown A, Dornhorst A, McGowan B, Omar O, Leeds AR, Taheri S et al. Low-energy total diet replacement intervention in patients with type 2 diabetes mellitus and obesity treated with insulin: a randomized trial. BMJ Open Diabetes Res Care. 2020;8(1):e001012. doi: 10.1136/bmjdrc-2019-001012.	Ineligible population
Brown TJ, Brainard J, Song F, Wang X, Abdelhamid A, Hooper L et al. Omega-3, omega-6, and total dietary polyunsaturated fat for prevention and treatment of type 2 diabetes mellitus: systematic review and meta-analysis of randomised controlled trials. BMJ. 2019;366:l4697. doi: 10.1136/bmj.l4697.	Systematic review
Brown-Frandsen K, Emerson SS, McGuire DK, Pieber TR, Poulter NR, Pratley RE et al. Lower rates of cardiovascular events and mortality associated with liraglutide use in patients treated with basal insulin: a DEVOTE subanalysis (DEVOTE 10). Diabetes Obes Metab. 2019;21(6):1437–44. doi: 10.1111/dom.13677.	Ineligible population
Buse JB, Bode BW, Mertens A, Cho YM, Christiansen E, Hertz CL et al. Long-term efficacy and safety of oral semaglutide and the effect of switching from sitagliptin to oral semaglutide in patients with type 2 diabetes: a 52-week, randomized, open-label extension of the PIONEER 7 trial. BMJ Open Diabetes Res Care. 2020;8(2):e001649. doi: 10.1136/bmjdrc-2020-001649.	Ineligible population
Buse JB, Bain SC, Mann JFE, Nauck MA, Nissen SE, Pocock S et al. Cardiovascular risk reduction with liraglutide: an exploratory mediation analysis of the LEADER Trial. Diabetes Care. 2020;43(7):1546–52. doi: 10.2337/dc19-2251.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Cai TT, Li HQ, Jiang LL, Wang HY, Luo MH, Su XF et al. Effects of GLP-1 receptor agonists on bone mineral density in patients with type 2 diabetes mellitus: a 52-week clinical study. BioMed Res Int. 2021:3361309. doi: 10.1155/2021/3361309.	No eligible outcome
Canudas S, Hernandez-Alonso P, Galie S, Muralidharan J, Morell-Azanza L, Zalba G et al. Pistachio consumption modulates DNA oxidation and genes related to telomere maintenance: a crossover randomized clinical trial. Am J Clin Nutr. 2019;109(6):1738–45. doi: 10.1093/ajcn/nqz048.	No eligible outcome
Cardona A, O'Brien A, Bernier MC, Somogyi A, Wysocki VH, Smart S et al. Trimethylamine *N*-oxide and incident atherosclerotic events in high-risk individuals with diabetes: an ACCORD trial post hoc analysis. BMJ Open Diabetes Res Care. 2019;7(1):e000718. doi: 10.1136/bmjdrc-2019-000718.	Ineligible population
Cardenas A, Hivert MF, Gold DR, Hauser R, Kleinman KP, Lin PD et al. Associations of perfluoroalkyl and polyfluoroalkyl substances with incident diabetes and microvascular disease. Diabetes Care. 2019;42(9):1824–32. doi: 10.2337/dc18-2254.	No new data from this paper (study included)
Carlson AL, Mullen DM, Mazze R, Strock E, Richter S, Bergenstal RM. Evaluation of insulin glargine and exenatide alone and in combination: a randomized clinical trial with continuous glucose monitoring and ambulatory glucose profile analysis. Endocr Pract. 2019;25(4):306–14. doi: 10.4158/EP-2018-0177.	No eligible outcome
Carmichael OT, Neiberg RH, Dutton GR, Hayden KM, Horton E, Pi-Sunyer FX et al. Long-term change in physiological markers and cognitive performance in type 2 diabetes: the Look AHEAD study. J Clin Endocrinol Metab. 2020;105(12):e4778–91. doi: 10.1210/clinem/dgaa591.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Carter S, Clifton PM, Keogh JB. The effect of intermittent compared with continuous energy restriction on glycaemic control in patients with type 2 diabetes:24-month follow-up of a randomised noninferiority trial. Diabetes Res Clin Pract. 2019; 151:11–19. doi: 10.1016/j.diabres.2019.03.022.	No eligible outcome
Castillo-Hernandez KG, Laviada-Molina H, Hernandez-Escalante VM, Molina-Segui F, Mena-Macossay L, Caballero AE. Peer support added to diabetes education improves metabolic control and quality of life in Mayan adults living with type 2 diabetes: a randomized controlled trial. Can J Diabetes. 2021;45(3):206–13. doi: 10.1016/j.jcjd.2020.08.107.	No eligible outcome
Castro Dos Santos NC, Andere N, Araujo CF, de Marco AC, Kantarci A, Van Dyke TE et al. Omega-3 PUFA and aspirin as adjuncts to periodontal debridement in patients with periodontitis and type 2 diabetes mellitus: randomized clinical trial. J Periodontol. 2020;91(10):1318–27. doi: 10.1002/JPER.19-0613.	No eligible outcome
Catley D, Puoane T, Tsolekile L, Resnicow K, Fleming KK, Hurley EA et al. Evaluation of an adapted version of the Diabetes Prevention Program for low- and middle-income countries: a cluster randomized trial to evaluate "Lifestyle Africa" in South Africa. PLOS Med. 2022;19(4):e1003964. doi: 10.1371/journal.pmed.1003964.	Ineligible population
Chan SP, Colagiuri S. Systematic review and meta-analysis of the efficacy and hypoglycemic safety of gliclazide versus other insulinotropic agents. Diabetes Res Clin Pract. 2015;110(1):75–81. doi: 10.1016/j.diabres.2015.07.002.	Systematic review
Chao AM, Wadden TA, Tronieri JS, Berkowitz RI. Alcohol intake and weight loss during intensive lifestyle intervention for adults with overweight or obesity and diabetes. Obesity (Silver Spring). 2019;27(1):30–40. doi: 10.1002/oby.22316.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Chen S, Burstrom B, Sparring V, Qian D, Burstrom K. Differential impact of an education-based intervention for patients with type 2 diabetes mellitus in rural China. Int J Environ Res Public Health. 2019;16(15):2676. doi: 10.3390/ijerph16152676.	No eligible outcome
Chen S, Qian D, Burstrom K, Burstrom B. Impact of an educational intervention in primary care on fasting blood glucose levels and diabetes knowledge among patients with type 2 diabetes mellitus in rural China. Patient Educ Couns. 2020;103(9):1767–73. doi: 10.1016/j.pec.2020.03.010.	No eligible outcome
Chen X, Xu Y, Zhang J, Shao S, Duan Y, Liu P et al. Exenatide twice daily plus glargine versus aspart 70/30 twice daily in patients with type 2 diabetes with inadequate glycemic control on premixed human insulin and metformin. Endocr Pract. 2021;27(8):790–7. doi: 10.1016/j.eprac.2021.03.015.	Ineligible population
Chen ZZ, Liu J, Morningstar J, Heckman-Stoddard BM, Lee CG, Dagogo-Jack S et al. Metabolite profiles of incident diabetes and heterogeneity of treatment effect in the Diabetes Prevention Program. Diabetes. 2019;68(12):2337–49. doi: 10.2337/db19-0236.	No eligible outcome
Cheng L, Sit JWH, Choi KC, Chair SY, Li X, Wu Y et al. The effects of an empowerment-based self-management intervention on empowerment level, psychological distress, and quality of life in patients with poorly controlled type 2 diabetes: a randomized controlled trial. Int J Nurs Stud. 2021;116:103407. doi: 10.1016/j.ijnurstu.2019.103407.	No eligible outcome
Cheng PC, Hsu SR, Kuo JF, Cheng YC, Liu YH, Tu ST. Comparing the effect of dipeptidyl-peptidase 4 inhibitors and sulfonylureas on albuminuria in patients with newly diagnosed type 2 diabetes mellitus: a prospective open-label study. J Clin Med. 2019;8(10):1715. doi: 10.3390/jcm8101715.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Cherney DZI, Heerspink HJL, Frederich R, Maldonado M, Liu J, Pong A et al. Effects of ertugliflozin on renal function over 104 weeks of treatment: a post hoc analysis of two randomised controlled trials. Diabetologia. 2020;63(6):1128–40. doi: 10.1007/s00125-020-05133-4.	No eligible outcome
Cheung NW, Campbell LV, Fulcher GR, McElduff P, Depczynski B, Acharya S et al. Routine glucose assessment in the emergency department for detecting unrecognised diabetes: a cluster randomised trial. Med J Aust. 2019;211(10):454–9. doi: 10.5694/mja2.50394.	Ineligible population
Chew BH, Vos RC, Metzendorf MI, Scholten R, Rutten G. Psychological interventions for diabetes-related distress in adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2017;(9):CD011469. doi: 10.1002/14651858.CD011469.pub2.	Systematic review
Chihara A, Tanaka A, Morimoto T, Sakuma M, Shimabukuro M, Nomiyama T et al. Differences in lipid metabolism between anagliptin and sitagliptin in patients with type 2 diabetes on statin therapy: a secondary analysis of the REASON trial. Cardiovasc Diabetol. 2019;18(1):158. doi: 10.1186/s12933-019-0965-3.	No eligible outcome
Chilcott J, Tappenden P, Jones ML, Wight JP. A systematic review of the clinical effectiveness of pioglitazone in the treatment of type 2 diabetes mellitus. Clin Ther. 2001;23(11):1792–823. doi: 10.1016/s0149-2918(00)80078-8.	Systematic review
Cho KY, Nomoto H, Nakamura A, Kawata S, Sugawara H, Takeuchi J et al. Improved time in range and postprandial hyperglycemia with canagliflozin in combination with teneligliptin: secondary analyses of the CALMER study. J Diabetes Investig. 2021;12(8): 1417–24. doi: 10.1111/jdi.13498.	No eligible outcome
Cho YM, Deerochanawong C, Seekaew S, Suraamornkul S, Benjachareonwong S, Sattanon S et al. Efficacy and safety of gemigliptin as add-on therapy to insulin, with or without metformin, in patients with type 2 diabetes mellitus (ZEUS II study). Diabetes Obes Metab. 2020;22(1):123–7. doi: 10.1111/dom.13873.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Choomai A, Wattanapisit A, Tiangtam O. Effects of an actual insulin injection demonstration on insulin acceptance among patients with T2DM: a pragmatic randomized controlled trial. Rom J Intern Med. 2021;59(2):151–8. doi: 10.2478/rjim-2020-0040.	No eligible outcome
Cintra RMR, Soares AAS, Breder I, Munhoz DB, Barreto J, Kimura-Medorima ST et al. Assessment of dapagliflozin effect on diabetic endothelial dysfunction of brachial artery (ADDENDA-BHS2 trial): rationale, design, and baseline characteristics of a randomized controlled trial. Diabetol Metab Syndr. 2019;11(1):62. doi: 10.1186/s13098-019-0457-3.	No follow-up (baseline data only)
Clements JN, Isaacs D, Hartman RE, Gambill K. Pharmacokinetics and clinical implications of oral semaglutide for type 2 diabetes mellitus. Clin Pharmacokinet. 2021;60(2):153–63. doi: 10.1007/s40262-020-00951-6.	Systematic review
Clemmensen KKB, Blond MB, Amadid H, Bruhn L, Vistisen D, Karstoft K et al. No effects of dapagliflozin, metformin or exercise on plasma glucagon concentrations in individuals with prediabetes: a post hoc analysis from the randomized controlled PRE-D trial. Diabetes Obes Metab. 2021;23(2):530–9. doi: 10.1111/dom.14246.	No eligible outcome
Cojic M, Kocic R, Klisic A, Cvejanov-Kezunovic L, Kavaric N, Kocic G. A novel mechanism of vitamin D anti-inflammatory/antioxidative potential in type 2 diabetic patients on metformin therapy. Arch Med Sci. 2020;16(5):1004–12. doi: 10.5114/aoms.2020.92832.	No eligible outcome
Colhoun HM, Leiter LA, Muller-Wieland D, Cariou B, Ray KK, Tinahones FJ et al. Effect of alirocumab on individuals with type 2 diabetes, high triglycerides, and low high-density lipoprotein cholesterol. Cardiovasc Diabetol. 2020;19(1):14. doi: 10.1186/s12933-020-0991-1.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Collins KA, Ross LM, Piner LW, Fos LB, Slentz CA, Bateman LA et al. Amount and intensity effects of exercise training alone versus a combined diet and exercise lifestyle intervention on health-related quality of life in the STRRIDE-PD randomized trial. BMJ Open Diabetes Res Care. 2022;10(1):e002584. doi: 10.1136/bmjdrc-2021-002584.	No eligible outcome
Cosenso-Martin LN, Takaoka LY, Vilela-Martin JF. Randomized study comparing vildagliptin vs glibenclamide on glucose variability and endothelial function in patients with type 2 diabetes mellitus and hypertension. Diabetes Metab Syndr Obes. 2020;13:3221–9. doi: 10.2147/DMSO.S257096.	No eligible outcome
Cox DJ, Banton T, Moncrief M, Conaway M, Diamond A, Holmes V et al. Glycemic excursion minimization in the management of type 2 diabetes: a novel intervention tested in a randomized clinical trial. BMJ Open Diabetes Res Care. 2020;8(2):e001795. doi: 10.1136/bmjdrc-2020-001795.	No eligible outcome
Cox DJ, Oser T, Moncrief M, Conaway M, McCall A. Long-term follow-up of a randomized clinical trial comparing glycemic excursion minimization (GEM) to weight loss (WL) in the management of type 2 diabetes. BMJ Open Diabetes Res Care. 2021;9(2):e002403. doi: 10.1136/bmjdrc-2021-002403.	No eligible outcome
Cukierman-Yaffe T, Gerstein HC, Colhoun HM, Diaz R, García-Perez L-E, Lakshmanan M et al. Effect of dulaglutide on cognitive impairment in type 2 diabetes: an exploratory analysis of the REWIND trial. Lancet Neurol. 2020;19(7):582–90. doi: 10.1016/S1474-4422(20)30173-3.	No eligible outcome
Cummings DM, Lutes LD, Littlewood K, Solar C, Carraway M, Kirian K et al. Randomized trial of a tailored cognitive behavioral intervention in type 2 diabetes with comorbid depressive and/or regimen-related distress symptoms:12-month outcomes from COMRADE. Diabetes Care. 2019;42(5):841–8. doi: 10.2337/dc18-1841.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Cummins E, Royle P, Snaith A, Greene A, Robertson L, McIntyre L et al. Clinical effectiveness and cost-effectiveness of continuous subcutaneous insulin infusion for diabetes: systematic review and economic evaluation. Health Technol Assess. 2010;14(11)::iii–iv, xi–xvi, 1–181. doi: 10.3310/hta14110.	Systematic review
Cunningham AT, Crittendon DR, White N, Mills GD, Diaz V, LaNoue MD. The effect of diabetes self-management education on HbA1c and quality of life in African-Americans: a systematic review and meta-analysis. BMC Health Serv Res. 2018;18(1):367. doi: 10.1186/s12913-018-3186-7.	Systematic review
Dagenais GR, Rydén L, Leiter LA, Lakshmanan M, Dyal L, Probstfield JL et al. Total cardiovascular or fatal events in people with type 2 diabetes and cardiovascular risk factors treated with dulaglutide in the REWIND trail: a post hoc analysis. Cardiovasc Diabetol. 2020;19(1):199. doi: 10.1186/s12933-020-01179-1.	Ineligible population
Dahl K, Brooks A, Almazedi F, Hoff ST, Boschini C, Baekdal TA. Oral semaglutide improves postprandial glucose and lipid metabolism, and delays gastric emptying, in subjects with type 2 diabetes. Diabetes Obes Metab. 2021;23(7):1594–603. doi: 10.1111/dom.14373.	Ineligible population
Dailey GE, Dex TA, Roberts M, Liu M, Meneilly GS. Efficacy and safety of lixisenatide as add-on therapy to basal insulin in older adults with type 2 diabetes in the GetGoal-O study. J Diabetes. 2019;11(12):971–81. doi: 10.1111/1753-0407.12952.	No eligible outcome
Dailey G, Bajaj HS, Dex T, Groleau M, Stager W, Vinik A. Post hoc efficacy and safety analysis of insulin glargine/lixisenatide fixed- ratio combination in North American patients compared with the rest of world. BMJ Open Diabetes Res Care. 2019;7(1):e000581. doi: 10.1136/bmjdrc-2018-000581.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Dalsgaard EM, Sandbaek A, Griffin SJ, Rutten GEHM, Khunti K, Davies MJ et al. Patient-reported outcomes after 10-year follow-up of intensive, multifactorial treatment in individuals with screen-detected type 2 diabetes: the ADDITION-Europe trial. Diabet Med. 2020;37(9):1509–18. doi: 10.1111/dme.14342.	No eligible outcome
Dave CV, Kim SC, Goldfine AB, Glynn RJ, Tong A, Patorno E. Risk of cardiovascular outcomes in patients with type 2 diabetes after addition of SGLT2 inhibitors versus sulfonylureas to baseline GLP-1RA therapy. Circulation. 2021;143(8):770–9. doi: 10.1161/CIRCULATIONAHA.120.047965.	Ineligible population
Davidson JA, Liebl A, Christiansen JS, Fulcher G, Ligthelm RJ, Brown P et al. Risk for nocturnal hypoglycemia with biphasic insulin aspart 30 compared with biphasic human insulin 30 in adults with type 2 diabetes mellitus: a meta-analysis. Clin Ther. 2009;31(8):1641–51. doi: 10.1016/j.clinthera.2009.08.011.	Systematic review
Davies MJ, Russell-Jones D, Barber TM, Lavalle-Gonzalez FJ, Galstyan GR, Zhu D et al. Glycaemic benefit of iGlarLixi in insulin-naive type 2 diabetes patients with high HbA1c or those with inadequate glycaemic control on two oral antihyperglycaemic drugs in the LixiLan-O randomized trial. Diabetes Obes Metab. 2019;21(8):1967–72. doi: 10.1111/dom.13791.	No eligible outcome
Davies MJ, Rosenstock J, Ali A, Russell-Jones D, Souhami E, Palmer K et al. Efficacy of iGlarLixi in adults with type 2 diabetes inadequately controlled (glycated haemoglobin ≥ 8%, ≥ 64 mmol/mol) on two oral antidiabetes drugs: post hoc analysis of the LixiLan-O randomized trial. Diabetes Obes Metab. 2022;24(1):34–41. doi: 10.1111/dom.14543.	No eligible outcome
Dawson-Hughes B, Staten MA, Knowler WC, Nelson J, Vickery EM, LeBlanc ES et al. Intratrial exposure to vitamin D and new-onset diabetes among adults with prediabetes: a secondary analysis from the Vitamin D and Type 2 Diabetes (D2d) study. Diabetes Care. 2020;43(12):2916–22. doi: 10.2337/dc20-1765.	Ineligible intervention

Table A2.1. contd

Reference	Reason for exclusion
de Mello VD, Selander T, Lindstrom J, Tuomilehto J, Uusitupa M, Kaarniranta K. Serum levels of plasmalogens and fatty acid metabolites associate with retinal microangiopathy in participants from the Finnish Diabetes Prevention Study. Nutrients. 2021;13(12):4452. doi: 10.3390/nu13124452.	No eligible outcome
de Vries TI, Dorresteijn JAN, van der Graaf Y, Visseren FLJ, Westerink J. Heterogeneity of treatment effects from an intensive lifestyle weight loss intervention on cardiovascular events in patients with type 2 diabetes: data from the Look AHEAD trial. Diabetes Care. 2019;42(10):1988–94. doi: 10.2337/dc19-0776.	Ineligible population
Dekkers IA, Bizino MB, Paiman EHM, Smit JW, Jazet IM, de Vries APJ et al. The effect of glycemic control on renal triglyceride content assessed by proton spectroscopy in patients with type 2 diabetes mellitus: a single-center parallel-group trial. J Ren Nutr. 2021;31(6):611–19. doi: 10.1053/j.jrn.2020.09.006.	No eligible outcome
Del Prato S, Kang J, Trautmann ME, Stewart J, Sorli CH, Derwahl M et al. Efficacy and safety of once-monthly efpeglenatide in patients with type 2 diabetes: results of a phase 2 placebo-controlled, 16-week randomized dose-finding study. Diabetes Obes Metab. 2020;22(7):1176–86. doi: 10.1111/dom.14020.	Ineligible population
Del Prato S, Frías JP, Blonde L, Aroda VR, Shehadeh N, Saremi A et al. Impact of disease duration and β-cell reserve on the efficacy of switching to iGlarLixi in adults with type 2 diabetes on glucagon-like peptide-1 receptor agonist therapy: exploratory analyses from the LixiLan-G trial. Diabetes Obes Metab. 2020;22(9): 1567–76. doi: 10.1111/dom.14068.	No eligible outcome
Delahanty LM, Levy DE, Chang Y, Porneala BC, Goldman V, McCarthy J et al. Effectiveness of lifestyle intervention for type 2 diabetes in primary care: the REAL HEALTH-Diabetes randomized clinical trial. J Gen Intern Med. 2020;35(9):2637–46. doi: 10.1007/s11606-019-05629-9.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Della Pepa G, Russo M, Vitale M, Carli F, Vetrani C, Masulli M et al. Pioglitazone even at low dosage improves NAFLD in type 2 diabetes: clinical and pathophysiological insights from a subgroup of the TOSCA.IT randomised trial. Diabetes Res Clin Pract. 2021;178:108984. doi: 10.1016/j.diabres.2021.108984.	No eligible outcome
Derosa G, D'Angelo A, Martinotti C, Valentino MC, Di Matteo S, Bruno GM et al. Vitamin D3 supplementation improves glycemic control in type 2 diabetic patients: results from an Italian clinical trial. Int J Vitam Nutr Res. 2022;92(2):91–100. doi: 10.1024/0300-9831/a000673.	No eligible outcome
Desai JR, Vázquez-Benitez G, Taylor G, Johnson S, Anderson J, Garrett JE et al. The effects of financial incentives on diabetes prevention program attendance and weight loss among low-income patients: the We Can Prevent Diabetes cluster-randomized controlled trial. BMC Public Health. 2020;20(1):1587. doi: 10.1186/s12889-020-09683-5.	No eligible outcome
DeSouza C, Cariou B, Garg S, Lausvig N, Navarria A, Fonseca V. Efficacy and safety of semaglutide for type 2 diabetes by race and ethnicity: a post hoc analysis of the SUSTAIN trials. J Clin Endocrinol Metab. 2020;105(2):dgz072. doi: 10.1210/clinem/dgz072.	No eligible outcome
Devaraj SM, Rockette-Wagner B, Miller RG, Arena VC, Napoleone JM, Conroy MB et al. The impact of a yearlong diabetes prevention program-based lifestyle intervention on cardiovascular health metrics. J Prim Care Community Health. 2021;12:21501327211029816. doi: 10.1177/21501327211029816.	No eligible outcome
Dharmalingam M, Aravind SR, Thacker H, Paramesh S, Mohan B, Chawla M et al. Efficacy and safety of remogliflozin etabonate, a new sodium glucose co-transporter-2 inhibitor, in patients with type 2 diabetes mellitus: a 24-week, randomized, double-blind, active-controlled trial. Drugs. 2020;80(6):587–600. doi: 10.1007/s40265-020-01285-0.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Diabetes Prevention Program Research Group. Long-term effects of metformin on diabetes prevention: identification of subgroups that benefited most in the Diabetes Prevention Program and Diabetes Prevention Program Outcomes Study. Diabetes Care. 2019;42(4):6018. doi: 10.2337/dc18-1970.	No new data from this paper (study included)
Dickinson WP, Dickinson LM, Jortberg BT, Hessler DM, Fernald DH, Cuffney M et al. A cluster randomized trial comparing strategies for translating self-management support into primary care practices. J Am Board Fam Med. 2019;32(3):341–52. doi: 10.3122/jabfm.2019.03.180254.	No eligible outcome
Didangelos T, Karlafti E, Kotzakioulafi E, Margariti E, Giannoulaki P, Batanis G et al. Vitamin B12 supplementation in diabetic neuropathy: a 1-year, randomized, double-blind, placebo-controlled trial. Nutrients. 2021;13(2):395. doi: 10.3390/nu13020395.	Ineligible population
Djaja N, Permadi I, Witjaksono F, Soewondo P, Abdullah M, Agustina R et al. The effect of Job's tears-enriched yoghurt on GLP-1, calprotectin, blood glucose levels and weight of patients with type 2 diabetes mellitus. Med J Nutrition Metab. 2019;12(2):163–71. doi: 10.3233/MNM-180258.	No eligible outcome
Do DV, Wang X, Vedula SS, Marrone M, Sleilati G, Hawkins BS et al. Blood pressure control for diabetic retinopathy. Cochrane Database Syst Rev. 2015;(1):CD006127. doi: 10.1002/14651858.CD006127.pub2.	Systematic review
Donnelly LA, Dennis JM, Coleman RL, Sattar N, Hattersley AT, Holman RR et al. Risk of anemia with metformin use in type 2 diabetes: a MASTERMIND study. Diabetes Care. 2020;43(10):2493–9. doi: 10.2337/dc20-1104.	No eligible outcome
Dorresteijn JAN, Kriegsman DMW, Assendelft WJJ, Valk GD. Patient education for preventing diabetic foot ulceration. Cochrane Database Syst Rev. 2014;(12):CD001488. doi: 10.1002/14651858.CD001488.pub5.	Systematic review

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Reference	Reason for exclusion
Doucet J, Chacra A, Maheux P, Lu J, Harris S, Rosenstock J. Efficacy and safety of saxagliptin in older patients with type 2 diabetes mellitus. Curr Med Res Opin. 2011;27(4):863–9. doi: 10.1185/03007995.2011.554532.	No eligible outcome
Doupis J, Alexandrides T, Elisaf M, Melidonis A, Bousboulas S, Thanopoulou A et al. Influence of supervised disease understanding and diabetes self-management on adherence to oral glucose-lowering treatment in patients with type 2 diabetes. Diabetes Ther. 2019;10(4):1407–22. doi: 10.1007/s13300-019-0648-9.	No eligible outcome
du Pon E, Kleefstra N, Cleveringa F, van Dooren A, Heerdink ER, van Dulmen S. Effects of the Proactive interdisciplinary self-management (PRISMA) program on self-reported and clinical outcomes in type 2 diabetes: a pragmatic randomized controlled trial. BMC Endocr Disord. 2019;19(1):139. doi: 10.1186/s12902-019-0466-0.	No eligible outcome
Dubourg J, Fouqueray P, Thang C, Grouin JM, Ueki K. Efficacy and safety of imeglimin monotherapy versus placebo in Japanese patients with type 2 diabetes (TIMES 1): a double-blind, randomized, placebo-controlled, parallel-group, multicenter phase 3 trial. Diabetes Care. 2021;44(4):952–9. doi: 10.2337/dc20-0763.	Ineligible population
Duke SAS, Colagiuri S, Colagiuri R. Individual patient education for people with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2009;(1):CD005268. doi: 10.1002/14651858.CD005268.pub2.	Systematic review
Eichner NZM, Gilbertson NM, Heiston EM, Musante L, La Salvia S, Weltman A et al. Interval exercise lowers circulating CD105 extracellular vesicles in prediabetes. Med Sci Sports Exerc. 2019;52(3):729–35. doi: 10.1249/MSS.0000000000002185.	Ineligible follow-up duration
El Mokadem M, Abd El Hady Y, Aziz A. A prospective single-blind randomized trial of ramipril, eplerenone and their combination in type 2 diabetic nephropathy. Cardiorenal Med. 2020;10(6):392–401. doi: 10.1159/000508670.	No eligible outcome

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Reference	Reason for exclusion
Eldor R, Neutel J, Homer K, Kidron M. Efficacy and safety of 28-day treatment with oral insulin (ORMD-0801) in patients with type 2 diabetes: a randomized, placebo-controlled trial. Diabetes Obes Metab. 2021;23(11):2529–38. doi: 10.1111/dom.14499.	Ineligible population
El-Sheikh HM, El-Haggar SM, Elbedewy TA. Comparative study to evaluate the effect of L-carnitine plus glimepiride versus glimepiride alone on insulin resistance in type 2 diabetic patients. Diabetes Metab Syndr. 2019;13(1):167–73. doi: 10.1016/j.dsx.2018.08.035.	No eligible outcome
Emery A, Ye C, Choi H, Kramer CK, Zinman B, Retnakaran R. Intermittent intensive insulin therapy for type 2 diabetes: effects on hypoglycemia, weight gain, and quality of life over 2 years. Endocr Pract. 2019;25(9):899–907. doi: 10.4158/EP-2019-0111.	No eligible outcome
Emini-Sadiku M, Car N, Begolli L, Blaslov K, Haliti E, Bahtiri E. The differential influence of glimepiride and glibenclamide on insulin resistance and adiponectin levels in patients with type 2 diabetes. Endocr J. 2019;66(10):915–21. doi: 10.1507/endocrj.EJ18-0493.	No eligible outcome
Engel SS, Golm GT, Shapiro D, Davies MJ, Kaufman KD, Goldstein BJ. Cardiovascular safety of sitagliptin in patients with type 2 diabetes mellitus: a pooled analysis. Cardiovasc Diabetol. 2013;12:3. doi: 10.1186/1475-2840-12-3.	Ineligible population
Espeland MA, Pratley RE, Rosenstock J, Kadowaki T, Seino Y, Zinman B et al. Cardiovascular outcomes and safety with linagliptin, a dipeptidyl peptidase-4 inhibitor, compared with the sulphonylurea glimepiride in older people with type 2 diabetes: a subgroup analysis of the randomized CAROLINA trial. Diabetes Obes Metab. 2021;23(2):569–80. doi: 10.1111/dom.14254.	Ineligible population
Espeland MA, Gaussoin SA, Bahnson J, Vaughan EM, Knowler WC, Simpson FR et al. Impact of an 8-year intensive lifestyle intervention on an index of multimorbidity. J Am Geriatr Soc. 2020;68(10):2249–56. doi: 10.1111/jgs.16672.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Espinoza SE, Musi N, Wang CP, Michalek J, Orsak B, Romo T et al. Rationale and study design of a randomized clinical trial of metformin to prevent frailty in older adults with pre-diabetes. J Gerontol A Biol Sci Med Sci. 2019;75(1):102–9. doi: 10.1093/gerona/glz078.	Study protocol
Esposito K, Chiodini P, Maiorino MI, Bellastella G, Capuano A, Giugliano D. Glycaemic durability with dipeptidyl peptidase-4 inhibitors in type 2 diabetes: a systematic review and meta-analysis of long-term randomised controlled trials. BMJ Open. 2014;4(6):e005442. doi: 10.1136/bmjopen-2014-005442.	No eligible outcome
Estruch R, Martínez-Gonzalez MA, Corella D, Salas-Salvado J, Fito M, Chiva-Blanch G et al. Effect of a high-fat Mediterranean diet on bodyweight and waist circumference: a prespecified secondary outcomes analysis of the PREDIMED randomised controlled trial. Lancet Diabetes Endocrinol. 2019;7(5):e6–17. doi: 10.1016/S2213-8587(19)30074-9.	No eligible outcome
Faerch K, Blond MB, Bruhn L, Amadid H, Vistisen D, Clemmensen KKB et al. The effects of dapagliflozin, metformin or exercise on glycaemic variability in overweight or obese individuals with prediabetes (the PRE-D Trial): a multi-arm, randomised, controlled trial. Diabetologia. 2021;64(1):42–55. doi: 10.1007/s00125-020-05306-1.	No eligible outcome
Fajriansyah, Iskandarsyah A, Puspitasari IM, Lestari K. Impact of pharmacist counseling on health-related quality of life of patients with type 2 diabetes mellitus: a cluster randomized controlled study. J Diabetes Metab Disord. 2020;19(2):675–82. doi: 10.1007/s40200-020-00528-x.	No eligible outcome
Fang H, Xu F, Du J, Liang L, Li W, Shen L et al. Impact of baseline characteristics on glycemic effects of add-on saxagliptin or acarbose to metformin therapy: subgroup analysis of the SMART study in Chinese patients with type 2 diabetes mellitus. J Diabetes Investig. 2020;11(4):896–905. doi: 10.1111/jdi.13224.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Farmer A, Bobrow K, Leon N, Williams N, Phiri E, Namadingo H et al. Digital messaging to support control for type 2 diabetes (StAR2D): a multicentre randomised controlled trial. BMC Public Health. 2021;21(1):1907. doi: 10.1186/s12889-021-11874-7.	Ineligible population
Fayfman M, Galindo RJ, Rubin DJ, Mize DL, Anzola I, Urrutia MA et al. A randomized controlled trial on the safety and efficacy of exenatide therapy for the inpatient management of general medicine and surgery patients with type 2 diabetes. Diabetes Care. 2019;42(3):450–6. doi: 10.2337/dc18-1760.	Ineligible population
Felix HC, Narcisse M-R, Long CR, English E, Haggard-Duff L, Purvis RS et al. The effect of family diabetes self-management education on self-care behaviors of Marshallese adults with type 2 diabetes. Am J Health Behav. 2019;43(3):490–7. doi: 10.5993/AJHB.43.3.4.	No eligible outcome
Ferrannini E, Niemoeller E, Dex T, Servera S, Mari A. Fixed-ratio combination of insulin glargine plus lixisenatide (iGlarLixi) improves β-cell function in people with type 2 diabetes. Diabetes Obes Metab. 2022;24(6):1159–65. doi: 10.1111/dom.14688.	No eligible outcome
Ferrannini E, Baldi S, Frías JP, Guja C, Hardy E, Repetto E et al. Hormone-substrate changes with exenatide plus dapagliflozin versus each drug alone: the randomized, active-controlled DURATION-8 study. Diabetes Obes Metab. 2020;22(1):99–106. doi: 10.1111/dom.13870.	No eligible outcome
Ferrannini G, Gerstein H, Colhoun HM, Dagenais GR, Diaz R, Dyal L et al. Similar cardiovascular outcomes in patients with diabetes and established or high risk for coronary vascular disease treated with dulaglutide with and without baseline metformin. Eur Heart J. 2021;42(26):2565–73. doi: 10.1093/eurheartj/ehaa777.	Ineligible population
Ferrara A, McDonald JC, Brown SD, Alexander JG, Christian-Herman JL, Fisher S et al. Comparative effectiveness of 2 diabetes prevention lifestyle programs in the workplace: the City and County of San Francisco Diabetes Prevention Trial. Prev Chronic Dis. 2020;17:E38. doi: 10.5888/pcd17.190396.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Fiorentino TV, Monroy A, Kamath S, Sotero R, Cas MD, Daniele G et al. Pioglitazone corrects dysregulation of skeletal muscle mitochondrial proteins involved in ATP synthesis in type 2 diabetes. Metabolism. 2021;114:154416. doi: 10.1016/j.metabol.2020.154416.	No eligible outcome
Ford CN, Do WL, Weber MB, Narayan KMV, Ranjani H, Anjana RM. Moderate-to-vigorous physical activity changes in a diabetes prevention intervention randomized trial among South Asians with prediabetes: the D-CLIP trial. Diabetes Res Clin Pract. 2021;174:108727. doi: 10.1016/j.diabres.2021.108727.	No eligible outcome
Fournier M, Germe M, Theobald K, Scholz GH, Lehmacher W. Indirect comparison of lixisenatide versus neutral protamine Hagedorn insulin as add-on to metformin and sulphonylurea in patients with type 2 diabetes mellitus. Ger Med Sci. 2014;12:Doc14. doi: 10.3205/000199.	Systematic review
Fralick M, Colacci M, Odutayo A, Siemieniuk R, Glynn RJ. Lowering of hemoglobin A1c and risk of cardiovascular outcomes and all-cause mortality, a meta-regression analysis. J Diabetes Complications. 2020;34(11):107704. doi: 10.1016/j.jdiacomp.2020.107704.	Systematic review
Francis SL, Simmering JE, Polgreen LA, Evans NJ, Hosteng KR, Carr LJ et al. Gamifying accelerometer use increases physical activity levels of individuals pre-disposed to type II diabetes. Prev Med Rep. 2021;23:101426. doi: 10.1016/j.pmedr.2021.101426.	No eligible outcome
Frías JP, Bonora E, Cox DA, Bethel MA, Kwan AYM, Raha S et al. Glycaemic efficacy of an expanded dose range of dulaglutide according to baseline glycated haemoglobin (HbA1c) subgroup: post hoc analysis of AWARD-11. Diabetes Obes Metab. 2021;23(12):2819–24. doi: 10.1111/dom.14533.	No eligible outcome
Frías JP, Bonora E, Nevarez Ruiz L, Li YG, Yu Z, Milicevic Z et al. Efficacy and safety of dulaglutide 3.0 mg and 4.5 mg versus dulaglutide 1.5 mg in metformin-treated patients with type 2 diabetes in a randomized controlled trial (AWARD-11). Diabetes Care. 2021;44(3):765–73. doi: 10.2337/dc20-1473.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Frías JP, Davies MJ, Rosenstock J, Perez Manghi FC, Fernandez Lando L, Bergman BK et al. Tirzepatide versus semaglutide once weekly in patients with type 2 diabetes. N Engl J Med. 2021;385(6):503–15. doi: 10.1056/NEJMoa2107519.	Ineligible population
Frías JP, Auerbach P, Bajaj HS, Fukushima Y, Lingvay I, Macura S et al. Efficacy and safety of once-weekly semaglutide 2·0 mg versus 1·0 mg in patients with type 2 diabetes (SUSTAIN FORTE): a double-blind, randomised, phase 3B trial. Lancet Diabetes Endocrinol. 2021;9(9):563–74. doi: 10.1016/S2213-8587(21)00174-1.	Ineligible population
Frías JP, Zimmer Z, Lam RLH, Amorin G, Ntabadde C, Iredale C et al. Double-blind, randomized clinical trial assessing the efficacy and safety of early initiation of sitagliptin during metformin uptitration in the treatment of patients with type 2 diabetes: the CompoSIT-M study. Diabetes Obes Metab. 2019;21(5):1128–35. doi: 10.1111/dom.13626.	Ineligible population
Fritsche A, Wagner R, Heni M, Kantartzis K, Machann J, Schick F et al. Different effects of lifestyle intervention in high- and low-risk prediabetes: results of the randomized controlled Prediabetes Lifestyle Intervention Study (PLIS). Diabetes. 2021;70(12):2785–95. doi: 10.2337/db21-0526.	No eligible outcome
Frydenberg M, Maindal HT, Fletcher A, Juul L. Is patient activation a mediator of the effect of a health promoting intervention in adults at high risk of type 2 diabetes? A longitudinal path model analysis within a randomised trial. BMC Public Health. 2022;22(1):439. doi: 10.1186/s12889-022-12864-z.	No eligible outcome
Fu J, Liu J, Xu Y, Yang N, Yang W, Wang G. Comparison of therapeutic effects of acarbose and metformin under different beta-cell function status in Chinese patients with type 2 diabetes. Endocr J. 2019;66(5):443–50. doi: 10.1507/endocrj.EJ18-0466.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Fuchigami A, Shigiyama F, Kitazawa T, Okada Y, Ichijo T, Higa M et al. Efficacy of dapagliflozin versus sitagliptin on cardiometabolic risk factors in Japanese patients with type 2 diabetes: a prospective, randomized study (DIVERSITY-CVR). Cardiovasc Diabetol. 2020;19(1):1. doi: 10.1186/s12933-019-0977-z.	No eligible outcome
Fuechtenbusch M, Aberle J, Heitmann E, Nicolay C, Jung H. Weight loss in patients with type 2 diabetes receiving once-weekly dulaglutide plus insulin lispro or insulin glargine plus insulin lispro: a post-hoc analysis of the AWARD-4 study across baseline body mass index subgroups. Diabetes Obes Metab. 2019;21(6): 1340–8. doi: 10.1111/dom.13658.	No eligible outcome
Fullerton B, Siebenhofer A, Jeitler K, Horvath K, Semlitsch T, Berghold A et al. Short-acting insulin analogues versus regular human insulin for adult, non-pregnant persons with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2018;(12):CD013228. doi: 10.1002/14651858.CD013228.	Systematic review
Furuhashi M, Sakuma I, Morimoto T, Higashiura Y, Sakai A, Matsumoto M et al. Treatment with anagliptin, a DPP-4 inhibitor, decreases FABP4 concentration in patients with type 2 diabetes mellitus at a high risk for cardiovascular disease who are receiving statin therapy. Cardiovasc Diabetol. 2020;19(1):89. doi: 10.1186/s12933-020-01061-0.	No eligible outcome
Furuhashi M, Sakuma I, Morimoto T, Higashiura Y, Sakai A, Matsumoto M et al. Differential effects of DPP-4 inhibitors, anagliptin and sitagliptin, on PCSK9 levels in patients with type 2 diabetes mellitus who are receiving statin therapy. J Atheroscler Thromb. 2022;29(1):24–37. doi: 10.5551/jat.58396.	No eligible outcome
Gaitán JM, Eichner NZM, Gilbertson NM, Heiston EM, Weltman A, Malin SK. Two weeks of interval training enhances fat oxidation during exercise in obese adults with prediabetes. J Sports Sci Med. 2019;18(4):636–44. PMID: 31827347.	Ineligible follow-up duration

Table A2.1. contd

Reference	Reason for exclusion
Gamboa Moreno E, Mateo-Abad M, Ochoa de Retana García L, Vrotsou K, Del Campo Pena E, Sánchez Perez Á et al. Efficacy of a self-management education programme on patients with type 2 diabetes in primary care: a randomised controlled trial. Prim Care Diabetes. 2019;13(2):122–33. doi: 10.1016/j.pcd.2018.10.001.	No eligible outcome
Gao F, Lv X, Mo Z, Ma J, Zhang Q, Yang G et al. Efficacy and safety of polyethylene glycol loxenatide as add-on to metformin in patients with type 2 diabetes: a multicentre, randomized, double-blind, placebo-controlled, phase 3b trial. Diabetes Obes Metab. 2020;22(12):2375–83. doi: 10.1111/dom.14163.	Ineligible population
Gao Y, Gao L, Peng Y, Long J, Yang M. Therapeutic effects of the combination of linagliptin and metformin on the treatment of elderly type 2 diabetes mellitus and influences on serum uric acid, insulin resistance and insulin Â cell functions. Acta Med Mediterr. 2020;36(1):421–5. doi: 10.19193/0393-6384_2020_1_66	No eligible outcome
Garber A, Marre M, Blonde L, Allavoine T, Howlett H, Lehert P et al. Influence of initial hyperglycaemia, weight and age on the blood glucose lowering efficacy and incidence of hypoglycaemic symptoms with a single-tablet metformin-glibenclamide therapy (Glucovance) in type 2 diabetes. Diabetes Obes Metab. 2003;5(3):171–9. doi: 10.1046/j.1463-1326.2003.00259.x.	No eligible outcome
Gastaldelli A, Cusi K, Fernandez Lando L, Bray R, Brouwers B, Rodriguez A. Effect of tirzepatide versus insulin degludec on liver fat content and abdominal adipose tissue in people with type 2 diabetes (SURPASS-3 MRI): a substudy of the randomised, open-label, parallel-group, phase 3 SURPASS-3 trial. Lancet Diabetes Endocrinol. 2022;10(6):393–406. doi: 10.1016/S2213-8587(22)00070-5.	Ineligible population
Gautier T, Umpierrez G, Renard E, Kovatchev B. The differential and combined action of insulin glargine and lixisenatide on the fasting and postprandial components of glucose control. J Diabetes Sci Technol. 2021;15(2):371–6. doi: 10.1177/1932296819891170.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Gentilella R, Sesti G, Vázquez L, Sapin H, Reed V, Romera I et al. Dulaglutide is an effective treatment for lowering HbA1c in patients with type 2 diabetes regardless of body mass index. Diabetes Obes Metab. 2019;21(12):2660–6. doi: 10.1111/dom.13853.	No eligible outcome
German CA, Laughey B, Bertoni AG, Yeboah J. Associations between BMI, waist circumference, central obesity and outcomes in type II diabetes mellitus: the ACCORD trial. J Diabetes Complications. 2020;34(3):107499. doi: 10.1016/j.jdiacomp.2019.107499.	Ineligible population
Gerstein HC, Hart R, Colhoun HM, Diaz R, Lakshmanan M, Botros FT et al. The effect of dulaglutide on stroke: an exploratory analysis of the REWIND trial. Lancet Diabetes Endocrinol. 2020;8(2):106–14. doi: 10.1016/S2213-8587(19)30423-1.	Ineligible population
Gholami F, Khaki R, Mirzaei B, Howatson G. Resistance training improves nerve conduction and arterial stiffness in older adults with diabetic distal symmetrical polyneuropathy: a randomized controlled trial. Exp Gerontol. 2021;153:111481. doi: 10.1016/j.exger.2021.111481.	Ineligible follow-up duration
Gibbons C, Blundell J, Tetens Hoff S, Dahl K, Bauer R, Baekdal T. Effects of oral semaglutide on energy intake, food preference, appetite, control of eating and body weight in subjects with type 2 diabetes. Diabetes Obes Metab. 2021;23(2):581–8. doi: 10.1111/dom.14255.	Ineligible population
Gilbert MP, Bain SC, Franek E, Jódar-Gimeno E, Nauck MA, Pratley R et al. Effect of liraglutide on cardiovascular outcomes in elderly patients: a post hoc analysis of a randomized controlled trial. Ann Intern Med. 2019;170(6):423–6. doi: 10.7326/M18-1569.	Ineligible population
Gilcharan Singh HK, Chee WSS, Hamdy O, Mechanick JI, Lee VKM, Barua A et al. Eating self-efficacy changes in individuals with type 2 diabetes following a structured lifestyle intervention based on the transcultural Diabetes Nutrition Algorithm (tDNA): a secondary analysis of a randomized controlled trial. PLOS One. 2020;15(11):e0242487. doi: 10.1371/journal.pone.0242487.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Gildea N, McDermott A, Rocha J, O'Shea D, Green S, Egana M. Time-course of VO_2 kinetics responses during moderate-intensity exercise subsequent to HIIT versus moderate-intensity continuous training in type 2 diabetes. J Appl Physiol (1985). 2021;130(6):1646–59. doi: 10.1152/japplphysiol.00952.2020.	No eligible outcome
Gillett M, Royle P, Snaith A, Scotland G, Poobalan A, Imamura M et al. Non-pharmacological interventions to reduce the risk of diabetes in people with impaired glucose regulation: a systematic review and economic evaluation. Health Technol Assess. 2012;16(33):1-236, iii–iv. doi: 10.3310/hta16330.	Systematic review
Gimbel RW, Rennert LM, Crawford P, Little JR, Truong K, Williams JE et al. Enhancing patient activation and self-management activities in patients with type 2 diabetes using the US Department of Defense mobile health care environment: feasibility study. J Med Internet Res. 2020;22(5):e17968. doi: 10.2196/17968.	Ineligible population
Giorgino F, Shaunik A, Liu M, Saremi A. Achievement of glycaemic control is associated with improvements in lipid profile with iGlarLixi versus iGlar: a post hoc analysis of the LixiLan-L trial. Diabetes Obes Metab. 2019;21(12):2712–17. doi: 10.1111/dom.13857.	No eligible outcome
Giugliano D, Longo M, Caruso P, Di Fraia R, Scappaticcio L, Gicchino M et al. Feasibility of simplification from a basal-bolus insulin regimen to a fixed-ratio formulation of basal insulin plus a GLP-1RA or to basal insulin plus an $SGLT_2$ inhibitor: BEYOND, a randomized, pragmatic trial. Diabetes Care. 2021;44(6):1353–60. doi: 10.2337/dc20-2623.	No eligible outcome
Glenn LE, Nichols M, Enriquez M, Jenkins C. Impact of a community-based approach to patient engagement in rural, low-income adults with type 2 diabetes. Public Health Nurs. 2020;37(2):178–87. doi: 10.1111/phn.12693.	No eligible outcome
Gnesin F, Thuesen ACB, Kahler LKA, Madsbad S, Hemmingsen B. Metformin monotherapy for adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2020;(6):CD012906. doi: 10.1002/14651858.CD012906.pub2.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Goldberg RB, Tripputi MT, Boyko EJ, Budoff M, Chen ZZ, Clark JM et al. Hepatic fat in participants with and without incident diabetes in the Diabetes Prevention Program Outcome Study. J Clin Endocrinol Metab. 2021;106(11):e4746–65. doi: 10.1210/clinem/dgab160 (erratum in: J Clin Endocrinol Metab. 2021;106(7):e2841).	Ineligible population
Gomes JMG, de Assis Costa J, Ribeiro PVM, Alfenas RCG. High calcium intake from fat-free milk, body composition and glycaemic control in adults with type 2 diabetes: a randomised crossover clinical trial. Br J Nutr. 2019;122(3):301–8. doi: 10.1017/S0007114519001259.	No eligible outcome
Gong Q, Zhang P, Wang J, Ma J, An Y, Da Qing Diabetes Prevention Study Group. Morbidity and mortality after lifestyle intervention for people with impaired glucose tolerance: 30-year results of the Da Qing Diabetes Prevention Outcome Study. Lancet Diabetes Endocrinol. 2019;7(6):452–61. doi: 10.1016/S2213-8587(19)30093-2.	Ineligible population
Gong QH, Kang JF, Ying YY, Li H, Zhang XH, Wu YH et al. Lifestyle interventions for adults with impaired glucose tolerance: a systematic review and meta-analysis of the effects on glycemic control. Intern Med. 2015;54(3):303–10. doi: 10.2169/internalmedicine.54.2745.	Systematic review
Gonzalez JS, Hoogendoorn CJ, Linnell J, Fishman S, Jonas V, Pham-Singer H et al. Design and methods of NYC care calls: an effectiveness trial of telephone-delivered type 2 diabetes self-management support. Contemp Clin Trials. 2020;98:106166. doi: 10.1016/j.cct.2020.106166.	No eligible outcome
Gonzalez-Rivas JP, Infante-García MM, Nieto-Martínez R, Mechanick JI, Danaei G. Feasibility and effectiveness of a preventive care program during the compound humanitarian crisis and COVID-19 pandemic in Venezuela. Nutrients. 2022;14(5):939. doi: 10.3390/nu14050939.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Goruntla N, Mallela V, Nayakanti D. Impact of pharmacist-directed counseling and message reminder services on medication adherence and clinical outcomes in type 2 diabetes mellitus. J Pharm Bioallied Sci. 2019;11(1):69–76. doi: 10.4103/jpbs.JPBS_211_18.	No eligible outcome
Goudswaard AN, Furlong NJ, Valk GD, Stolk RP, Rutten G. Insulin monotherapy versus combinations of insulin with oral hypoglycaemic agents in patients with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2004;(4):CD003418. doi: 10.1002/14651858.CD003418.pub2.	Systematic review
Gram-Kampmann EM, Hansen CD, Hugger MB, Jensen JM, Brønd JC, Hermann AP et al. Effects of a 6-month, low-carbohydrate diet on glycaemic control, body composition, and cardiovascular risk factors in patients with type 2 diabetes: an open-label randomized controlled trial. Diabetes Obes Metab. 2022;24(4):693–703. doi: 10.1111/dom.14633.	Ineligible population
Granhall C, Donsmark M, Blicher TM, Golor G, Sondergaard FL, Thomsen M et al. Safety and pharmacokinetics of single and multiple ascending doses of the novel oral human GLP-1 analogue, oral semaglutide, in healthy subjects and subjects with type 2 diabetes. Clin Pharmacokinet. 2019;58(6):781–91. doi: 10.1007/s40262-018-0728-4.	No eligible outcome
Gray KE, Hoerster KD, Taylor L, Krieger J, Nelson KM. Improvements in physical activity and some dietary behaviors in a community health worker-led diabetes self-management intervention for adults with low incomes: results from a randomized controlled trial. Transl Behav Med. 2021;11(12):2144–54. doi: 10.1093/tbm/ibab113.	No eligible outcome
Grenet G, Ribault S, Nguyen GB, Glais F, Metge A, Linet T et al. GLUcose COntrol Safety & Efficacy in type 2 DIabetes, a systematic review and NETwork meta-analysis. PLOS One. 2019;14(6):e0217701. doi: 10.1371/journal.pone.0217701.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Griauzde DH, Ling G, Wray D, DeJonckheere M, Mizokami Stout K, Saslow LR et al. Continuous glucose monitoring with low-carbohydrate nutritional coaching to improve type 2 diabetes control: randomized quality improvement program. J Med Internet Res. 2022;24(2):e31184. doi: 10.2196/31184.	No eligible outcome
Griffin SJ, Rutten GEHM, Khunti K, Witte DR, Lauritzen T, Sharp SJ et al. Long-term effects of intensive multifactorial therapy in individuals with screen-detected type 2 diabetes in primary care: 10-year follow-up of the ADDITION-Europe cluster-randomised trial. Lancet Diabetes Endocrinol. 2019;7(12):925–37. doi: 10.1016/S2213-8587(19)30349-3.	Already included in USPSTF review
Griffin TP, Dinneen SF. In men who are overweight or obese, adding testosterone therapy reduced glucose intolerance/T2DM. Ann Intern Med. 2021;174(5):JC54. doi: 10.7326/ACPJ202105180-054.	Commentary
Guardado-Mendoza R, Salazar-López SS, Álvarez-Canales M, Farfán-Vázquez D, Martínez-López YE, Jiménez-Ceja LM et al. The combination of linagliptin, metformin and lifestyle modification to prevent type 2 diabetes (PRELLIM). A randomized clinical trial. Metabolism. 2020;104:154054. doi: 10.1016/j.metabol.2019.154054.	No eligible comparator
Gudban N, Yehuda I, Nasir W, Soboh S, Tamir S, Blum A. Effect of telemedicine dietary intervention for endothelial function in patients with type 2 diabetes mellitus on Mediterranean diet. Isr Med Assoc J. 2021;23(2):89–93. PMID: 33595213.	No eligible outcome
Guilbert E, Perry R, Whitmarsh A, Sauchelli S. Short-term effectiveness of nutrition therapy to treat type 2 diabetes in low-income and middle-income countries: systematic review and meta-analysis of randomised controlled trials. BMJ Open. 2022;12(3):e056108. doi: 10.1136/bmjopen-2021-056108.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Gummesson A, Nyman E, Knutsson M, Karpefors M. Effect of weight reduction on glycated haemoglobin in weight loss trials in patients with type 2 diabetes. Diabetes Obes Metab. 2017;19(9):1295–305. doi: 10.1111/dom.12971.	Systematic review
Gupta U, Gupta Y, Jose D, Mani K, Jyotsna VP, Sharma G et al. Effectiveness of a video-based lifestyle education program compared to usual care in improving HbA1c and other metabolic parameters in individuals with type 2 diabetes: an open-label parallel arm randomized control trial (RCT). Diabetes Ther. 2020;11(3):667–79. doi: 10.1007/s13300-020-00769-2.	No eligible outcome
Gutierrez JA, Scirica BM, Bonaca MP, Steg PG, Mosenzon O, Hirshberg B et al. Prevalence and outcomes of polyvascular (coronary, peripheral, or cerebrovascular) disease in patients with diabetes mellitus (from the SAVOR-TIMI 53 trial). Am J Cardiol. 2019;123(1):145–52. doi: 10.1016/j.amjcard.2018.09.014.	Ineligible population
Gyawali B, Sharma R, Mishra SR, Neupane D, Vaidya A, Sandbaek A et al. Effectiveness of a female community health volunteer-delivered intervention in reducing blood glucose among adults with type 2 diabetes: an open-label, cluster randomized clinical trial. JAMA Netw Open. 2021;4(2):e2035799. doi: 10.1001/jamanetworkopen.2020.35799.	No eligible outcome
Halberg IB, Lyby K, Wassermann K, Heise T, Zijlstra E, Plum-Morschel L. Efficacy and safety of oral basal insulin versus subcutaneous insulin glargine in type 2 diabetes: a randomised, double-blind, phase 2 trial. Lancet Diabetes Endocrinol. 2019;7(3):179–88. doi: 10.1016/S2213-8587(18)30372-3.	No eligible outcome
Halvorsen Y-D, Lock JP, Zhou W, Zhu F, Freeman MW. A 24-week, randomized, double-blind, active-controlled clinical trial comparing bexagliflozin with sitagliptin as an adjunct to metformin for the treatment of type 2 diabetes in adults. Diabetes Obes Metab. 2019;21(10):2248–56. doi: 10.1111/dom.13801.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Han HR, Nkimbeng M, Ajomagberin O, Grunstra K, Sharps P, Renda S et al. Health literacy enhanced intervention for inner-city African Americans with uncontrolled diabetes: a pilot study. Pilot Feasibility Stud. 2019;5(1):99. doi: 10.1186/s40814-019-0484-8.	No eligible outcome
Han Y, Cheng B, Guo Y, Wang Q, Yang N, Lin P. A low-carbohydrate diet realizes medication withdrawal: a possible opportunity for effective glycemic control. Front Endocrinol. 2021;12:779636. doi: 10.3389/fendo.2021.779636.	Ineligible population
Handelsman Y, Mathieu C, Del Prato S, Johnsson E, Kurlyandskaya R, Iqbal N et al. Sustained 52-week efficacy and safety of triple therapy with dapagliflozin plus saxagliptin versus dual therapy with sitagliptin added to metformin in patients with uncontrolled type 2 diabetes. Diabetes Obes Metab. 2019;21(4):883–92. doi: 10.1111/dom.13594.	Ineligible population
Hangping Z, Xiaona Q, Qi Z, Qingchun L, Na Y, Lijin J et al. The impact on glycemic control through progressive resistance training with bioDensity in Chinese elderly patients with type 2 diabetes: the PReTTy2 (Progressive Resistance Training in Type 2 diabetes) trial. Diabetes Res Clin Pract. 2019;150:64–71. doi: 10.1016/j.diabres.2019.02.011.	No eligible outcome
Hansen CS, Lundby-Christiansen L, Tarnow L, Gluud C, Hedetoft C, Thorsteinsson B et al. Metformin may adversely affect orthostatic blood pressure recovery in patients with type 2 diabetes: substudy from the placebo-controlled Copenhagen Insulin and Metformin Therapy (CIMT) trial. Cardiovasc Diabetol. 2020;19(1):150. doi: 10.1186/s12933-020-01131-3.	Ineligible population
Harreiter J, Just I, Leutner M, Bastian M, Brath H, Schelkshorn C et al. Combined exenatide and dapagliflozin has no additive effects on reduction of hepatocellular lipids despite better glycaemic control in patients with type 2 diabetes mellitus treated with metformin: EXENDA, a 24-week, prospective, randomized, placebo-controlled pilot trial. Diabetes Obes Metab. 2021;23(5):1129–39. doi: 10.1111/dom.14319.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Hartman ML, Sanyal AJ, Loomba R, Wilson JM, Nikooienejad A, Bray R et al. Effects of novel dual GIP and GLP-1 receptor agonist tirzepatide on biomarkers of nonalcoholic steatohepatitis in patients with type 2 diabetes. Diabetes Care. 2020;43(6):1352–5. doi: 10.2337/dc19-1892.	No eligible outcome
Hartweg J, Perera R, Montori VM, Dinneen SF, Neil A, Farmer AJ. Omega-3 polyunsaturated fatty acids (PUFA) for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2008;(1):CD003205. doi: 10.1002/14651858.CD003205.pub2.	Systematic review
Hashim SA, B.-Mohd Yusof N, Abu Saad H, Ismail S, Hamdy O, Mansour AA. Effectiveness of simplified diabetes nutrition education on glycemic control and other diabetes-related outcomes in patients with type 2 diabetes mellitus. Clin Nutr ESPEN. 2021;45:141–9. doi: 10.1016/j.clnesp.2021.07.024.	No eligible outcome
Hassanein M, Kumwenda MJ, Hemida K, Clark K, Roberts J, Pritchard Jones C et al. Structured hypertension education program for people with type 2 diabetes, the SHED study. Diabetes Res Clin Pract. 2021;175:108773. doi: 10.1016/j.diabres.2021.108773.	No eligible outcome
Hattori S. Ten-year follow-up of sitagliptin treatment in patients with type 2 diabetes mellitus. Diabetol Metab Syndr. 2021;13(1):117. doi: 10.1186/s13098-021-00735-3.	Ineligible population
Hayden KM, Neiberg RH, Evans JK, Luchsinger JA, Carmichael O, Dutton GR et al. Legacy of a 10-year multidomain lifestyle intervention on the cognitive trajectories of individuals with overweight/obesity and type 2 diabetes mellitus. Dement Geriatr Cogn Disord. 2021;50(3):237–49. doi: 10.1159/000517160.	No eligible outcome
Hazuda HP, Pan Q, Florez H, Luchsinger JA, Crandall JP, Venditti EM et al. Association of intensive lifestyle and metformin interventions with frailty in the Diabetes Prevention Program Outcomes Study. J Gerontol A Biol Sci Med Sci. 2021;76(5):929–36. doi: 10.1093/gerona/glaa295.	No new data from this paper (study included)

Table A2.1. contd

Reference	Reason for exclusion
Heise T, Mari A, DeVries JH, Urva S, Li J, Pratt EJ et al. Effects of subcutaneous tirzepatide versus placebo or semaglutide on pancreatic islet function and insulin sensitivity in adults with type 2 diabetes: a multicentre, randomised, double-blind, parallel-arm, phase 1 clinical trial. Lancet Diabetes Endocrinol. 2022;10(6):418–29. doi: 10.1016/S2213-8587(22)00085-7.	Ineligible population
Heisler M, Choi H, Mase R, Long JA, Reeves PJ. Effectiveness of technologically enhanced peer support in improving glycemic management among predominantly African American, low-income adults with diabetes. Diabetes Educ. 2019;45(3):260–71. doi: 10.1177/0145721719844547.	No eligible outcome
Hemmingsen B, Sonne DP, Metzendorf MI, Richter B. Insulin secretagogues for prevention or delay of type 2 diabetes mellitus and its associated complications in persons at increased risk for the development of type 2 diabetes mellitus. Cochrane Database Syst Rev. 2016;(10):CD012151. doi: 10.1002/14651858.CD012151.pub2.	Systematic review
Hemmingsen B, Gimenez-Perez G, Mauricio D, Roqué i Figuls M, Metzendorf MI, Richter B. Diet, physical activity or both for prevention or delay of type 2 diabetes mellitus and its associated complications in people at increased risk of developing type 2 diabetes mellitus. Cochrane Database Syst Rev. 2017;(12):CD003054. doi: 10.1002/14651858.CD003054.pub4.	Systematic review
Hemmingsen B, Schroll JB, Lund SS, Wetterslev J, Gluud C, Vaag A et al. Sulphonylurea monotherapy for patients with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2013;(4):CD009008. doi: 10.1002/14651858.CD009008.pub2.	Systematic review
Heselmans A, Delvaux N, Laenen A, Van de Velde S, Ramaekers D, Kunnamo I et al. Computerized clinical decision support system for diabetes in primary care does not improve quality of care: a cluster-randomized controlled trial. Implement Sci. 2020;15(1):5. doi: 10.1186/s13012-019-0955-6.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Hetherington-Rauth M, Magalhaes JP, Judice PB, Melo X, Sardinha LB. Vascular improvements in individuals with type 2 diabetes following a 1 year randomised controlled exercise intervention, irrespective of changes in cardiorespiratory fitness. Diabetologia. 2020;63(4): 722–32. doi: 10.1007/s00125-020-05089-5.	No eligible outcome
Heymsfield SB, Coleman LA, Miller R, Rooks DS, Laurent D, Petricoul O et al. Effect of bimagrumab vs placebo on body fat mass among adults with type 2 diabetes and obesity: a phase 2 randomized clinical trial. JAMA Netw Open. 2021;4(1):e2033457. doi: 10.1001/jamanetworkopen.2020.33457.	Ineligible population
Hilmarsdottir E, Sigurardottir AK, Arnardottir RH. A digital lifestyle program in outpatient treatment of type 2 diabetes: a randomized controlled study. J Diabetes Sci Technol. 2021;15(5):1134–41. doi: 10.1177/1932296820942286.	No eligible outcome
Hirai H, Higa M, Morimoto T, Sakuma M, Arasaki O, Nomiyama T et al. Dissimilar effects of anagliptin and sitagliptin on lipoprotein subclass in standard or strong statin-treated patients with type-2 diabetes mellitus: a subanalysis of the reason (randomized evaluation of anagliptin versus sitagliptin on low-density lipoprotein cholesterol in diabetes) trial. J Clin Med. 2020;9(1):93. doi: 10.3390/jcm9010093.	No eligible outcome
Hjorth MF, Bray GA, Zohar Y, Urban L, Miketinas DC, Williamson DA et al. Pretreatment fasting glucose and insulin as determinants of weight loss on diets varying in macronutrients and dietary fibers: the POUNDS LOST study. Nutrients. 2019;11(3):586. doi: 10.3390/nu11030586.	No eligible outcome
Hochsmann C, Muller O, Ambuhl M, Klenk C, Konigstein K, Infanger D et al. Novel smartphone game improves physical activity behavior in type 2 diabetes. Am J Prev Med. 2019;57(1):41–50. doi: 10.1016/j.amepre.2019.02.017.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Hong S, Jung CH, Han S, Park CY. Increasing age associated with higher dipeptidyl peptidase-4 inhibition rate is a predictive factor for efficacy of dipeptidyl peptidase-4 inhibitors. Diabetes Metab J. 2022;46(1): 63–70. doi: 10.4093/dmj.2020.0253.	No eligible outcome
Hong S, Nam M, Little BB, Paik S, Lee K, Woo J et al. Randomized control trial comparing the effect of cilostazol and aspirin on changes in carotid intima-medial thickness. Heart Vessels. 2019;34(11):1758–68. doi: 10.1007/s00380-019-01421-1.	Ineligible population
Hoogeveen RC, Dorresteijn JAN, Kriegsman DMW, Valk GD. Complex interventions for preventing diabetic foot ulceration. Cochrane Database Syst Rev. 2015;(8):CD007610. doi: 10.1002/14651858.CD007610.pub3.	Systematic review
Horne BD, Anderson JL, May HT, Le VT, Galenko O, Drakos SG et al. Intermittent fasting and changes in galectin-3: a secondary analysis of a randomized controlled trial of disease-free subjects. Nutr Metab Cardiovasc Dis. 2022;32(6):1538–48. doi: 10.1016/j.numecd.2022.03.001.	No eligible outcome
Hosseini SS, Shamsi M, Khorsandi M, Moradzadeh R. The effect of educational program based on theory of planned behavior on promoting retinopathy preventive behaviors in patients with type 2 diabetes: RCT. BMC Endocr Disord. 2021;21(1):17. doi: 10.1186/s12902-021-00680-2.	No eligible outcome
Hsu YJ, Chen YH, Lin KD, Lee MY, Lee YL, Yu CK et al. Clinical outcomes and oral health-related quality of life after periodontal treatment with community health worker strategy in patients with type 2 diabetes: a randomized controlled study. Int J Environ Res Public Health. 2021;18(16):8371. doi: 10.3390/ijerph18168371.	No eligible outcome
Hu B, Fan H, Yao J. The effect of metformin combined with sitagliptin on type 2 diabetes mellitus and the islets function. Acta Med Mediterr. 2020;36(6):3631–4. doi: 10.19193/0393-6384_2020_6_575.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Hu H, Yuan G, Wang X, Sun J, Gao Z, Zhou T et al. Effects of a diet with or without physical activity on angiopoietin-like protein 8 concentrations in overweight/obese patients with newly diagnosed type 2 diabetes: a randomized controlled trial. Endocr J. 2019;66(1):89–105. doi: 10.1507/endocrj.EJ18-0191.	Ineligible population
Hu W, Fan X, Zhou B, Li L, Tian B, Fang X et al. Circulating alarin concentrations are high in patients with type 2 diabetes and increased by glucagon-like peptide-1 receptor agonist treatment: an Consort-compliant study. Medicine (Baltimore). 2019;98(28):e16428. doi: 10.1097/MD.0000000000016428.	Ineligible study design
Huffman JC, Golden J, Massey CN, Feig EH, Chung WJ, Millstein RA et al. A positive psychology-motivational interviewing intervention to promote positive affect and physical activity in type 2 diabetes: the BEHOLD-8 controlled clinical trial. Psychosom Med. 2020;82(7): 641–9. doi: 10.1097/PSY.0000000000000840.	No eligible outcome
Huffman JC, Golden J, Massey CN, Feig EH, Chung WJ, Millstein RA et al. A positive psychology-motivational interviewing program to promote physical activity in type 2 diabetes: the BEHOLD-16 pilot randomized trial. Gen Hosp Psychiatry. 2021;68:65–73. doi: 10.1016/j.genhosppsych.2020.12.001.	No eligible outcome
Huntriss R, Campbell M, Bedwell C. The interpretation and effect of a low-carbohydrate diet in the management of type 2 diabetes: a systematic review and meta-analysis of randomised controlled trials. Eur J Clin Nutr. 2018;72(3):311–25. doi: 10.1038/s41430-017-0019-4.	Systematic review
Hygum K, Harsløf T, Jørgensen NR, Rungby J, Pedersen SB, Langdahl BL. Bone resorption is unchanged by liraglutide in type 2 diabetes patients: a randomised controlled trial. Bone. 2020;132:115197. doi: 10.1016/j.bone.2019.115197.	No eligible outcome
Iacobellis G, Gra-Menendez S. Effects of dapagliflozin on epicardial fat thickness in patients with type 2 diabetes and obesity. Obesity (Silver Spring). 2020;28(6):1068–74. doi: 10.1002/oby.22798.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Ikonomidis I, Pavlidis G, Thymis J, Birba D, Kalogeris A, Kousathana F et al. Effects of glucagon-like peptide-1 receptor agonists, sodium-glucose cotransporter-2 inhibitors, and their combination on endothelial glycocalyx, arterial function, and myocardial work index in patients with type 2 diabetes mellitus after 12-month treatment. J Am Heart Assoc. 2020;9(9):e015716. doi: 10.1161/JAHA.119.015716.	No eligible outcome
Ilkun OL, Greene T, Cheung AK, Whelton PK, Wei G, Boucher RE et al. The influence of baseline diastolic blood pressure on the effects of intensive blood pressure lowering on cardiovascular outcomes and all-cause mortality in type 2 diabetes. Diabetes Care. 2020;43(8):1878–84. doi: 10.2337/dc19-2047.	Ineligible population
Inoue M, Lorenz M, Muto H, Wesch R, Hashimoto Y. Effect of a single dose of insulin glargine/lixisenatide fixed ratio combination (iGlarLixi) on postprandial glucodynamic response in Japanese patients with type 2 diabetes mellitus: a phase I randomized trial. Diabetes Obes Metab. 2019;21(8):2001–5. doi: 10.1111/dom.13757.	No eligible outcome
Inzucchi SE, Fitchett D, Jurišić-Eržen D, Woo V, Hantel S, Janista C et al. Are the cardiovascular and kidney benefits of empagliflozin influenced by baseline glucose-lowering therapy? Diabetes Obes Metab. 2020;22(4):631–9. doi: 10.1111/dom.13938.	Ineligible population
Ipsen E, Madsen KS, Chi Y, Pedersen-Bjergaard U, Richter B, Metzendorf MI et al. Pioglitazone for prevention or delay of type 2 diabetes mellitus and its associated complications in people at risk for the development of type 2 diabetes mellitus. Cochrane Database Syst Rev. 2020;(11):CD013516. doi: 10.1002/14651858.CD013516.pub2.	Systematic review
Ishihara H, Yamaguchi S, Nakao I, Asahina S, Sakatani T. Efficacy and safety of ipragliflozin as add-on therapy to insulin in Japanese patients with type 2 diabetes mellitus (IOLITE): a 36-week, open-label extension of a 16-week, randomized, placebo-controlled, double-blind study. Diabetol Int. 2019;10(1):37–50. doi: 10.1007/s13340-018-0359-x.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Ishii H, Onishi Y, Oura T, Takeuchi M. Once-weekly dulaglutide with insulin therapy for type 2 diabetes: efficacy and safety results from a phase 4, randomized, placebo-controlled study. Diabetes Ther. 2020;11(1): 133–45. doi: 10.1007/s13300-019-00726-8.	Ineligible population
Ishii H, Suzaki Y, Miyata Y, Matsui S. Randomized multicenter evaluation of quality of life and treatment satisfaction in type 2 diabetes patients receiving once-weekly trelagliptin versus a daily dipeptidyl peptidase-4 inhibitor. Diabetes Ther. 2019;10(4):1369–80. doi: 10.1007/s13300-019-0643-1.	Ineligible population
Ivanova E, Sadikaj G, Bourne JE, Beauchamp M, Little JP, Jung ME. A pilot study on in-task affect predicting free-living adherence to HIIT and MICT. Res Q Exerc Sport. 2022;93(2):291–300. doi: 10.1080/02701367.2020.1828562.	No eligible outcome
Jabbour SA, Frías JP, Ahmed A, Hardy E, Choi J, Sjostrom CD et al. Efficacy and safety over 2 years of exenatide plus dapagliflozin in the DURATION-8 study: a multicenter, double-blind, phase 3, randomized controlled trial. Diabetes Care. 2020;43(10):2528–36. doi: 10.2337/dc19-1350.	Ineligible population
Jagannathan R, Weber MB, Anjana RM, Ranjani H, Staimez LR, Ali MK et al. Clinical utility of 30-min plasma glucose for prediction of type 2 diabetes among people with prediabetes: ancillary analysis of the diabetes community lifestyle improvement program. Diabetes Res Clin Pract. 2020;161:108075. doi: 10.1016/j.diabres.2020.108075.	No eligible outcome
Jahansouz C, Xu H, Kizy S, Thomas AJ, Josephrajan A, Hertzel AV et al. Serum FABP4 concentrations decrease after Roux-en-Y gastric bypass but not after intensive medical management. Surgery. 2019;165(3):571–8. doi: 10.1016/j.surg.2018.08.007.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Janez A, Őrsy P, Stachlewska K, Salvesen-Sykes K, Billings LK, Philis-Tsimikas A. Benefits of insulin degludec/liraglutide are maintained even in patients discontinuing sulphonylureas or dipeptidyl peptidase-4 inhibitors upon initiation of degludec/liraglutide therapy: a post hoc analysis of the DUAL II and DUAL IX trials. Diabetes Obes Metab. 2020;22(4): 658–68. doi: 10.1111/dom.13944.	No eligible outcome
Javaid Z, Imtiaz U, Khalid I, Saeed H, Khan RQ, Islam M et al. A randomized control trial of primary care-based management of type 2 diabetes by a pharmacist in Pakistan. BMC Health Serv Res. 2019;19(1):409. doi: 10.1186/s12913-019-4274-z.	Ineligible population
Jensen JK, Zobel EH, von Scholten BJ, Rotbain Curovic V, Hansen TW, Rossing P et al. Effect of 26 weeks of liraglutide treatment on coronary artery inflammation in type 2 diabetes quantified by [64Cu] Cu-DOTATATE PET/CT: results from the LIRAFLAME trial. Front Endocrinol. 2021;12:790405. doi: 10.3389/ fendo.2021.790405.	No eligible outcome
Jeyaraman MM, Al-Yousif NSH, Singh Mann A, Dolinsky VW, Rabbani R, Zarychanski R et al. Resveratrol for adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2020;(1):CD011919. doi: 10.1002/14651858.CD011919.pub2.	Systematic review
Ji C, Dai J, Li L, Tao X, Shen S, Ge W. Influence of health education based on artificial intelligence system on the control indicators in the patients with type 2 diabetes mellitus. Pharma Care Res. 2021;21(1):1–5.	Ineligible population
Ji L, Ma J, Lu W, Liu J, Zeng JE, Yang J et al. Phase III, randomized, double-blind, placebo-controlled study to evaluate the efficacy and safety of teneligliptin monotherapy in Chinese patients with type 2 diabetes mellitus inadequately controlled with diet and exercise. J Diabetes Investig. 2021;12(4):537–45. doi: 10.1111/ jdi.13389.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Jiang XJ, Jiang H, Lu YH, Liu SL, Wang JP, Tang RS et al. The effectiveness of a self-efficacy-focused structured education programme on adults with type 2 diabetes: a multicentre randomised controlled trial. J Clin Nurs. 2019;28(17–18):3299–309. doi: 10.1111/jocn.14908.	Ineligible population
Jiang Y, Mao F, Dong W, Zhang X, Dong J. Lasting effects of a community-based self-management intervention for patients with type 2 diabetes in China: outcomes at 2-year follow-up of a randomized trial. Asia Pac J Public Health. 2021;33(1):30–8. doi: 10.1177/1010539520975266.	No eligible outcome
Jiménez-Lucena R, Alcala-Diaz JF, Roncero-Ramos I, López-Moreno J, Camargo A, Gomez-Delgado F et al. MiRNAs profile as biomarkers of nutritional therapy for the prevention of type 2 diabetes mellitus: from the CORDIOPREV study. Clin Nutr. 2021;40(3):1028–38. doi: 10.1016/j.clnu.2020.06.035.	Ineligible population
Jódar E, Romera I, Wang Q, Roche SL, García-Perez LE. Glycaemic variability in patients with type 2 diabetes mellitus treated with dulaglutide, with and without concomitant insulin: post hoc analyses of randomized clinical trials. Diabetes Obes Metab. 2022;24(4):631–40. doi: 10.1111/dom.14615.	No eligible outcome
Jódar E, Michelsen M, Polonsky W, Réa R, Sandberg A, Vilsbøll T et al. Semaglutide improves health-related quality of life versus placebo when added to standard of care in patients with type 2 diabetes at high cardiovascular risk (SUSTAIN 6). Diabetes Obes Metab. 2020;22(8):1339–47. doi: 10.1111/dom.14039.	No eligible outcome
Johansen ML, Ibarrola J, Fernandez-Celis A, Schou M, Sonne MP, Refsgaard Holm M et al. The mineralocorticoid receptor antagonist eplerenone suppresses interstitial fibrosis in subcutaneous adipose tissue in patients with type 2 diabetes. Diabetes. 2021;70(1):196–203. doi: 10.2337/db20-0394.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Johansen ML, Schou M, Rossignol P, Holm MR, Rasmussen J, Brandt N et al. Effect of the mineralocorticoid receptor antagonist eplerenone on liver fat and metabolism in patients with type 2 diabetes: a randomized, double-blind, placebo-controlled trial (MIRAD trial). Diabetes Obes Metab. 2019;21(10):2305–14. doi: 10.1111/dom.13809.	No eligible outcome
Johansen MY, Karstoft K, MacDonald CS, Hansen KB, Ellingsgaard H, Hartmann B et al. Effects of an intensive lifestyle intervention on the underlying mechanisms of improved glycaemic control in individuals with type 2 diabetes: a secondary analysis of a randomised clinical trial. Diabetologia. 2020;63(11):2410–22. doi: 10.1007/s00125-020-05249-7.	No eligible outcome
Johansson L, Hockings PD, Johnsson E, Dronamraju N, Maaske J, García-Sánchez R et al. Dapagliflozin plus saxagliptin add-on to metformin reduces liver fat and adipose tissue volume in patients with type 2 diabetes. Diabetes Obes Metab. 2020;22(7):1094–101. doi: 10.1111/dom.14004.	No eligible outcome
Johns I, Frost G, Dornhorst A. Increasing the proportion of plasma MUFA, as a result of dietary intervention, is associated with a modest improvement in insulin sensitivity. J Nutr Sci. 2019;9:e6. doi: 10.1017/jns.2019.29.	Ineligible population
Johnson LCM, Desloge A, Sathish T, Williams ED, Absetz P, Haregu T et al. The relationship between common mental disorders and incident diabetes among participants in the Kerala Diabetes Prevention Program (K-DPP). PLOS One. 2021;16(7):e0255217. doi: 10.1371/journal.pone.0255217.	No eligible outcome
Johnsson KM, Ptaszynska A, Schmitz B, Sugg J, Parikh SJ, List JF. Urinary tract infections in patients with diabetes treated with dapagliflozin. J Diabetes Complications. 2013;27(5):473–8. doi: 10.1016/j.jdiacomp.2013.05.004.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Johnsson KM, Ptaszynska A, Schmitz B, Sugg J, Parikh SJ, List JF. Vulvovaginitis and balanitis in patients with diabetes treated with dapagliflozin. J Diabetes Complications. 2013;27(5):479–84. doi: 10.1016/j.jdiacomp.2013.04.012.	No eligible outcome
Jonas DE, Crotty K, Yun JDY, Middleton JC, Feltner C, Taylor-Phillips S et al. Screening for prediabetes and type 2 diabetes: updated evidence report and systematic review for the US Preventive Services Task Force. JAMA. 2021;326(8):744–60. doi: 10.1001/jama.2021.10403.	Systematic review
Jones TA, Sautter M, Van Gaal LF, Jones NP. Addition of rosiglitazone to metformin is most effective in obese, insulin-resistant patients with type 2 diabetes. Diabetes Obes Metab. 2003;5(3):163–70. doi: 10.1046/j.1463-1326.2003.00258.x.	Ineligible population
Joubert M, Opigez V, Pavlikova B, Peyro Saint Paul L, Jeandidier N, Briant AR et al. Efficacy and safety of exenatide as add-on therapy for patients with type 2 diabetes with an intensive insulin regimen: a randomized double-blind trial. Diabetes Obes Metab. 2021;23(2):374–81. doi: 10.1111/dom.14225.	Ineligible population
Kabisch S, Honsek C, Kemper M, Gerbracht C, Arafat AM, Birkenfeld AL et al. Dose-dependent effects of insoluble fibre on glucose metabolism: a stratified post hoc analysis of the Optimal Fibre Trial (OptiFiT). Acta Diabetol. 2021;58(12):1649–58. doi: 10.1007/s00592-021-01772-0.	Ineligible study design
Kabisch S, Meyer NMT, Honsek C, Gerbracht C, Dambeck U, Kemper M et al. Obesity does not modulate the glycometabolic benefit of insoluble cereal fibre in subjects with prediabetes: a stratified post hoc analysis of the Optimal Fibre Trial (OptiFiT). Nutrients. 2019;11(11):2726. doi: 10.3390/nu11112726.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Kadowaki T, Wang G, Rosenstock J, Yabe D, Peng Y, Kanasaki K et al. Effect of linagliptin, a dipeptidyl peptidase-4 inhibitor, compared with the sulfonylurea glimepiride on cardiovascular outcomes in Asians with type 2 diabetes: subgroup analysis of the randomized CAROLINA® trial. Diabetol Int. 2021;12(1):87–100. doi: 10.1007/s13340-020-00447-5.	Ineligible population
Kahn SE, Edelstein SL, Arslanian SA, Barengolts E, Caprio S, Ehrmann DA et al. Effect of medical and surgical interventions on alpha-cell function in dysglycemic youth and adults in the RISE study. Diabetes Care. 2021;44(9):1948–60. doi: 10.2337/dc21-0461.	No eligible outcome
Kakoschke N, Zajac IT, Tay J, Luscombe-Marsh ND, Thompson CH, Noakes M et al. Effects of very low-carbohydrate vs high-carbohydrate weight loss diets on psychological health in adults with obesity and type 2 diabetes: a 2-year randomized controlled trial. Eur J Nutr. 2021;60(8):4251–62. doi: 10.1007/s00394-021-02587-z.	Ineligible population
Kaku K, Haneda M, Tanaka Y, Lee G, Shiki K, Miyamoto Y et al. Linagliptin as add-on to empagliflozin in a fixed-dose combination in Japanese patients with type 2 diabetes: glycaemic efficacy and safety profile in a two-part, randomized, placebo-controlled trial. Diabetes Obes Metab. 2019;21(1):136–45. doi: 10.1111/dom.13496.	No eligible outcome
Kamradt M, Ose D, Krisam J, Jacke C, Salize H-J, Besier W et al. Meeting the needs of multimorbid patients with type 2 diabetes mellitus: a randomized controlled trial to assess the impact of a care management intervention aiming to improve self-care. Diabetes Res Clin Pract. 2019;150:184–93. doi: 10.1016/j.diabres.2019.03.008.	No eligible outcome
Kang C, Qiao Q, Tong Q, Bai Q, Huang C, Fan R et al. Effects of exenatide on urinary albumin in overweight/obese patients with T2DM: a randomized clinical trial. Sci Rep. 2021;11(1):20062. doi: 10.1038/s41598-021-99527-y.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Kang YM, Cho YK, Lee J, Lee SE, Lee WJ, Park JY et al. Asian subpopulations may exhibit greater cardiovascular benefit from long-acting glucagon-like peptide 1 receptor agonists: a meta-analysis of cardiovascular outcome trials. Diabetes Metab J. 2019;43(4):410–21. doi: 10.4093/dmj.2018.0070.	Ineligible population
Kaplan Serin E, Citlik Saritas S. The effect of the transtheoretical model based walking exercise training and follow-up on improving exercise behavior and metabolic control in patients with type 2 diabetes. Clin Nurs Res. 2021;30(3):273–84. doi: 10.1177/1054773820920487.	No eligible outcome
Karagiannis T, Paschos P, Paletas K, Matthews DR, Tsapas A. Dipeptidyl peptidase-4 inhibitors for treatment of type 2 diabetes mellitus in the clinical setting: systematic review and meta-analysis. BMJ. 2012;344:e1369. doi: 10.1136/bmj.e1369.	Systematic review
Karaivanov Y, Philpott EE, Asghari S, Graham J, Lane DM. Shared medical appointments for Innu patients with well-controlled diabetes in a northern First Nation community. Can J Rural Med. 2021;26(1): 19–27. doi: 10.4103/CJRM.CJRM_45_20.	No eligible outcome
Kargin D, Tomaino L, Serra-Majem L. Experimental outcomes of the Mediterranean diet: lessons learned from the Predimed randomized controlled trial. Nutrients. 2019;11(12):2991. doi: 10.3390/nu11122991.	Systematic review
Kasthuri S, Poongothai S, Anjana RM, Selvakumar J, Muthukumar S, Kayalvizhi S et al. Comparison of glycemic excursion using flash continuous glucose monitoring in patients with type 2 diabetes mellitus before and after treatment with voglibose. Diabetes Technol Ther. 2021;23(3):213–20. doi: 10.1089/dia.2019.0484.	Ineligible population
Katakami N, Mita T, Yoshii H, Shiraiwa T, Yasuda T, Okada Y et al. Effect of tofogliflozin on arterial stiffness in patients with type 2 diabetes: prespecified sub-analysis of the prospective, randomized, open-label, parallel-group comparative UTOPIA trial. Cardiovasc Diabetol. 2021;20(1):4. doi: 10.1186/s12933-020-01206-1.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Katsuno T, Shiraiwa T, Iwasaki S, Park H, Watanabe N, Kaneko S et al. Benefit of early add-on of linagliptin to insulin in Japanese patients with type 2 diabetes mellitus: randomized-controlled open-label trial (TRUST2). Adv Ther. 2021;38(3):1514–35. doi: 10.1007/s12325-021-01631-y.	Ineligible population
Katula JA, Dressler EV, Kittel CA, Harvin LN, Almeida FA, Wilson KE et al. Effects of a digital diabetes prevention program: an RCT. Am J Prev Med. 2022;62(4):567–77. doi: 10.1016/j.amepre.2021.10.023.	No eligible outcome
Kavitha Chandran C, Mathew A, Jayakumar RV. Primary prevention of type 2 diabetes mellitus: multiple health care strategies. Indian J Public Health Res Dev. 2020;11(10):139–45. doi: 10.37506/ijphrd.v11i10.11130.	Study protocol
Kaze AD, Santhanam P, Musani SK, Ahima R, Echouffo-Tcheugui JB. Metabolic dyslipidemia and cardiovascular outcomes in type 2 diabetes mellitus: findings from the Look AHEAD study. J Am Heart Assoc. 2021;10(7):e016947. doi: 10.1161/JAHA.120.016947.	Ineligible population
Ke J, Lin T, Liu X, Wu K, Ruan X, Ding Y et al. Glucose intolerance and cancer risk: a community-based prospective cohort study in Shanghai, China. Front Oncol. 2021;11:726672. doi: 10.3389/fonc.2021.726672.	No eligible outcome
Khaladkar K, Mohan B, Khaladkar K, Suryawanshi S, Barkatestrong/Strong H. Efficacy and safety of a fixed dose combination of remogliflozin etabonate and vildagliptin in patients with type-2 diabetes mellitus: a randomized, active-controlled, double-blind, phase III study. J Assoc Physicians India. 2022;70(4):11–12. PMID: 35443373.	Ineligible population
Khalatbari A, Ghorbanshiroudi S, Zarbakhsh MR, Tizdast T. Comparison of the effectiveness of compassion-based therapy and acceptance-based therapy and commitment to self-care behavior and glycosylated hemoglobin in patients with type 2 diabetes. J Guilan Univ Med Sci. 2020;29(3):34–49. doi: 10.32598/JGUMS.29.3.1584.1.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Khunti K, Griffin S, Brennan A, Dallosso H, Davies M, Eborall H et al. Behavioural interventions to promote physical activity in a multiethnic population at high risk of diabetes: PROPELS three-arm RCT. Health Technol Assess. 2021;25(77):1–190. doi: 10.3310/hta25770.	No eligible outcome
Kim G, Lim S, Kwon HS, Park IB, Ahn KJ, Park CY et al. Efficacy and safety of evogliptin treatment in patients with type 2 diabetes: a multicentre, active-controlled, randomized, double-blind study with open-label extension (the EVERGREEN study). Diabetes Obes Metab. 2020;22(9):1527–36. doi: 10.1111/dom.14061.	No eligible outcome
Kim HJ, Jeong IK, Hur KY, Kim SK, Noh JH, Chun SW et al. Comparison of efficacy of glimepiride, alogliptin, and alogliptin–pioglitazone as the initial periods of therapy in patients with poorly controlled type 2 diabetes mellitus: an open-label, multicenter, randomized, controlled study. Diabetes Metab J. 2022;46(5):689–700. doi: 10.4093/dmj.2021.0183.	Ineligible population
Kim H, Wang D, Chalmers J, Jun M, Zoungas S, Marre M et al. Alternative kidney filtration markers and the risk of major macrovascular and microvascular events, and all-cause mortality in individuals with type 2 diabetes in the ADVANCE trial. J Diabetes. 2020;12(12):929–41. doi: 10.1111/1753-0407.13083.	Ineligible population
Kim KS, Hong S, Ahn HY, Park CY. Comparative efficacy of lobeglitazone versus pioglitazone on albuminuria in patients with type 2 diabetes mellitus. Diabetes Ther. 2021;12(1):171–81. doi: 10.1007/s13300-020-00948-1.	Ineligible population
Kim MT, Kim KB, Ko J, Murry N, Xie B, Radhakrishnan K et al. Health literacy and outcomes of a community-based self-help intervention: a case of Korean Americans with type 2 diabetes. Nurs Res. 2020;69(3):210–18. doi: 10.1097/NNR.0000000000000409.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Kim SG, Kim KJ, Yoon KH, Chun SW, Park KS, Choi KM et al. Efficacy and safety of lobeglitazone versus sitagliptin as an add-on to metformin in patients with type 2 diabetes with two or more components of metabolic syndrome over 24 weeks. Diabetes Obes Metab. 2020;22(10):1869–73. doi: 10.1111/dom.14085.	No eligible outcome
Kim SH, Abbasi F, Nachmanoff C, Stefanakis K, Kumar A, Kalra B et al. Effect of the glucagon-like peptide-1 analogue liraglutide versus placebo treatment on circulating proglucagon-derived peptides that mediate improvements in body weight, insulin secretion and action: a randomized controlled trial. Diabetes Obes Metab. 2021;23(2):489–98. doi: 10.1111/dom.14242.	No eligible outcome
Kim SH, Brodsky IG, Chatterjee R, Kashyap SR, Knowler WC, Liao E et al. Effect of vitamin D supplementation on kidney function in adults with prediabetes: a secondary analysis of a randomized trial. Clin J Am Soc Nephrol. 2021;16(8):1201–9. doi: 10.2215/CJN.00420121.	Ineligible intervention
Kim SH, Kim Y, Choi S, Jeon B. Evaluation of nurse-led social media intervention for diabetes self-management: a mixed-method study. J Nurs Scholarsh. 2022;54(5):569–77. doi: 10.1111/jnu.12770.	Ineligible population
Kim Y, Lee H, Seo JM. Integrated diabetes self-management program using smartphone application: a randomized controlled trial. West J Nurs Res. 2022;44(4):383–94. doi: 10.1177/0193945921994912.	Ineligible population
Kinduryte Schorling O, Clark D, Zwiener I, Kaspers S, Lee J, Iliev H. Pooled safety and tolerability analysis of empagliflozin in patients with type 2 diabetes mellitus. Adv Ther. 2020;37(8):3463–84. doi: 10.1007/s12325-020-01329-7.	Ineligible population
Kitazawa T, Seino H, Ohashi H, Inazawa T, Inoue M, Ai M et al. Comparison of tofogliflozin versus glimepiride as the third oral agent added to metformin plus a dipeptidyl peptidase-4 inhibitor in Japanese patients with type 2 diabetes: a randomized, 24-week, open-label, controlled trial (STOP-OB). Diabetes Obes Metab. 2020;22(9):1659–63. doi: 10.1111/dom.14059.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Kobayashi M, Miura T, Miura K, Hiroyama N, Akashi K. Effect of a moderate carbohydrate-restricted diet on DPP-4 inhibitor action among individuals with type 2 diabetes mellitus: a 6-month intervention study. J Nutr Sci Vitaminol (Tokyo). 2020;66(2):114–18. doi: 10.3177/jnsv.66.114.	No eligible outcome
Kobe EA, Diamantidis CJ, Bosworth HB, Davenport CA, Oakes M, Alexopoulos A-S et al. Racial differences in the effectiveness of a multifactorial telehealth intervention to slow diabetic kidney disease. Med Care. 2020;58(11):968–73. doi: 10.1097/MLR.0000000000001387.	No eligible outcome
Kohler S, Kaspers S, Salsali A, Zeller C, Woerle HJ. Analysis of fractures in patients with type 2 diabetes treated with empagliflozin in pooled data from placebo-controlled trials and a head-to-head study versus glimepiride. Diabetes Care. 2018;41(8):1809–16. doi: 10.2337/dc17-1525.	No eligible outcome
Koloverou E, Esposito K, Giugliano D, Panagiotakos D. The effect of Mediterranean diet on the development of type 2 diabetes mellitus: a meta-analysis of 10 prospective studies and 136 846 participants. Metabolism. 2014;63(7):903–11. doi: 10.1016/j.metabol.2014.04.010.	Systematic review
Kong JX, Zhu L, Wang HM, Li Y, Guo AY, Gao C et al. Effectiveness of the chronic care model in type 2 diabetes management in a community health service center in China: a group randomized experimental study. J Diabetes Res. 2019;2019:6516581. doi: 10.1155/2019/6516581.	No eligible outcome
Kong SH, Koo BK, Moon MK. Effects of dapagliflozin on endothelial function, renal injury markers, and glycemic control in drug-naïve patients with type 2 diabetes mellitus. Diabetes Metab J. 2019;43(5):711–17. doi: 10.4093/dmj.2018.0208.	No eligible outcome
Konig M, Riddle MC, Colhoun HM, Branch KR, Atisso CM, Lakshmanan MC et al. Exploring potential mediators of the cardiovascular benefit of dulaglutide in type 2 diabetes patients in REWIND. Cardiovasc Diabetol. 2021;20(1):194. doi: 10.1186/s12933-021-01386-4.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Koska J, Migrino RQ, Chan KC, Cooper-Cox K, Reaven PD. The effect of exenatide once weekly on carotid atherosclerosis in individuals with type 2 diabetes: an 18-month randomized placebo-controlled study. Diabetes Care. 2021;44(6):1385–92. doi: 10.2337/dc20-2014.	No eligible outcome
Kour H, Kothiwale VA, Goudar SS. Effects of the six months of programmed exercise therapy on cardio-respiratory endurance and neurophysiological variables in asymptomatic young adults diagnosed newly with type 2 diabetes mellitus: a randomized controlled trial. Indian J Physiol Pharmacol. 2019;63(4):283–93.	No eligible outcome
Kring C, Rasmussen LM, Lindholt JS, Diederichsen ACP, Vinholt PJ. Platelet aggregation is not altered among men with diabetes mellitus. Acta Diabetol. 2020;57(4):389–99. doi: 10.1007/s00592-019-01438-y.	Ineligible population
Krishnappa M, Patil K, Parmar K, Trivedi P, Mody N, Shah C et al. Effect of saroglitazar 2 mg and 4 mg on glycemic control, lipid profile and cardiovascular disease risk in patients with type 2 diabetes mellitus: a 56-week, randomized, double blind, phase 3 study (PRESS XII study). Cardiovasc Diabetol. 2020;19(1):93. doi: 10.1186/s12933-020-01073-w.	Ineligible population
Kriska AM, Devaraj SM, Kramer K, Napoleone JM, Rockette-Wagner B, Eaglehouse Y et al. The likely underestimated impact of lifestyle intervention: diabetes prevention program translation examples. Am J Prev Med. 2022;62(4):e248–54. doi: 10.1016/j.amepre.2021.10.019.	No eligible outcome
Kriska AM, Rockette-Wagner B, Edelstein SL, Bray GA, Delahanty LM, DPP Research Group. The impact of physical activity on the prevention of type 2 diabetes: evidence and lessons learned from the diabetes prevention program, a long-standing clinical trial incorporating subjective and objective activity measures. Diabetes Care. 2021;44(1):43–9. doi: 10.2337/dc20-1129.	No new data from this paper (study included)

Table A2.1. contd

Reference	Reason for exclusion
Kusnanto, Widyanata KAJ, Suprajitno, Arifin H. DM-calendar app as a diabetes self-management education on adult type 2 diabetes mellitus: a randomized controlled trial. J Diabetes Metab Disord. 2019;18(2): 557–63. doi: 10.1007/s40200-019-00468-1.	No eligible outcome
Lake AJ, Hateley-Browne JL, Rees G, Speight J. Effect of a tailored leaflet to promote diabetic retinopathy screening among young adults with type 2 diabetes: a randomised controlled trial. BMC Ophthalmol. 2020;20(1):80. doi: 10.1186/s12886-020-1311-y.	Ineligible population
Lam CSP, Ramasundarahettige C, Branch KRH, Sattar N, Rosenstock J, Pratley R et al. Efpeglenatide and clinical outcomes with and without concomitant sodium–glucose cotransporter-2 inhibition use in type 2 diabetes: exploratory analysis of the AMPLITUDE-O trial. Circulation. 2022;145(8):565–74. doi: 10.1161/CIRCULATIONAHA.121.057934.	Ineligible population
Landry MJ, Crimarco A, Perelman D, Durand LR, Petlura C, Aronica L et al. Adherence to ketogenic and Mediterranean study diets in a crossover trial: the Keto-Med randomized trial. Nutrients. 2021;13(3):967. doi: 10.3390/nu13030967.	No eligible outcome
Larsen EL, Kjær LK, Lundby-Christensen L, Boesgaard TW, Breum L, Gluud C et al. Effects of 18-months metformin versus placebo in combination with three insulin regimens on RNA and DNA oxidation in individuals with type 2 diabetes: a post-hoc analysis of a randomized clinical trial. Free Radic Biol Med. 2022;178:18–25. doi: 10.1016/j.freeradbiomed.2021.11.028.	No eligible outcome
Lauffenburger JC, Ghazinouri R, Jan S, Makanji S, Ferro CA, Lewey J et al. Impact of a novel pharmacist-delivered behavioral intervention for patients with poorly-controlled diabetes: the ENhancing outcomes through Goal Assessment and Generating Engagement in Diabetes Mellitus (ENGAGE-DM) pragmatic randomized trial. PLOS One. 2019;14(4):e0214754. doi: 10.1371/journal.pone.0214754.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Lavikainen P, Mattila E, Absetz P, Harjumaa M, Lindstrom J, Jarvela-Reijonen E et al. Digitally supported lifestyle intervention to prevent type 2 diabetes through healthy habits: secondary analysis of long-term user engagement trajectories in a randomized controlled trial. J Med Internet Res. 2022;24(2):e31530. doi: 10.2196/31530.	Ineligible population
Leach MJ, Kumar S. Cinnamon for diabetes mellitus. Cochrane Database Syst Rev. 2012;(9):CD007170. doi: 10.1002/14651858.CD007170.pub2.	Systematic review
Lean MEJ, Leslie WS, Barnes AC, Brosnahan N, Thom G, McCombie L et al. Durability of a primary care-led weight-management intervention for remission of type 2 diabetes:2-year results of the DiRECT open-label, cluster-randomised trial. Lancet Diabetes Endocrinol. 2019;7(5):344–55. doi: 10.1016/S2213-8587(19)30068-3.	Ineligible population
Lee AK, Woodward M, Wang D, Ohkuma T, Warren B, Sharrett AR et al. The risks of cardiovascular disease and mortality following weight change in adults with diabetes: results from ADVANCE. J Clin Endocrinol Metab. 2020;105(1):152–62. doi: 10.1210/clinem/dgz045.	Ineligible population
Lee CH, Wu MZ, Lui DW, Chan DH, Fong CY, Shiu SM et al. Comparison of serum ketone levels and cardiometabolic efficacy of dapagliflozin versus sitagliptin among insulin-treated Chinese patients with type 2 diabetes mellitus. Diabetes Metab J. 2022;46(6):843–54. doi: 10.4093/dmj.2021.0319.	Ineligible population
Lee HH, McGeary JE, Dunsiger S, Baker L, Balasubramanyam A, Knowler WC et al. The moderating effects of genetic variations on changes in physical activity level and cardiorespiratory fitness in response to a life-style intervention: a randomized controlled trial. Psychosom Med. 2021;83(5):440–8. doi: 10.1097/PSY.0000000000000930.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Lee HY, Han KH, Chung WB, Her SH, Park TH, Rha SW et al. Safety and efficacy of pitavastatin in patients with impaired fasting glucose and hyperlipidemia: a randomized, open-labeled, multicentered, phase IV study. Clin Ther. 2020;42(10):2036–48. doi: 10.1016/j.clinthera.2020.07.013.	No eligible comparator
Lee JH, Lim SY, Cha SA, Han CJ, Jung AR, Kim KR et al. Short-term effects of the internet-based Korea Diabetes Prevention Study:6-month results of a community-based randomized controlled trial. Diabetes Metab J. 2021;45(6):960–5. doi: 10.4093/dmj.2020.0225.	No eligible outcome
Lee JY, Chan CKY, Chua SS, Ng CJ, Paraidathathu T, Lee KKC et al. Telemonitoring and team-based management of glycemic control on people with type 2 diabetes: a cluster-randomized controlled trial. J Gen Intern Med. 2020;35(1):87–94. doi: 10.1007/s11606-019-05316-9.	No eligible outcome
Lee MK, Lee DY, Ahn HY, Park CY. A novel user utility score for diabetes management using tailored mobile coaching: secondary analysis of a randomized controlled trial. JMIR Mhealth Uhealth. 2021;9(2):e17573. doi: 10.2196/17573.	No eligible outcome
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Table A2.1. contd

Reference	Reason for exclusion
Li A, Del Olmo MG, Fong M, Sim K, Lymer SJ, Cunich M et al. Effect of a smartphone application (Perx) on medication adherence and clinical outcomes: a 12-month randomised controlled trial. BMJ Open. 2021;11(8):e047041. doi: 10.1136/bmjopen-2020-047041.	No eligible outcome
Li DQ, Lv FF, Li ZC, Dai ZY, Wang HX, Han Y. Anti-atherosclerotic effects between a combined treatment with simvastatin plus hirudin and single simvastatin therapy in patients with early type 2 diabetes mellitus. Ann Transl Med. 2019;7(14):302. doi: 10.21037/atm.2019.05.69.	No eligible outcome
Li H, Xu X, Wang J, Kong X, Chen M, Jing T et al. A randomized study to compare the effects of once-weekly dulaglutide injection and once-daily glimepiride on glucose fluctuation of type 2 diabetes mellitus patients: a 26-week follow-up. J Diabetes Res. 2019;2019:6423987. doi: 10.1155/2019/6423987.	Ineligible population
Li J, Li J, Shan Z, Yang W, Liu J, Tian H et al. Gender-differential effects on blood glucose levels between acarbose and metformin in Chinese patients with newly diagnosed type 2 diabetes: a sub-analysis of the MARCH trial. Endocr J. 2021;68(1):69–79. doi: 10.1507/endocrj.EJ20-0006.	No eligible outcome
Li M, Zheng Q, Miller JD, Zuo P, Yuan X, Feng J et al. Aerobic training reduces pancreatic fat content and improves beta-cell function: a randomized controlled trial using IDEAL-IQ magnetic resonance imaging. Diabetes Metab Res Rev. 2022;38(4):e3516. doi: 10.1002/dmrr.3516.	No eligible outcome
Li R, Xu W, Yang P, Tan L, Ling Z, Gan X. The nursing effect of individualized management on patients with diabetes mellitus type 2 and hypertension. Front Endocrinol. 2022;13:846419. doi: 10.3389/fendo.2022.846419.	Ineligible population
Li S, Lin G, Chen J, Chen Z, Xu F, Zhu F et al. The effect of periodic ketogenic diet on newly diagnosed overweight or obese patients with type 2 diabetes. BMC Endocr Disord. 2022;22(1):34. doi: 10.1186/s12902-022-00947-2.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Li Y, Li L, De Peng Y, Song GY, Ye SD, Du LY et al. Efficacy and safety of dulaglutide versus insulin glargine in Chinese T2DM patients: a subgroup analysis of a randomized trial (AWARD-CHN2). Diabetes Ther. 2019;10(4):1435–52. doi: 10.1007/s13300-019-0646-y.	Ineligible population
Li Z, Zhang Y, Quan X, Yang Z, Zeng X, Ji L et al. Efficacy and acceptability of glycemic control of glucagon-like peptide-1 receptor agonists among type 2 diabetes: a systematic review and network meta-analysis. PLOS One. 2016;11(5):e0154206. doi: 10.1371/journal.pone.0154206.	Systematic review
Liang G, Jiang H, Huang C, Que X, Tang J, Lu J et al. Diabetes health management strategy based on internet plus graded diagnosis and treatment strategy. Ann Palliat Med. 2020;9(6):3915–22.	No eligible outcome
Liang K, Xie Q, Nie J, Deng J. Study on the effect of education for insulin injection in diabetic patients with new simulation tools. Medicine (Baltimore). 2021;100(14):e25424. doi: 10.1097/MD.0000000000025424.	No eligible outcome
Liao L, Liu Y, Zheng C, Xiang Y, Zhang Z, Cheng X et al. Association of statins with mortality in type 2 diabetes patients with intensive glycemic therapy. Diabetes Res Clin Pract. 2021;179:109005. doi: 10.1016/j.diabres.2021.109005.	Ineligible population
Lim PC, Lim SL, Khaw CH, Lim YL, Hassali MA, Chong CP. Evaluation of glycaemic control comparing originator versus generic fixed-dose glibenclamide/metformin tablet among diabetes mellitus patients in an outpatient clinic. J Pharm Pract Res. 2019;49(3):224–33. doi: 10.1002/jppr.1494.	No eligible outcome
Lim SL, Ong KW, Johal J, Han CY, Yap QV, Chan YH et al. Effect of a smartphone app on weight change and metabolic outcomes in Asian adults with type 2 diabetes: a randomized clinical trial. JAMA Netw Open. 2021;4(6):e2112417. doi: 10.1001/jamanetworkopen.2021.12417.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Lin CL, Huang LC, Chang YT, Chen RY, Yang SH. Effectiveness of health coaching in diabetes control and lifestyle improvement: a randomized-controlled trial. Nutrients. 2021;13(11):3878. doi: 10.3390/nu13113878.	No eligible outcome
Lin PI, Cardenas A, Hauser R, Gold DR, Kleinman KP, Hivert MF et al. Per- and polyfluoroalkyl substances and blood lipid levels in pre-diabetic adults: longitudinal analysis of the diabetes prevention program outcomes study. Environ Int. 2019;129:343–53. doi: 10.1016/j.envint.2019.05.027.	No eligible outcome
Lin PI, Cardenas A, Hauser R, Gold DR, Kleinman KP, Hivert MF et al. Per- and polyfluoroalkyl substances and kidney function: follow-up results from the Diabetes Prevention Program trial. Environ Int. 2021;148:106375. doi: 10.1016/j.envint.2020.106375.	No eligible outcome
Liu JP, Zhang M, Wang W, Grimsgaard S. Chinese herbal medicines for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2004;(3):CD003642. doi: 10.1002/14651858.CD003642.pub2.	Systematic review
Liu J, Patel S, Cater NB, Wu L, Huyck S, Terra SG et al. Efficacy and safety of ertugliflozin in east/southeast Asian patients with type 2 diabetes mellitus. Diabetes Obes Metab. 2020;22(4):574–82. doi: 10.1111/dom.13931.	Ineligible population
Liu L, Ma X, Xu H, Ruan S, Yuan X. Comparing the effects of 12 months aerobic exercise and resistance training on glucose metabolism among prediabetes phenotype: a explorative randomized controlled trial. Prim Care Diabetes. 2021;15(2):340–6. doi: 10.1016/j.pcd.2020.11.003.	No eligible outcome
Liu SC, Lee CC, Chuang SM, Sun FJ, Zeng YH. Comparison of efficacy and safety of empagliflozin vs linagliptin added to premixed insulin in patients with uncontrolled type 2 diabetes: a randomized, open-label study. Diabetes Metab. 2021;47(3):101184. doi: 10.1016/j.diabet.2020.08.001.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Liu Y, Guo H, Wang Q, Chen J, Xuan Y, Xu J et al. Short-term effects of lifestyle intervention in the reversion to normoglycemia in people with prediabetes. Prim Care Diabetes. 2022;16(1):168–72. doi: 10.1016/j.pcd.2021.12.009.	No eligible outcome
Lohner S, Kuellenberg de Gaudry D, Toews I, Ferenci T, Meerpohl JJ. Non-nutritive sweeteners for diabetes mellitus. Cochrane Database Syst Rev. 2020;(5):CD012885. doi: 10.1002/14651858.CD012885.pub2.	Systematic review
Loveman E, Royle P, Waugh N. Specialist nurses in diabetes mellitus. Cochrane Database Syst Rev. 2003;(2):CD003286. doi: 10.1002/14651858.CD003286.	Systematic review
Lu CH, Chang CC, Chuang LM, Wang CY, Jiang YD, Wu HP. Double-blind, randomized, multicentre study of the efficacy and safety of gliclazide-modified release in the treatment of Chinese type 2 diabetic patients. Diabetes Obes Metab. 2006;8(2):184–91. doi: 10.1111/j.1463-1326.2005.00501.x.	Ineligible population
Lu J, Fu L, Li Y, Geng J, Qin L, Li P et al. Henagliflozin monotherapy in patients with type 2 diabetes inadequately controlled on diet and exercise: a randomized, double-blind, placebo-controlled, phase 3 trial. Diabetes Obes Metab. 2021;23(5):1111–20. doi: 10.1111/dom.14314.	No eligible outcome
Lu Z, Li Y, He Y, Zhai Y, Wu J, Wang J et al. Internet-based medication management services improve glycated hemoglobin levels in patients with type 2 diabetes. Telemed J E Health. 2021;27(6):686–93. doi: 10.1089/tmj.2020.0123.	Ineligible population
Ludvik B, Giorgino F, Jódar E, Frías JP, Fernandez Lando L, Brown K et al. Once-weekly tirzepatide versus once-daily insulin degludec as add-on to metformin with or without SGLT2 inhibitors in patients with type 2 diabetes (SURPASS-3): a randomised, open-label, parallel-group, phase 3 trial. Lancet. 2021;398(10300):583–98. doi: 10.1016/S0140-6736(21)01443-4.	Ineligible population

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Reference	Reason for exclusion
Lv J, Perkovic V, Foote CV, Craig ME, Craig JC, Strippoli GFM. Antihypertensive agents for preventing diabetic kidney disease. Cochrane Database Syst Rev. 2012;12:CD004136. doi: 10.1002/14651858.CD004136.pub3.	Systematic review
MacPherson MM, Merry KJ, Locke SR, Jung ME. Effects of mobile health prompts on self-monitoring and exercise behaviors following a diabetes prevention program: secondary analysis from a randomized controlled trial. JMIR Mhealth Uhealth. 2019;7(9):e12956. doi: 10.2196/12956.	No eligible outcome
Madsen KS, Kähler P, Kähler LKA, Madsbad S, Gnesin F, Metzendorf MI et al. Metformin and second- or third-generation sulphonylurea combination therapy for adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2019;(4):CD012368. doi: 10.1002/14651858.CD012368.pub2.	Systematic review
Madsen KS, Chi Y, Metzendorf MI, Richter B, Hemmingsen B. Metformin for prevention or delay of type 2 diabetes mellitus and its associated complications in persons at increased risk for the development of type 2 diabetes mellitus. Cochrane Database Syst Rev. 2019;(12):CD008558. doi: 10.1002/14651858.CD008558.pub2.	Systematic review
Magalhaes JP, Hetherington-Rauth M, Judice PB, Correia IR, Rosa GB, Henriques-Neto D et al. Interindividual variability in fat mass response to a 1-year randomized controlled trial with different exercise intensities in type 2 diabetes: implications on glycemic control and vascular function. Front Physiol. 2021;12:698971. doi: 10.3389/fphys.2021.698971.	No eligible outcome
Maki KC, Wilcox ML, Dicklin MR, Buggia M, Palacios OM, Maki CE et al. Substituting lean beef for carbohydrate in a healthy dietary pattern does not adversely affect the cardiometabolic risk factor profile in men and women at risk for type 2 diabetes. J Nutr. 2020;150(7):1824–33. doi: 10.1093/jn/nxaa116.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Malanda UL, Welschen LMC, Riphagen II, Dekker JM, Nijpels G, Bot SDM. Self-monitoring of blood glucose in patients with type 2 diabetes mellitus who are not using insulin. Cochrane Database Syst Rev. 2012;(1):CD005060. doi: 10.1002/14651858.CD005060.pub3.	Systematic review
Malin SK, Gilbertson NM, Eichner NZM, Heiston E, Miller S, Weltman A. Impact of short-term continuous and interval exercise training on endothelial function and glucose metabolism in prediabetes. J Diabetes Res. 2019;2019:4912174. doi: 10.1155/2019/4912174.	Ineligible follow-up duration
Manios Y, Mavrogianni C, Lambrinou C-P, Cardon G, Lindstrom J, Iotova V et al. Two-stage, school and community-based population screening successfully identifies individuals and families at high-risk for type 2 diabetes: the Feel4Diabetes-study. BMC Endocr Disord. 2020;20(suppl 1):12. doi: 10.1186/s12902-019-0478-9.	Ineligible study design
Martí-Carvajal AJ, Gluud C, Nicola S, Simancas-Racines D, Reveiz L, Oliva P et al. Growth factors for treating diabetic foot ulcers. Cochrane Database Syst Rev. 2015;(10):CD008548. doi: 10.1002/14651858.CD008548.pub2.	Systematic review
Maslakpak MH, Parizad N, Ghahremani A, Alinejad V. The effect of motivational interviewing on the self-efficacy of people with type 2 diabetes: a randomised controlled trial. J Diabetes Nurs. 2021;25(4):1–8.	Ineligible population
Masulli M, Della Pepa G, Cocozza S, Capasso M, Pignataro P, Vitale M et al. The Pro12Ala polymorphism of PPARγ2 modulates beta cell function and failure to oral glucose-lowering drugs in patients with type 2 diabetes. Diabetes Metab Res Rev. 2021;37(3):e3392. doi: 10.1002/dmrr.3392.	Ineligible population
Mathews AS. Intervention of clinical pharmacist in the management of type 2 diabetes mellitus in outpatients. Int J Pharm Pharm Sci. 2021;13(10):31–4. doi: 10.22159/ijpps.2021v13i10.42435.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Matthews DR, Paldánius PM, Proot P, Chiang Y, Stumvoll M, Del Prato S. Glycaemic durability of an early combination therapy with vildagliptin and metformin versus sequential metformin monotherapy in newly diagnosed type 2 diabetes (VERIFY): a 5-year, multicentre, randomised, double-blind trial. Lancet. 2019;394(10208):1519–29. doi: 10.1016/S0140-6736(19)32131-2.	No eligible outcome
Mayer VL, Vangeepuram N, Fei K, Hanlen-Rosado EA, Arniella G, Negron R et al. Outcomes of a weight loss intervention to prevent diabetes among low-income residents of East Harlem, New York. Health Educ Behav. 2019;46(6):1073–82. doi: 10.1177/1090198119868232.	No eligible outcome
McBain H, Mulligan K, Haddad M, Flood C, Jones J, Simpson A. Self management interventions for type 2 diabetes in adult people with severe mental illness. Cochrane Database Syst Rev. 2016;(4):CD011361. doi: 10.1002/14651858.CD011361.pub2.	Systematic review
McCrimmon RJ, Catarig A-M, Frías JP, Lausvig NL, le Roux CW, Thielke D et al. Effects of once-weekly semaglutide vs once-daily canagliflozin on body composition in type 2 diabetes: a substudy of the SUSTAIN 8 randomised controlled clinical trial. Diabetologia. 2020;63(3):473–85. doi: 10.1007/s00125-019-05065-8.	No eligible outcome
McInnes N, Hall S, Hramiak I, Sigal RJ, Goldenberg R, Gupta N et al. Remission of type 2 diabetes following a short-term intensive intervention with insulin glargine, sitagliptin, and metformin: results of an open-label randomized parallel-design trial. Diabetes Care. 2022;45(1):178–85. doi: 10.2337/dc21-0278.	Ineligible population
Mehrzadi S, Mirzaei R, Heydari M, Sasani M, Yaqoobvand B, Huseini HF. Efficacy and safety of a traditional herbal combination in patients with type II diabetes mellitus: a randomized controlled trial. J Diet Suppl. 2021;18(1):31–43. doi: 10.1080/19390211.2020.1727076.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Miller E, Doshi A, Grøn R, Jódar E, Őrsy P, Ranthe MF et al. IDegLira improves patient-reported outcomes while using a simple regimen with fewer injections and dose adjustments compared with basal-bolus therapy. Diabetes Obes Metab. 2019;21(12):2643–50. doi: 10.1111/dom.13851.	No eligible outcome
Miranda L, Ezequiel DGA, Vanelli CP, Colugnati FAB, Ferreira M, Moreira RO et al. Impact of an educational intervention in the management of individuals with uncontrolled type 2 diabetes mellitus using insulin therapy. Prim Care Diabetes. 2022;16(4):496–501. doi: 10.1016/j.pcd.2022.01.006.	Ineligible population
Moelands SVL, Lucassen P, Akkermans RP, De Grauw WJC, Van de Laar FA. Alpha-glucosidase inhibitors for prevention or delay of type 2 diabetes mellitus and its associated complications in people at increased risk of developing type 2 diabetes mellitus. Cochrane Database Syst Rev. 2018;(12):CD005061. doi: 10.1002/14651858.CD005061.pub3.	Systematic review
Moin T, Duru OK, Turk N, Chon JS, Frosch DL, Martin JM et al. Effectiveness of shared decision-making for diabetes prevention:12-month results from the Prediabetes Informed Decision and Education (PRIDE) trial. J Gen Intern Med. 2019;34(11):2652–9. doi: 10.1007/s11606-019-05238-6.	No eligible outcome
Molavynejad S, Miladinia M, Jahangiri M. A randomized trial of comparing video telecare education vs in-person education on dietary regimen compliance in patients with type 2 diabetes mellitus: a support for clinical telehealth providers. BMC Endocr Disord. 2022;22(1):116. doi: 10.1186/s12902-022-01032-4.	No eligible outcome
Mollentze WF, Joubert G, Prins A, van der Linde S, Marx GM, Tsie KG. The safety and efficacy of a low-energy diet to induce weight loss, improve metabolic health, and induce diabetes remission in insulin-treated obese men with type 2 diabetes: a pilot RCT. Int J Diabetes Dev Ctries. 2019;39(4):618–25. doi: 10.1007/s13410-019-00734-1	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Mora PF, Chao J, Saremi A, Dex TA, Roberts M, Umpierrez GE. Efficacy and safety of iglarlixi in Hispanics and non-Hispanic whites with type 2 diabetes. Endocr Pract. 2019;25(11):1091–100. doi: 10.4158/EP-2018-0615.	Ineligible population
Mora-Rodriguez R, Ortega JF, Ramirez-Jiménez M, Moreno-Cabañas A, Morales-Palomo F. Insulin sensitivity improvement with exercise training is mediated by body weight loss in subjects with metabolic syndrome. Diabetes Metab. 2020;46(3):210–18. doi: 10.1016/j.diabet.2019.05.004.	Ineligible follow-up duration
Moravcova K, Karbanova M, Bretschneider MP, Sovova M, Ozana J, Sovova E. Comparing digital therapeutic intervention with an intensive obesity management program: randomized controlled trial. Nutrients. 2022;14(10):2005. doi: 10.3390/nu14102005.	No eligible outcome
Morieri ML, Shah HS, Sjaarda J, Lenzini PA, Campbell H, Motsinger-Reif AA et al. *PPARA* polymorphism influences the cardiovascular benefit of fenofibrate in type 2 diabetes: findings from ACCORD-Lipid. Diabetes. 2020;69(4):771–83. doi: 10.2337/db19-0973.	Ineligible population
Mosenzon O, Bain SC, Heerspink HJL, Idorn T, Mann JFE, Persson F et al. Cardiovascular and renal outcomes by baseline albuminuria status and renal function: results from the LEADER randomized trial. Diabetes Obes Metab. 2020;22(11):2077–88. doi: 10.1111/dom.14126.	Ineligible population
Mostafa TM, Hegazy SK, Elnaidany SS, Shehabeldin WA, Sawan ES. *Nigella sativa* as a promising intervention for metabolic and inflammatory disorders in obese prediabetic subjects: a comparative study of *Nigella sativa* versus both lifestyle modification and metformin. J Diabetes Complications. 2021;35(7):107947. doi: 10.1016/j.jdiacomp.2021.107947.	No eligible outcome
Motoki H, Masuda I, Yasuno S, Oba K, Shoin W, Usami S et al. Rationale and design of the EMPYREAN study. ESC Heart Fail. 2020;7(5):3134–41. doi: 10.1002/ehf2.12825.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Muchiri JW, Gericke GJ, Rheeder P. Effectiveness of an adapted diabetes nutrition education program on clinical status, dietary behaviors and behavior mediators in adults with type 2 diabetes: a randomized controlled trial. J Diabetes Metab Disord. 2021;20(1): 293–306. doi: 10.1007/s40200-021-00744-z.	No eligible outcome
Muilwijk M, Loh M, Siddiqui S, Mahmood S, Palaniswamy S, Shahzad K et al. Effects of a lifestyle intervention programme after 1 year of follow-up among south Asians at high risk of type 2 diabetes: a cluster randomised controlled trial. BMJ Glob Health. 2021;6(11)):e006479. doi: 10.1136/bmjgh-2021-006479.	No eligible outcome
Mulder S, Perco P, Oxlund C, Mehdi UF, Hankemeier T, Jacobsen IA et al. Baseline urinary metabolites predict albuminuria response to spironolactone in type 2 diabetes. Transl Res. 2020;222:17–27. doi: 10.1016/j.trsl.2020.04.010.	No eligible outcome
Nagaike H, Ohara M, Kohata Y, Hiromura M, Tomoyasu M, Takada M et al. Effect of dulaglutide versus liraglutide on glucose variability, oxidative stress, and endothelial function in type 2 diabetes: a prospective study. Diabetes Ther. 2019;10(1):215–28. doi: 10.1007/s13300-018-0560-8.	No eligible outcome
Nagarathna R, Anand A, Nanda S, Patil SS, Singh A, Rajesh SK et al. Is the Indian dietary pattern associated with type 2 diabetes? A pan-India randomized cluster sample study. Ann Neurosci. 2020;27(3–4):175–82. doi: 10.1177/09727531211005226.	No eligible outcome
Nah EH, Chu J, Kim S, Cho S, Kwon E. Efficacy of lifestyle interventions in the reversion to normoglycemia in Korean prediabetics: one-year results from a randomised controlled trial. Prim Care Diabetes. 2019;13(3):212–20. doi: 10.1016/j.pcd.2018.11.017.	No eligible outcome
Nakanekar A, Kohli K, Tatke P. Ayurvedic polyherbal combination (PDBT) for prediabetes: a randomized double blind placebo controlled study. J Ayurveda Integr Med. 2019;10(4):284–9. doi: 10.1016/j.jaim.2018.05.004.	Ineligible intervention

Table A2.1. contd

Reference	Reason for exclusion
Narimani R, Kachuei A, Rezvanian H, Feizi A, Poorpoone M. Effect of sitagliptin on proteinuria in patients with type 2 diabetes: a renoprotective effect of sitagliptin. J Res Med Sci. 2021;26:35. doi: 10.4103/jrms.JRMS_78_20.	No eligible outcome
Nassar M, Ahmed TM, AbdAllah NH, El Sayed El Hadidy K, Sheir RE. The impact of structured diabetes education on glycemic control during Ramadan fasting in diabetic patients in Beni Suef, Egypt. Diabetes Metab Syndr. 2021;15(5):102249. doi: 10.1016/j.dsx.2021.102249.	Ineligible population
Nelson LA, Greevy RA, Spieker A, Wallston KA, Elasy TA, Kripalani S et al. Effects of a tailored text messaging intervention among diverse adults with type 2 diabetes: evidence from the 15-month REACH randomized controlled trial. Diabetes Care. 2021;44(1):26–34. doi: 10.2337/dc20-0961.	No eligible outcome
Nguyen SN, Tran VD, Le TTM, Nga HT, Tho NTT. Lifestyle interventions reduce the risk of type II diabetes and cardiovascular diseases development among pre-diabetic adults. Int J Pharm Res Allied Sci. 2021;10(2):94–102. doi: 10.51847/8RpiSiVJRG.	No eligible outcome
Nguyen TH, Tran TTT, Nguyen NK, Diep HG, Vo SD, Taxis K et al. A randomized controlled trial of a pharmacist-led intervention to enhance knowledge of Vietnamese patients with type 2 diabetes mellitus. Int J Pharm Pract. 2022;30(5):449–56. doi: 10.1093/ijpp/riac030.	No eligible outcome
Nicolucci A, Haxhi J, D'Errico V, Sacchetti M, Orlando G, Cardelli P et al. Effect of a behavioural intervention for adoption and maintenance of a physically active lifestyle on psychological well-being and quality of life in patients with type 2 diabetes: the IDES_2 randomized clinical trial. Sports Med. 2022;52(3):643–54. doi: 10.1007/s40279-021-01556-0.	No eligible outcome
Nield L, Moore H, Hooper L, Cruickshank K, Vyas A, Whittaker V et al. Dietary advice for treatment of type 2 diabetes mellitus in adults. Cochrane Database Syst Rev. 2007;(3):CD004097. doi: 10.1002/14651858.CD004097.pub4.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Nikbina M, Mameneh M, Bakaeian M, Dehcheshmeh NF, Moradi A, Jalilian H et al. Effectiveness of nutrition education and counseling on metabolic control parameters of diabetes mellitus type 2patients in primary health care centers. Clin Diabetol. 2020;9(5):293–9. doi: 10.5603/DK.2020.0030.	No eligible outcome
Nordklint AK, Almdal TP, Vestergaard P, Lundby-Christensen L, Jørgensen NR, Boesgaard TW et al. Effect of metformin vs placebo in combination with insulin analogues on bone markers P1NP and CTX in patients with type 2 diabetes mellitus. Calcif Tissue Int. 2020;107(2):160–9. doi: 10.1007/s00223-020-00711-5.	No eligible outcome
Nordklint AK, Almdal TP, Vestergaard P, Lundby-Christensen L, Boesgaard TW, Breum L et al. Effect of metformin and insulin vs placebo and insulin on whole body composition in overweight patients with type 2 diabetes: a randomized placebo-controlled trial. Osteoporos Int. 2021;32(9):1837–48. doi: 10.1007/s00198-021-05870-1.	No eligible outcome
Norris SL, Kansagara D, Bougatsos C, Fu R, US Preventive Services Task Force. Screening adults for type 2 diabetes: a review of the evidence for the US Preventive Services Task Force. Ann Intern Med. 2008;148(11):855–68. doi: 10.7326/0003-4819-148-11-200806030-00008.	Earlier version of study in USPSTF review
Norris SL, Zhang X, Avenell A, Gregg E, Schmid CH, Lau J. Long-term non-pharmacological weight loss interventions for adults with prediabetes. Cochrane Database Syst Rev. 2005;(2):CD005270. doi: 10.1002/14651858.CD005270.	Systematic review
Norris SL, Zhang X, Avenell A, Gregg E, Schmid CH, Lau J. Pharmacotherapy for weight loss in adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2005;(1):CD004096. doi: 10.1002/14651858.CD004096.pub2.	Systematic review
Norris SL, Zhang X, Avenell A, Gregg E, Brown TJ, Schmid CH et al. Long-term non-pharmacologic weight loss interventions for adults with type 2 diabetes. Cochrane Database Syst Rev. 2005;(2):CD004095. doi: 10.1002/14651858.CD004095.pub2.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Obermayer A, Tripolt NJ, Pferschy PN, Kojzar H, Jacan A, Schauer M et al. INTERmittent FASTing in people with insulin-treated type 2 diabetes mellitus: the INTERFAST-2 study protocol. Diabet Med. 2022;39(6):e14813. doi: 10.1111/dme.14813.	Ineligible population
Ohara M, Nagaike H, Fujikawa T, Kohata Y, Ogawa M, Omachi T et al. Effects of omarigliptin on glucose variability and oxidative stress in type 2 diabetes patients: a prospective study. Diabetes Res Clin Pract. 2021;179:108999. doi: 10.1016/j.diabres.2021.108999.	No eligible outcome
Ohkuma T, Jun M, Rodgers A, Cooper ME, Glasziou P, Hamet P et al. Acute increases in serum creatinine after starting angiotensin-converting enzyme inhibitor-based therapy and effects of its continuation on major clinical outcomes in type 2 diabetes mellitus. Hypertension. 2019;73(1):84–91. doi: 10.1161/HYPERTENSIONAHA.118.12060.	Ineligible population
Onishi Y, Ishii H, Oura T, Takeuchi M. Efficacy and safety of once-weekly dulaglutide in type 2 diabetes patients using insulin: exploratory subgroup analysis by insulin regimen. Diabetes Ther. 2020;11(3):735–45. doi: 10.1007/s13300-020-00765-6.	Ineligible population
Onoue T, Goto M, Wada E, Furukawa M, Okuji T, Okada N et al. Dipeptidyl peptidase-4 inhibitor anagliptin reduces fasting apolipoprotein B-48 levels in patients with type 2 diabetes: a randomized controlled trial. PLOS One. 2020;15(1):e0228004. doi: 10.1371/journal.pone.0228004.	No eligible outcome
Ooi CP, Loke SC. Colesevelam for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2012;(12):CD009361. doi: 10.1002/14651858.CD009361.pub2.	Systematic review
Ooi CP, Loke SC. Sweet potato for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2013;(9):CD009128. doi: 10.1002/14651858.CD009128.pub3.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Ooi CP, Yassin Z, Hamid TA. *Momordica charantia* for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2012;(8):CD007845. doi: 10.1002/14651858.CD007845.pub3.	Systematic review
Or CK, Liu K, So MKP, Cheung B, Yam LYC, Tiwari A et al. Improving self-care in patients with coexisting type 2 diabetes and hypertension by technological surrogate nursing: randomized controlled trial. J Med Internet Res. 2020;22(3):e16769. doi: 10.2196/16769.	No eligible outcome
Oseran AS, Rao K, Chang Y, He W, Sikora CE, Wexler DJ et al. HbA1c-triggered endocrinology electronic consultation for type 2 diabetes management. J Gen Intern Med. 2022;37(5):1081–7. doi: 10.1007/s11606-021-07157-x.	No eligible outcome
Osorio-Yáñez C, Sánchez-Guerra M, Cardenas A, Lin PI, Hauser R, Gold DR et al. Per- and polyfluoroalkyl substances and calcifications of the coronary and aortic arteries in adults with prediabetes: results from the diabetes prevention program outcomes study. Environ Int. 2021;151:106446. doi: 10.1016/j.envint.2021.106446.	No eligible outcome
Padwal RS, Rucker D, Li SK, Curioni C, Lau DCW. Long-term pharmacotherapy for obesity and overweight. Cochrane Database Syst Rev. 2003;(4):CD004094. doi: 10.1002/14651858.CD004094.	Systematic review
Pai LW, Chiu SC, Liu HL, Chen LL, Peng T. Effects of a health education technology program on long-term glycemic control and self-management ability of adults with type 2 diabetes: a randomized controlled trial. Diabetes Res Clin Pract. 2021;175:108785. doi: 10.1016/j.diabres.2021.108785.	Ineligible population
Paiman EHM, van Eyk HJ, van Aalst MMA, Bizino MB, van der Geest RJ, Westenberg JJM et al. Effect of liraglutide on cardiovascular function and myocardial tissue characteristics in type 2 diabetes patients of south Asian descent living in the Netherlands: a double-blind, randomized, placebo-controlled trial. J Magn Reson Imaging. 2020;51(6):1679–88. doi: 10.1002/jmri.27009.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Pal K, Eastwood SV, Michie S, Farmer AJ, Barnard ML, Peacock R et al. Computer-based diabetes self-management interventions for adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2013;(3):CD008776. doi: 10.1002/14651858.CD008776.pub2.	Systematic review
Palacios T, Vitetta L, Coulson S, Madigan CD, Lam YY, Manuel R et al. Targeting the intestinal microbiota to prevent type 2 diabetes and enhance the effect of metformin on glycaemia: a randomised controlled pilot study. Nutrients. 2020;12(7):2041. doi: 10.3390/nu12072041.	Ineligible follow-up duration
Pan B, Ge L, Xun YQ, Chen YJ, Gao CY, Han X et al. Exercise training modalities in patients with type 2 diabetes mellitus: a systematic review and network meta-analysis. Int J Behav Nutr Phys Act. 2018;15(1):72. doi: 10.1186/s12966-018-0703-3.	Systematic review
Pan J, Xu Y, Chen S, Tu Y, Mo Y, Gao F et al. The effectiveness of traditional Chinese medicine jinlida granules on glycemic variability in newly diagnosed type 2 diabetes: a double-blinded, randomized trial. J Diabetes Res. 2021;2021:6303063. doi: 10.1155/2021/6303063.	Ineligible follow-up duration
Pandey A, Patel KV, Bahnson JL, Gaussoin SA, Martin CK, Balasubramanyam A et al. Association of intensive lifestyle intervention, fitness, and body mass index with risk of heart failure in overweight or obese adults with type 2 diabetes mellitus: an analysis from the Look AHEAD trial. Circulation 2020;141(16):1295–306. doi: 10.1161/CIRCULATIONAHA.119.044865.	Ineligible population
Papadopoulou E, Loutradis C, Tzatzagou G, Kotsa K, Zografou I, Minopoulou I et al. Dapagliflozin decreases ambulatory central blood pressure and pulse wave velocity in patients with type 2 diabetes: a randomized, double-blind, placebo-controlled clinical trial. J Hypertens. 2021;39(4):749–58. doi: 10.1097/HJH.0000000000002690.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Parker WAE, Schulte C, Barwari T, Phoenix F, Pearson SM, Mayr M et al. Aspirin, clopidogrel and prasugrel monotherapy in patients with type 2 diabetes mellitus: a double-blind randomised controlled trial of the effects on thrombotic markers and microRNA levels. Cardiovasc Diabetol. 2020;19(1):3. doi: 10.1186/s12933-019-0981-3.	No eligible outcome
Parmar Vinendra M, Goswami Sunita S. Efficacy and safety of teneligliptin as add-on therapy to conventional therapy in Indian patients with type 2 diabetes mellitus. Asian J Pharm Clin Res. 2019;12(12):116–20. doi: 10.22159/ajpcr.2019.v12i12.35952.	Ineligible population
Parra DI, Guevara SLR, Rojas LZ. "Teaching: individual" to improve adherence in hypertension and type 2 diabetes. Br J Community Nurs. 2021;26(2):84–91. doi: 10.12968/bjcn.2021.26.2.84.	No eligible outcome
Pasquel FJ, Urrutia MA, Cardona S, Coronado KWZ, Albury B, Perez-Guzman MC et al. Liraglutide hospital discharge trial: a randomized controlled trial comparing the safety and efficacy of liraglutide versus insulin glargine for the management of patients with type 2 diabetes after hospital discharge. Diabetes Obes Metab. 2021;23(6):1351–60. doi: 10.1111/dom.14347.	No eligible outcome
Patel KV, Bahnson JL, Gaussoin SA, Johnson KC, Pi-Sunyer X, White U et al. Association of baseline and longitudinal changes in body composition measures with risk of heart failure and myocardial infarction in type 2 diabetes: findings from the Look AHEAD trial. Circulation. 2020;142(25):2420–30. doi: 10.1161/CIRCULATIONAHA.120.050941.	Ineligible population
Patel MS, Small DS, Harrison JD, Hilbert V, Fortunato MP, Oon AL et al. Effect of behaviorally designed gamification with social incentives on lifestyle modification among adults with uncontrolled diabetes: a randomized clinical trial. JAMA Netw Open. 2021;4(5):e2110255. doi: 10.1001/jamanetworkopen.2021.10255.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Patel S, Hickman A, Frederich R, Johnson S, Huyck S, Mancuso JP et al. Safety of ertugliflozin in patients with type 2 diabetes mellitus: pooled analysis of seven phase 3 randomized controlled trials. Diabetes Ther. 2020;11(6):1347–67. doi: 10.1007/s13300-020-00803-3.	No eligible outcome
Patel S, Abreu M, Tumyan A, Adams-Huet B, Li X, Lingvay I. Effect of medication adherence on clinical outcomes in type 2 diabetes: analysis of the SIMPLE study. BMJ Open Diabetes Res Care. 2019;7(1):e000761. doi: 10.1136/bmjdrc-2019-000761.	No eligible outcome
Pavithran N, Kumar H, Menon AS, Pillai GK, Sundaram KR, Ojo O. South Indian cuisine with low glycemic index ingredients reduces cardiovascular risk factors in subjects with type 2 diabetes. Int J Environ Res Public Health. 2020;17(17):6232. doi: 10.3390/ijerph17176232.	No eligible outcome
Pavithran N, Kumar H, Menon AS, Pillai GK, Sundaram KR, Ojo O. The effect of a low GI diet on truncal fat mass and glycated hemoglobin in south Indians with type 2 diabetes: a single centre randomized prospective study. Nutrients. 2020;12(1):179. doi: 10.3390/nu12010179.	No eligible outcome
Peacock OJ, Western MJ, Batterham AM, Chowdhury EA, Stathi A, Standage M et al. Effect of novel technology-enabled multidimensional physical activity feedback in primary care patients at risk of chronic disease – the MIPACT study: a randomised controlled trial. Int J Behav Nutr Phys Act. 2020;17(1):99. doi: 10.1186/s12966-020-00998-5.	No eligible outcome
Pearson SM, Whittam B, Kulavarasalingam K, Mitchell-Gears A, James C, Ajjan RA. Reduction in cardiovascular mortality following severe hypoglycemia in individuals with type 2 diabetes: the role of a pragmatic and structured intervention: structured intervention for community hypoglycemia. Cardiovasc Diabetol. 2021;20(1):18. doi: 10.1186/s12933-020-01204-3.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Peer N, Balakrishna Y, Durao S. Screening for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2020;(5):CD005266. doi: 10.1002/14651858.CD005266.pub2.	Systematic review
Pei Y, Agner BR, Luo B, Dong X, Li D, Liu J et al. DUAL II China: superior HbA1c reductions and weight loss with insulin degludec/liraglutide (IDegLira) versus insulin degludec in a randomized trial of Chinese people with type 2 diabetes inadequately controlled on basal insulin. Diabetes Obes Metab. 2021;23(12):2687–96. doi: 10.1111/dom.14522.	No eligible outcome
Pengpid S, Peltzer K, Puckpinyo A, Chantarasongsuk IJ. Effectiveness of a cluster-randomized controlled trial community-based lifestyle intervention program to control prehypertension and/or prediabetes in Thailand. Int J Diabetes Dev Ctries. 2019;39(1):123–31. doi: 10.1007/s13410-018-0641-2.	Ineligible setting
Pengpid S, Peltzer K, Jayasvasti I, Aekplakorn W, Puckpinyo A, Nanthananate P et al. Two-year results of a community-based randomized controlled lifestyle intervention trial to control prehypertension and/or prediabetes in Thailand: a brief report. Int J Gen Med. 2019;12:131–5. doi: 10.2147/IJGM.S200086.	Ineligible population
Pereira MA, Mullane SL, Toledo MJL, Larouche ML, Rydell SA, Vuong B et al. Efficacy of the "Stand and Move at Work" multicomponent workplace intervention to reduce sedentary time and improve cardiometabolic risk: a group randomized clinical trial. Int J Behav Nutr Phys Act. 2020;17(1):133. doi: 10.1186/s12966-020-01033-3.	No eligible outcome
Pettus JH, D'Alessio D, Frías JP, Vajda EG, Pipkin JD, Rosenstock J et al. Efficacy and safety of the glucagon receptor antagonist RVT-1502 in type 2 diabetes uncontrolled on metformin monotherapy: a 12-week dose-ranging study. Diabetes Care. 2020;43(1):161–8. doi: 10.2337/dc19-1328.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Philis-Tsimikas A, Wysham CH, Hardy E, Han J, Iqbal N. Efficacy and tolerability of exenatide once weekly over 7 years in patients with type 2 diabetes: an open-label extension of the DURATION-1 study. J Diabetes Complications. 2019;33(3):223–30. doi: 10.1016/j.jdiacomp.2018.11.012.	Ineligible population
Philis-Tsimikas A, Billings LK, Busch R, Portillo CM, Sahay R, Halladin N et al. Superior efficacy of insulin degludec/liraglutide versus insulin glargine U100 as add-on to sodium-glucose co-transporter-2 inhibitor therapy: a randomized clinical trial in people with uncontrolled type 2 diabetes. Diabetes Obes Metab. 2019;21(6):1399–408. doi: 10.1111/dom.13666.	No eligible outcome
Piccoli GF, Mesquita LA, Stein C, Aziz M, Zoldan M, Degobi NAH et al. Do GLP-1 receptor agonists increase the risk of breast cancer? A systematic review and meta-analysis. J Clin Endocrinol Metab. 2021;106(3):912–21. doi: 10.1210/clinem/dgaa891.	Systematic review
Pieber TR, Bode B, Mertens A, Cho YM, Christiansen E, Hertz CL et al. Efficacy and safety of oral semaglutide with flexible dose adjustment versus sitagliptin in type 2 diabetes (PIONEER 7): a multicentre, open-label, randomised, phase 3a trial. Lancet Diabetes Endocrinol. 2019;7(7):528–39. doi: 10.1016/S2213-8587(19)30194-9.	Ineligible population
Pilmark NS, Lyngbaek M, Oberholzer L, Elkjaer I, Petersen-Bonding C, Kofoed K et al. The interaction between metformin and physical activity on postprandial glucose and glucose kinetics: a randomised, clinical trial. Diabetologia. 2021;64(2):397–409. doi: 10.1007/s00125-020-05282-6.	Ineligible follow-up duration
Pingali U, Ali MA, Gundagani S, Nutalapati C. Evaluation of the effect of an aqueous extract of *Azadirachta indica* (Neem) leaves and twigs on glycemic control, endothelial dysfunction and systemic inflammation in subjects with type 2 diabetes mellitus: a randomized, double-blind, placebo-controlled clinical study. Diabetes Metab Syndr Obes. 2020;13:4401–12. doi: 10.2147/DMSO.S274378.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Pirro V, Roth KD, Lin Y, Willency JA, Milligan PL, Wilson JM et al. Effects of tirzepatide, a dual GIP and GLP-1 RA, on lipid and metabolite profiles in subjects with type 2 diabetes. J Clin Endocrinol Metab. 2022;107(2):363–78. doi: 10.1210/clinem/dgab722.	No eligible outcome
Pishdad P, Pishdad R, Pishdad GR, Panahi Y. A time to revisit the two oldest prandial anti-diabetes agents: acarbose and repaglinide. Endocrine. 2020;70(2):307–13. doi: 10.1007/s12020-020-02396-0.	No eligible outcome
Pistrosch F, Matschke JB, Schipp D, Schipp B, Henkel E, Weigmann I et al. Rivaroxaban compared with low-dose aspirin in individuals with type 2 diabetes and high cardiovascular risk: a randomised trial to assess effects on endothelial function, platelet activation and vascular biomarkers. Diabetologia. 2021;64(12):2701–12. doi: 10.1007/s00125-021-05562-9.	No eligible outcome
Pitt B, Filippatos G, Agarwal R, Anker SD, Bakris GL, Rossing P et al. Cardiovascular events with finerenone in kidney disease and type 2 diabetes. N Engl J Med. 2021;385(24):2252–63. doi: 10.1056/NEJMoa2110956.	No eligible outcome
Pollock C, Stefansson B, Reyner D, Rossing P, Sjostrom CD, Wheeler DC et al. Albuminuria-lowering effect of dapagliflozin alone and in combination with saxagliptin and effect of dapagliflozin and saxagliptin on glycaemic control in patients with type 2 diabetes and chronic kidney disease (DELIGHT): a randomised, double-blind, placebo-controlled trial. Lancet Diabetes Endocrinol. 2019;7(6):429–41. doi: 10.1016/S2213-8587(19)30086-5.	Ineligible population
Ponirakis G, Abdul-Ghani MA, Jayyousi A, Almuhannadi H, Petropoulos IN, Khan A et al. Effect of treatment with exenatide and pioglitazone or basal-bolus insulin on diabetic neuropathy: a substudy of the Qatar Study. BMJ Open Diabetes Res Care. 2020;8(1):e001420. doi: 10.1136/bmjdrc-2020-001420.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Ponirakis G, Abdul-Ghani MA, Jayyousi A, Zirie MA, Qazi M, Almuhannadi H et al. Painful diabetic neuropathy is associated with increased nerve regeneration in patients with type 2 diabetes undergoing intensive glycemic control. J Diabetes Investig. 2021;12(9):1642–50. doi: 10.1111/jdi.13544.	No eligible outcome
Ponirakis G, Abdul-Ghani MA, Jayyousi A, Zirie MA, Al-Mohannadi S, Almuhannadi H et al. Insulin resistance limits corneal nerve regeneration in patients with type 2 diabetes undergoing intensive glycemic control. J Diabetes Investig. 2021;12(11):2002–9. doi: 10.1111/jdi.13582.	Ineligible population
Pooladi S, Sadeghi S, Vahedprast H, Bagherzadeh R, Sharifi S. Effect of the training based on Islamic Lifestyle Model on fasting blood glucose and glycosylated hemoglobin in people with prediabetes. J Diabetes Nurs. 2019;7(1):683–93 (in Farsi).	Ineligible follow-up duration
Poonprapai P, Lerkiatbundit S, Saengcharoen W. Family support-based intervention using a mobile application provided by pharmacists for older adults with diabetes to improve glycaemic control: a randomised controlled trial. Int J Clin Pharm. 2022;44(3):680–8. doi: 10.1007/s11096-022-01389-5.	No eligible outcome
Poppe L, De Bourdeaudhuij I, Verloigne M, Shadid S, Van Cauwenberg J, Compernolle S et al. Efficacy of a self-regulation-based electronic and mobile health intervention targeting an active lifestyle in adults having type 2 diabetes and in adults aged 50 years or older: two randomized controlled trials. J Med Internet Res. 2019;21(8):e13363. doi: 10.2196/13363.	No eligible outcome
Portillo-Sánchez P, Bril F, Lomonaco R, Barb D, Orsak B, Bruder JM et al. Effect of pioglitazone on bone mineral density in patients with nonalcoholic steatohepatitis: a 36-month clinical trial. J Diabetes. 2019;11(3):223–31. doi: 10.1111/1753-0407.12833.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Potter E, Stephenson G, Harris J, Wright L, Marwick TH. Screening-guided spironolactone treatment of subclinical left ventricular dysfunction for heart failure prevention in at-risk patients. Eur J Heart Fail. 2022;24(4):620–30. doi: 10.1002/ejhf.2428.	Ineligible population
Pourshabanan P, Momeni A, Mahmoudnia L, Kheiri S. Effect of pioglitazone on decreasing of proteinuria in type 2 diabetic patients with nephropathy. Diabetes Metab Syndr. 2019;13(1):132–6. doi: 10.1016/j.dsx.2018.04.013.	No eligible outcome
Prajitno JH, Soelistijo SA, Pranoto A. Simvastatin effect on high-sensitivity C-reactive protein in type 2 diabetes mellitus. Syst Rev Pharm. 2020;11(3):618–23. doi: 10.31838/srp.2020.3.82.	No eligible outcome
Pratley RE, Jacob S, Baek S, Trautmann ME, Hompesch M, Han O et al. Efficacy and safety of efpeglenatide in key patient subgroups from the BALANCE randomized trial, stratified by pre-diabetes status, BMI, and age at baseline. BMJ Open Diabetes Res Care. 2022;10(1):e002207. doi: 10.1136/bmjdrc-2021-002207.	Ineligible follow-up duration
Pratley R, Amod A, Hoff ST, Kadowaki T, Lingvay I, Nauck M et al. Oral semaglutide versus subcutaneous liraglutide and placebo in type 2 diabetes (PIONEER 4): a randomised, double-blind, phase 3a trial. Lancet. 2019;394(10192):39–50. doi: 10.1016/S0140-6736(19)31271-1.	Ineligible population
Priebe M, van Binsbergen J, de Vos R, Vonk RJ. Whole grain foods for the prevention of type 2 diabetes mellitus. Cochrane Database Syst Rev. 2008;(1):CD006061. doi: 10.1002/14651858.CD006061.pub2.	Systematic review
Pugh JA, Wagner ML, Sawyer J, Ramirez G, Tuley M, Friedberg SJ. Is combination sulfonylurea and insulin therapy useful in NIDDM patients? A metaanalysis. Diabetes Care. 1992;15(8):953–9. doi: 10.2337/diacare.15.8.953.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Qasim R, Masih S, Yousafzai MT, Shah H, Manan A, Shah Y et al. Diabetes conversation map – a novel tool for diabetes management self-efficacy among type 2 diabetes patients in Pakistan: a randomized controlled trial. BMC Endocr Disord. 2020;20(1):88. doi: 10.1186/s12902-020-00572-x.	Ineligible follow-up duration
Qin Y, Adams J, Solis-Herrera C, Triplitt C, DeFronzo R, Cersosimo E. Clinical parameters, fuel oxidation, and glucose kinetics in patients with type 2 diabetes treated with dapagliflozin plus saxagliptin. Diabetes Care. 2020;43(10):2519–27. doi: 10.2337/dc19-1993.	Ineligible follow-up duration
Quast DR, Nauck MA, Schenker N, Menge BA, Kapitza C, Meier JJ. Macronutrient intake, appetite, food preferences and exocrine pancreas function after treatment with short- and long-acting glucagon-like peptide-1 receptor agonists in type 2 diabetes. Diabetes Obes Metab. 2021;23(10):2344–53. doi: 10.1111/dom.14477.	Ineligible follow-up duration
Quast DR, Schenker N, Menge BA, Nauck MA, Kapitza C, Meier JJ. Effects of lixisenatide versus liraglutide (short- and long-acting GLP-1 receptor agonists) on esophageal and gastric function in patients with type 2 diabetes. Diabetes Care. 2020;43(9):2137–45. doi: 10.2337/dc20-0720.	Ineligible follow-up duration
Quezada-Fernandez P, Trujillo-Quiros J, Pascoe-Gonzalez S, Trujillo-Rangel WA, Cardona-Muller D, Ramos-Becerra CG et al. Effect of green tea extract on arterial stiffness, lipid profile and sRAGE in patients with type 2 diabetes mellitus: a randomised, double-blind, placebo-controlled trial. Int J Food Sci Nutr. 2019;70(8):977–85. doi: 10.1080/09637486.2019.1589430.	Ineligible follow-up duration
Raben A, Vestentoft PS, Brand-Miller J, Jalo E, Drummen M, Simpson L et al. The PREVIEW intervention study: results from a 3-year randomized 2 × 2 factorial multinational trial investigating the role of protein, glycaemic index and physical activity for prevention of type 2 diabetes. Diabetes Obes Metab. 2021;23(2):324–37. doi: 10.1111/dom.14219.	No eligible comparator

Table A2.1. contd

Reference	Reason for exclusion
Raccah D, Miossec P, Esposito V, Niemoeller E, Cho M, Gerich J. Efficacy and safety of lixisenatide in elderly (≥ 65 years old) and very elderly (≥ 75 years old) patients with type 2 diabetes: an analysis from the GetGoal phase III programme. Diabetes Metab Res Rev. 2015;31(2):204–11. doi: 10.1002/dmrr.2588.	Ineligible study design
Raghavan S, Jablonski K, Delahanty LM, Maruthur NM, Leong A, Franks PW et al. Interaction of diabetes genetic risk and successful lifestyle modification in the Diabetes Prevention Programme. Diabetes Obes Metab. 2021;23(4):1030–40. doi: 10.1111/dom.14309.	Ineligible study design
Raghuram N, Ram V, Majumdar V, Sk R, Singh A, Patil S et al. Effectiveness of a yoga-based lifestyle protocol (YLP) in preventing diabetes in a high-risk Indian cohort: a multicenter cluster-randomized controlled trial (NMB-Trial). Front Endocrinol. 2021;12:664657. doi: 10.3389/fendo.2021.664657.	Ineligible follow-up duration
Raghuveer B, Netaji N. Efficacy of teneligliptin with metformin in type 2 diabetes mellitus patients. Natl J Physiol Pharm Pharmacol. 2020;10(8):663–6. doi: 10.5455/njppp.2020.10.03058202013052020.	Ineligible population
Rahman F, McEvoy JW, Ohkuma T, Marre M, Hamet P, Harrap S et al. Effects of blood pressure lowering on clinical outcomes according to baseline blood pressure and cardiovascular risk in patients with type 2 diabetes mellitus. Hypertension. 2019;73(6):1291–9. doi: 10.1161/HYPERTENSIONAHA.118.12414.	Ineligible population
Rahul A, Chintha S, Anish TS, Prajitha KC, Indu PS. Effectiveness of a non-pharmacological intervention to control diabetes mellitus in a primary care setting in Kerala: a cluster-randomized controlled trial. Front Public Health. 2021;9:747065. doi: 10.3389/fpubh.2021.747065.	Ineligible population
Rajput MA, Ali F, Zehra T, Zafar S, Kumar G. The effect of proton pump inhibitors on glycaemic control in diabetic patients. J Taibah Univ Med Sci. 2020;15(3):218–23. doi: 10.1016/j.jtumed.2020.03.003.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Ranasinghe C, Devage S, Constantine GR, Katulanda P, Hills AP, King NA. Glycemic and cardiometabolic effects of exercise in south Asian Sri Lankans with type 2 diabetes mellitus: a randomized controlled trial Sri Lanka Diabetes Aerobic and Resistance Training Study (SL-DARTS). Diabetes Metab Syndr. 2021;15(1): 77–85. doi: 10.1016/j.dsx.2020.12.011.	Ineligible follow-up duration
Raubenheimer PJ, Cushman WC, Avezum A, Basile J, Conget I, Dagenais G et al. Dulaglutide and incident atrial fibrillation or flutter in patients with type 2 diabetes: a post hoc analysis from the REWIND randomized trial. Diabetes Obes Metab. 2022;24(4): 704–12. doi: 10.1111/dom.14634.	Ineligible population
Ravindranath R, Oldenburg B, Balachandran S, Mini GK, Mahat K, Sathish T et al. Scale-up of the Kerala Diabetes Prevention Program (K-DPP) in Kerala, India: implementation evaluation findings. Transl Behav Med. 2020;10(1):5–12. doi: 10.1093/tbm/ibz197.	No eligible outcome
Ray KK, Seshasai SRK, Wijesuriya S, Sivakumaran R, Nethercott S, Preiss D et al. Effect of intensive control of glucose on cardiovascular outcomes and death in patients with diabetes mellitus: a meta-analysis of randomised controlled trials. Lancet. 2009;373(9677):1765–72. doi: 10.1016/S0140-6736(09)60697-8.	Systematic review
Raymond LW, Roy DM, Mullinax SL, Yanni A, Pentek KC, Isaacs SE. Preventing diabetes in the workplace: effects of coaching and monetary incentives. J Occup Environ Med. 2019;61(7):e308–11. doi: 10.1097/JOM.0000000000001611.	Ineligible setting
Reale R, Tumminia A, Romeo L, La Spina N, Baratta R, Padova G et al. Short-term efficacy of high intensity group and individual education in patients with type 2 diabetes: a randomized single-center trial. J Endocrinol Invest. 2019;42(4):403–9. doi: 10.1007/s40618-018-0929-6.	Ineligible follow-up duration

Table A2.1. contd

Reference	Reason for exclusion
Reimer RA, Wharton S, Green TJ, Manjoo P, Ramay HR, Lyon MR et al. Effect of a functional fibre supplement on glycemic control when added to a year-long medically supervised weight management program in adults with type 2 diabetes. Eur J Nutr. 2021;60(3): 1237–51. doi: 10.1007/s00394-020-02328-8.	Ineligible population
Rein M, Ben-Yacov O, Godneva A, Shilo S, Zmora N, Kolobkov D et al. Effects of personalized diets by prediction of glycemic responses on glycemic control and metabolic health in newly diagnosed T2DM: a randomized dietary intervention pilot trial. BMC Med. 2022;20(1):56. doi: 10.1186/s12916-022-02254-y.	No eligible outcome
Ren M, Zhang H, Qi J, Hu A, Jiang Q, Hou Y et al. An almond-based low carbohydrate diet improves depression and glycometabolism in patients with type 2 diabetes through modulating gut microbiota and GLP-1: a randomized controlled trial. Nutrients. 2020;12(10):3036. doi: 10.3390/nu12103036.	Ineligible population
Retnakaran R, Emery A, Ye C, Harris SB, Reichert SM, McInnes N et al. Short-term intensive insulin as induction and maintenance therapy for the preservation of beta-cell function in early type 2 diabetes (RESET-IT Main): a 2-year randomized controlled trial. Diabetes Obes Metab. 2021;23(8): 1926–35. doi: 10.1111/dom.14421.	No eligible outcome
Rezki A, Cosson E, Fysekidis M, Chiheb S, Vicaut E, Valensi P. Acute and long-term effects of saxagliptin on a set of cardiovascular targets measured at fasting and post-prandially in obese patients with impaired glucose tolerance: a placebo-controlled study. Nutr Metab Cardiovasc Dis. 2021;31(10):2945–58. doi: 10.1016/j.numecd.2021.06.017.	Ineligible follow-up duration
Rezki A, Fysekidis M, Chiheb S, Vicaut E, Cosson E, Valensi P. Acute and long-term effects of saxagliptin on post-prandial glycemic response in obese patients with impaired glucose tolerance. Nutr Metab Cardiovasc Dis. 2021;31(4):1257–66. doi: 10.1016/j.numecd.2020.12.025.	Ineligible follow-up duration

Table A2.1. contd

Reference	Reason for exclusion
Richey PA, Johnson KC, Neiberg RH, Bahnson JL, Singhal K, Coday M et al. Association of the intensive lifestyle intervention with total knee replacement in the Look AHEAD (Action for Health in Diabetes) clinical trial. J Arthroplasty. 2020;35(6):1576–82. doi: 10.1016/j.arth.2020.01.057.	No eligible outcome
Richter B, Bandeira-Echtler E, Bergerhoff K, Lerch C. Dipeptidyl peptidase-4 (DPP-4) inhibitors for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2008;(2):CD006739. doi: 10.1002/14651858.CD006739.pub2.	Systematic review
Richter B, Bandeira-Echtler E, Bergerhoff K, Clar C, Ebrahim SH. Pioglitazone for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2006;(4):CD006060. doi: 10.1002/14651858.CD006060.pub2.	Systematic review
Richter B, Bandeira-Echtler E, Bergerhoff K, Clar C, Ebrahim SH. Rosiglitazone for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2007;(3):CD006063. doi: 10.1002/14651858.CD006063.pub2.	Systematic review
Richter B, Hemmingsen B, Metzendorf MI, Takwoingi Y. Development of type 2 diabetes mellitus in people with intermediate hyperglycaemia. Cochrane Database Syst Rev. 2018;(10):CD012661. doi: 10.1002/14651858.CD012661.pub2.	Systematic review
Riddle MC, Gerstein HC, Xavier D, Cushman WC, Leiter LA, Raubenheimer PJ et al. Efficacy and safety of dulaglutide in older patients: a post hoc analysis of the REWIND trial. J Clin Endocrinol Metab. 2021;106(5):1345–51. doi: 10.1210/clinem/dgab065.	Ineligible population
Ried-Larsen M, Johansen MY, MacDonald CS, Hansen KB, Christensen R, Wedell-Neergaard A-S et al. Type 2 diabetes remission 1 year after an intensive lifestyle intervention: a secondary analysis of a randomized clinical trial. Diabetes Obes Metab. 2019;21(10):2257–66. doi: 10.1111/dom.13802.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Ripa RS, Zobel EH, von Scholten BJ, Jensen JK, Binderup T, Diaz LJ et al. Effect of liraglutide on arterial inflammation assessed as [^{18}F]FDG uptake in patients with type 2 diabetes: a randomized, double-blind, placebo-controlled trial. Circ Cardiovasc Imaging. 2021;14(7):e012174. doi: 10.1161/CIRCIMAGING.120.012174.	Ineligible population
RISE Consortium. Lack of durable improvements in β-cell function following withdrawal of pharmacological interventions in adults with impaired glucose tolerance or recently diagnosed type 2 diabetes. Diabetes Care. 2019;42(9):1742–51. doi: 10.2337/dc19-0556.	No eligible outcome
Risebrough NA, Baker TM, Zhang L, Ali SN, Radin M, Dang-Tan T. Lifetime cost-effectiveness of oral semaglutide versus dulaglutide and liraglutide in patients with type 2 diabetes inadequately controlled with oral antidiabetics. Clin Ther. 2021;43(11):1812–26.e7. doi: 10.1016/j.clinthera.2021.08.015.	Systematic review
Rivera-Avila DA, Esquivel-Lu AI, Salazar-Lozano CR, Jones K, Doubova SV. The effects of professional continuous glucose monitoring as an adjuvant educational tool for improving glycemic control in patients with type 2 diabetes. BMC Endocr Disord. 2021;21(1):79. doi: 10.1186/s12902-021-00742-5.	Ineligible follow-up duration
Rizvi N, Ahmad J, Ahmad F, Siddiqui SS. Efficacy and safety of vildagliptin and teneligliptin in patients of type 2 diabets mellitus inadequately controlled on stable doses of metformin. Int J Pharm Sci Res. 2020;11(4):1629–34.doi: 10.13040/IJPSR.0975-8232.11(4).1629-34.	Ineligible population
Rockette-Wagner B, Miller RG, Eaglehouse YL, Arena VC, Kramer MK, Kriska AM. Leisure sedentary behavior levels and meeting program goals in a community lifestyle intervention for diabetes prevention. J Phys Act Health. 2021;18(1):44–51. doi: 10.1123/jpah.2020-0052.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Rodbard HW, Rosenstock J, Canani LH, Deerochanawong C, Gumprecht J, Lindberg SO et al. Oral semaglutide versus empagliflozin in patients with type 2 diabetes uncontrolled on metformin: the PIONEER 2 trial. Diabetes Care. 2019;42(12):2272–81. doi: 10.2337/dc19-0883.	Ineligible population
Rohling M, Kempf K, Banzer W, Berg A, Braumann K-M, Tan S et al. Prediabetes conversion to normoglycemia is superior adding a low-carbohydrate and energy deficit formula diet to lifestyle intervention: a 12-month subanalysis of the ACOORH trial. Nutrients. 2020;12(7):2022. doi: 10.3390/nu12072022.	No eligible outcome
Romera I, Conget I, Vázquez LA, Gentilella R, Lebrec J, Jódar E, Reviriego J. Once-weekly dulaglutide versus insulin glargine in the early control of fasting serum glucose and HbA1c. J Diabetes Complications. 2020;34(7):107575. doi: 10.1016/j.jdiacomp.2020.107575.	Ineligible population
Roncero-Ramos I, Gutierrez-Mariscal FM, Gomez-Delgado F, Villasanta-Gonzalez A, Torres-Pena JD, Cruz-Ares SDL et al. Beta cell functionality and hepatic insulin resistance are major contributors to type 2 diabetes remission and starting pharmacological therapy: from CORDIOPREV randomized controlled trial. Transl Res. 2021;238:12–24. doi: 10.1016/j.trsl.2021.07.001.	Ineligible population
Roncero-Ramos I, Alcala-Diaz JF, Rangel-Zuniga OA, Gomez-Delgado F, Jiménez-Lucena R, García-Rios A et al. Prediabetes diagnosis criteria, type 2 diabetes risk and dietary modulation: the CORDIOPREV study. Clin Nutr. 2020;39(2):492–500. doi: 10.1016/j.clnu.2019.02.027.	Ineligible population
Rosales CB, Denman CA, Bell ML, Cornejo E, Ingram M, Del Carmen Castro Vásquez M et al. Meta Salud Diabetes for cardiovascular disease prevention in Mexico: a cluster-randomized behavioural clinical trial. Int J Epidemiol. 2021;50(4):1272–82. doi: 10.1093/ije/dyab072.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Rosas LG, Lv N, Xiao L, Lewis MA, Venditti EMJ, Zavella P et al. Effect of a culturally adapted behavioral intervention for Latino adults on weight loss over 2 years: a randomized clinical trial. JAMA Netw Open. 2020;3(12):e2027744. doi: 10.1001/jamanetworkopen.2020.27744.	No eligible outcome
Rosenson RS, Daviglus ML, Handelsman Y, Pozzilli P, Bays H, Monsalvo ML et al. Efficacy and safety of evolocumab in individuals with type 2 diabetes mellitus: primary results of the randomised controlled BANTING study. Diabetologia. 2019;62(6):948–58. doi: 10.1007/s00125-019-4856-7.	Ineligible follow-up duration
Rosenstock J, Allison D, Birkenfeld AL, Blicher TM, Deenadayalan S, Jacobsen JB et al. Effect of additional oral semaglutide vs sitagliptin on glycated hemoglobin in adults with type 2 diabetes uncontrolled with metformin alone or with sulfonylurea: the PIONEER 3 randomized clinical trial. JAMA. 2019;321(15):1466–80. doi: 10.1001/jama.2019.2942.	Ineligible population
Rosenstock J, Bajaj HS, Janez A, Silver R, Begtrup K, Hansen MV et al. Once-weekly insulin for type 2 diabetes without previous insulin treatment. N Engl J Med. 2020;383(22):2107–16. doi: 10.1056/NEJMoa2022474.	Ineligible population
Rosenstock J, Nino A, Soffer J, Erskine L, Acusta A, Dole J et al. Impact of a weekly glucagon-like peptide 1 receptor agonist, albiglutide, on glycemic control and on reducing prandial insulin use in type 2 diabetes inadequately controlled on multiple insulin therapy: a randomized trial. Diabetes Care. 2020;43(10):2509–18. doi: 10.2337/dc19-2316.	Ineligible population
Rosenstock J, Perl S, Johnsson E, García-Sánchez R, Jacob S. Triple therapy with low-dose dapagliflozin plus saxagliptin versus dual therapy with each monocomponent, all added to metformin, in uncontrolled type 2 diabetes. Diabetes Obes Metab. 2019;21(9):2152–62. doi: 10.1111/dom.13795.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Rosenstock J, Sorli CH, Trautmann ME, Morales C, Wendisch U, Dailey G et al. Once-weekly efpeglenatide dose-range effects on glycemic control and body weight in patients with type 2 diabetes on metformin or drug naive, referenced to liraglutide. Diabetes Care. 2019;42(9):1733–41. doi: 10.2337/dc18-2648.	Ineligible follow-up duration
Rosenstock J, Wysham C, Frías JP, Kaneko S, Lee CJ, Fernandez Lando L et al. Efficacy and safety of a novel dual GIP and GLP-1 receptor agonist tirzepatide in patients with type 2 diabetes (SURPASS-1): a double-blind, randomised, phase 3 trial. Lancet. 2021;398(10295):143–55. doi: 10.1016/S0140-6736(21)01324-6.	Ineligible population
Ross LM, Slentz CA, Zidek AM, Huffman KM, Shalaurova I, Otvos JD et al. Effects of amount, intensity, and mode of exercise training on insulin resistance and type 2 diabetes risk in the STRRIDE randomized trials. Front Physiol. 2021;12:626142. doi: 10.3389/fphys.2021.626142.	No eligible outcome
Rossen J, Larsson K, Hagstromer M, Yngve A, Brismar K, Ainsworth B et al. Effects of a three-armed randomised controlled trial using self-monitoring of daily steps with and without counselling in prediabetes and type 2 diabetes: the Sophia Step study. Int J Behav Nutr Phys Act. 2021;18(1):121. doi: 10.1186/s12966-021-01193-w.	No eligible outcome
Roussel R, Duran-García S, Zhang Y, Shah S, Darmiento C, Shankar RR et al. Double-blind, randomized clinical trial comparing the efficacy and safety of continuing or discontinuing the dipeptidyl peptidase-4 inhibitor sitagliptin when initiating insulin glargine therapy in patients with type 2 diabetes: the CompoSIT-I study. Diabetes Obes Metab. 2019;21(4):781–90. doi: 10.1111/dom.13574.	Ineligible population
Rovner BW, Casten RJ, Piersol CV, White N, Kelley M, Leiby BE. Improving glycemic control in African Americans with diabetes and mild cognitive impairment. J Am Geriatr Soc. 2020;68(5):1015–22. doi: 10.1111/jgs.16339.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Ruff CT, Baron M, Im K, O'Donoghue ML, Fiedorek FT, Sabatine MS. Subcutaneous infusion of exenatide and cardiovascular outcomes in type 2 diabetes: a non-inferiority randomized controlled trial. Nat Med. 2022;28(1):89–95. doi: 10.1038/s41591-021-01584-3.	Ineligible population
Ruggenenti P, Cortinovis M, Trillini M, Parvanova A, Abbate M, Satriano C et al. Long-term kidney and systemic effects of calorie restriction in overweight or obese type 2 diabetic patients (C.Re.S.O. 2 randomized controlled trial). Diabetes Res Clin Pract. 2022;185:109804. doi: 10.1016/j.diabres.2022.109804.	Ineligible population
Ruggenenti P, Trillini M, Barlovic DP, Cortinovis M, Pisani A, Parvanova A et al. Effects of valsartan, benazepril and their combination in overt nephropathy of type 2 diabetes: a prospective, randomized, controlled trial. Diabetes Obes Metab. 2019;21(5): 1177–90. doi: 10.1111/dom.13639.	Ineligible population
Ruospo M, Saglimbene VM, Palmer SC, De Cosmo S, Pacilli A, Lamacchia O et al. Glucose targets for preventing diabetic kidney disease and its progression. Cochrane Database Syst Rev. 2017;(6):CD010137. doi: 10.1002/14651858.CD010137.pub2.	Systematic review
Saadeh NA, Al-Azzeh OY, Khader YS. Biphasic human insulin 30 thrice daily, is it reasonable? BMC Res Notes. 2020;13(1):250. doi: 10.1186/s13104-020-05090-6.	Ineligible follow-up duration
Sabag A, Way KL, Sultana RN, Keating SE, Gerofi JA, Chuter VH et al. The effect of a novel low-volume aerobic exercise intervention on liver fat in type 2 diabetes: a randomized controlled trial. Diabetes Care. 2020;43(10):2371–8. doi: 10.2337/dc19-2523.	Ineligible follow-up duration
Safarpour P, Daneshi-Maskooni M, Vafa M, Nourbakhsh M, Janani L, Maddah M et al. Vitamin D supplementation improves SIRT1, irisin, and glucose indices in overweight or obese type 2 diabetic patients: a double-blind randomized placebo-controlled clinical trial. BMC Fam Pract. 2020;21(1):26. doi: 10.1186/s12875-020-1096-3.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Saffari M, Ghanizadeh G, Koenig HG. Health education via mobile text messaging for glycemic control in adults with type 2 diabetes: a systematic review and meta-analysis. Prim Care Diabetes. 2014;8(4):275–85. doi: 10.1016/j.pcd.2014.03.004.	Systematic review
Sakane N, Kotani K, Suganuma A, Takahashi K, Sato J, Suzuki S et al. Effects of obesity, metabolic syndrome, and non-alcoholic or alcoholic elevated liver enzymes on incidence of diabetes following lifestyle intervention: a subanalysis of the J-DOIT1. J Occup Health. 2020;62(1):e12109. doi: 10.1002/1348-9585.	No new data from this paper (study included)
Sakane N, Kotani K, Suganuma A, Takahashi K, Sato J, Suzuki S et al. Prevention of metabolic syndrome by telephone-delivered lifestyle intervention in a real-world setting: sub-analysis of a cluster-randomized trial. Metab Syndr Relat Disord. 2019;17(7):355–61. doi: 10.1089/met.2018.0130.	No eligible outcome
Sakane N, Oshima Y, Kotani K, Suganuma A, Nirengi S, Takahashi K et al. Self-weighing frequency and the incidence of type 2 diabetes: post hoc analysis of a cluster-randomized controlled trial. BMC Res Notes. 2020;13(1):375. doi: 10.1186/s13104-020-05215-x.	Ineligible population
Sakane N, Oshima Y, Kotani K, Suganuma A, Takahashi K, Sato J et al. Impact of telephone support programme using telemonitoring on stage of change towards healthy eating and active exercise in people with prediabetes. J Telemed Telecare. 2021;27(5):307–13. doi: 10.1177/1357633X211010981.	No new data from this paper (study included)
Salpeter SR, Greyber E, Pasternak GA, Salpeter EE. Risk of fatal and nonfatal lactic acidosis with metformin use in type 2 diabetes mellitus. Cochrane Database Syst Rev. 2010;(4):CD002967. doi: 10.1002/14651858.CD002967.pub4.	Systematic review
Samadpour Masouleh S, Bagheri R, Ashtary-Larky D, Cheraghloo N, Wong A, Yousefi Bilesvar O et al. The effects of TRX suspension training combined with taurine supplementation on body composition, glycemic and lipid markers in women with type 2 diabetes. Nutrients. 2021;13(11):3958. doi: 10.3390/nu13113958.	Ineligible follow-up duration

Table A2.1. contd

Reference	Reason for exclusion
Sampson M, Clark A, Bachmann M, Garner N, Irvine L, Howe A et al. Effects of the Norfolk diabetes prevention lifestyle intervention (NDPS) on glycaemic control in screen-detected type 2 diabetes: a randomised controlled trial. BMC Med. 2021;19(1):183. doi: 10.1186/s12916-021-02053-x.	No eligible outcome
Sanaeinasab H, Saffari M, Yazdanparast D, Karimi Zarchi A, Al-Zaben F, Koenig HG et al. Effects of a health education program to promote healthy lifestyle and glycemic control in patients with type 2 diabetes: a randomized controlled trial. Prim Care Diabetes. 2021;15(2):275–82. doi: 10.1016/j.pcd.2020.09.007.	Ineligible follow-up duration
Sanatkar S, Baldwin P, Clarke J, Fletcher S, Gunn J, Wilhelm K et al. The influence of personality on trajectories of distress, health and functioning in mild-to-moderately depressed adults with type 2 diabetes. Psychol Health Med. 2020;25(3):296–308. doi: 10.1080/13548506.2019.1668567.	Ineligible study design
Sánchez A, Pablo S, García-Álvarez A, Dominguez S, Grandes G, for the PREDIAPS Group. Effectiveness of two procedures for deploying a facilitated collaborative modeling implementation strategy-the PVS-PREDIAPS strategy-to optimize type 2 diabetes prevention in primary care: the PREDIAPS cluster randomized hybrid type II implementation trial. Implement Sci. 2021;16(1):58. doi: 10.1186/s13012-021-01127-x.	No eligible outcome
Sarid O, Berger R, Guez J. Reduced HbA1c levels in type 2 diabetes patients: an interaction between a pedagogical format for students and psycho-educational intervention for patients. Diabetes Metab Syndr. 2019;13(3):2280–4. doi: 10.1016/j.dsx.2019.05.021.	No eligible outcome
Sarraju A, Li J, Cannon CP, Chang TI, Agarwal R, Bakris G et al. Effects of canagliflozin on cardiovascular, renal, and safety outcomes in participants with type 2 diabetes and chronic kidney disease according to history of heart failure: results from the CREDENCE trial. Am Heart J. 2021;233:141–8. doi: 10.1016/j.ahj.2020.12.008.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Sartore G, Chilelli NC, Seraglia R, Ragazzi E, Marin R, Roverso M et al. Long-term effect of pioglitazone vs glimepiride on lipoprotein oxidation in patients with type 2 diabetes: a prospective randomized study. Acta Diabetol. 2019;56(5):505–13. doi: 10.1007/s00592-018-01278-2.	Ineligible population
Sasako T, Ueki K, Miyake K, Okazaki Y, Takeuchi Y, Ohashi Y et al. Effect of a multifactorial intervention on fracture in patients with type 2 diabetes: subanalysis of the J-DOIT3 study. J Clin Endocrinol Metab. 2021;106(5):e2116–28. doi: 10.1210/clinem/dgab013.	No eligible outcome
Sato S, Tajiri Y, Shimono D, Sumiyoshi S, Futata T. Changes in psychological behavior accompanied by the short-term usage of flash glucose monitoring for newly diagnosed type 2 diabetes mellitus. Ther Res. 2020;41(7):577–86.	No eligible outcome
Schafer GL, Songer TJ, Arena VC, Kramer MK, Miller RG, Kriska AM. Participant food and activity costs in a translational Diabetes Prevention Program. Transl Behav Med. 2021;11(2):351–8. doi: 10.1093/tbm/ibaa031.	No eligible outcome
Schlicker S, Weisel KK, Buntrock C, Berking M, Nobis S, Lehr D et al. Do nonsuicidal severely depressed individuals with diabetes profit from internet-based guided self-help? Secondary analyses of a pragmatic randomized trial. J Diabetes Res. 2019;2019:2634094. doi: 10.1155/2019/2634094.	No eligible outcome
Schmiedel K, Mayr A, Fießler C, Schlager H, Friedland K. [Quality of life and satisfaction during the diabetes prevention program GLICEMIA: a cluster-randomized, controlled trial.] Gesundheitswesen. 2020;82(11):844–51. doi: 10.1055/a-0883-4888 (in German).	Ineligible population
Schulte EM, Tuerk PW, Wadden TA, Garvey WT, Weiss D, Hermayer KL et al. Changes in weight control behaviors and hedonic hunger in a commercial weight management program adapted for individuals with type 2 diabetes. Int J Obes (Lond). 2020;44(5):990–8. doi: 10.1038/s41366-020-0530-x.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Schwartz AV, Pan Q, Aroda VR, Crandall JP, Kriska A, Diabetes Prevention Program Research Group. Long-term effects of lifestyle and metformin interventions in DPP on bone density. Osteoporos Int. 2021;32(11):2279–87. doi: 10.1007/s00198-021-05989-1.	No new data from this paper (study included)
Schwingshackl L, Missbach B, Konig J, Hoffmann G. Adherence to a Mediterranean diet and risk of diabetes: a systematic review and meta-analysis. Public Health Nutr. 2015;18(7):1292–9. doi: 10.1017/S1368980014001542.	Systematic review
Selcuk-Tosun A, Zincir H. The effect of a transtheoretical model-based motivational interview on self-efficacy, metabolic control, and health behaviour in adults with type 2 diabetes mellitus: a randomized controlled trial. Int J Nurs Pract. 2019;25(4):e12742. doi: 10.1111/ijn.12742.	No eligible outcome
Selph S, Dana T, Blazina I, Bougatsos C, Patel H, Chou R. Screening for type 2 diabetes mellitus: a systematic review for the US Preventive Services Task Force. Ann Intern Med. 2015;162(11):765–76. doi: 10.7326/M14-2221.	Systematic review
Selvin E, Wang D, McEvoy JW, Juraschek SP, Lazo M, Hamet P et al. Response of 1,5-anhydroglucitol level to intensive glucose- and blood-pressure-lowering interventions, and its associations with clinical outcomes in the ADVANCE trial. Diabetes Obes Metab. 2019;21(8):2017–23. doi: 10.1111/dom.13755.	No eligible outcome
Semlitsch T, Engler J, Siebenhofer A, Jeitler K, Berghold A, Horvath K. (Ultra-)long-acting insulin analogues versus NPH insulin (human isophane insulin) for adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2020;(11):CD005613. doi: 10.1002/14651858.CD005613.pub4.	Systematic review
Sesti G, Bardtrum L, Dagdelen S, Halladin N, Haluzík M, Órsy P et al. A greater proportion of participants with type 2 diabetes achieve treatment targets with insulin degludec/liraglutide versus insulin glargine 100 units/mL at 26 weeks: DUAL VIII, a randomized trial designed to resemble clinical practice. Diabetes Obes Metab. 2020;22(5):873–8. doi: 10.1111/dom.13957.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Shaddinger BC, Soffer J, Vlasakakis G, Shabbout M, Weston C, Nino A. Efficacy and safety of an albiglutide liquid formulation compared with the lyophilized formulation: a 26-week randomized, double-blind, repeat-dose study in patients with type 2 diabetes mellitus. Diabetes Res Clin Pract. 2019;152:125–34. doi: 10.1016/j.diabres.2019.04.018.	Ineligible population
Shailaja K, Thomas AA, Mathaikutty JR, Abraham N, John RL. Impact of patient counselling among type 2 diabetes mellitus patients in a tertiary care hospital. Int J Pharma Bio Sci. 2020;11(2):33–9. doi: 10.22376/ijpbs.2020.11.2.p33-39.	No eligible outcome
Shaman AM, Bain SC, Bakris GL, Buse JB, Idorn T, Mahaffey KW et al. Effect of the glucagon-like peptide-1 receptor agonists semaglutide and liraglutide on kidney outcomes in patients with type 2 diabetes: pooled analysis of SUSTAIN 6 and LEADER. Circulation. 2022;145(8):575–85. doi: 10.1161/CIRCULATIONAHA.121.055459.	Ineligible population
Shamizadeh T, Jahangiry L, Sarbakhsh P, Ponnet K. Social cognitive theory-based intervention to promote physical activity among prediabetic rural people: a cluster randomized controlled trial. Trials. 2019;20(1):98. doi: 10.1186/s13063-019-3220-z.	Ineligible follow-up duration
Shearer J, Kalyani M, Mangelis A, de Silva D, de Silva P, Wijesuriya M et al. Cost-effectiveness of peer-educator–delivered lifestyle modification for type 2 diabetes prevention in a young healthy population in Sri Lanka: a trial-based economic evaluation and economic model. Pharmacoecon Open. 2021;5(4):693–700. doi: 10.1007/s41669-021-00284-5.	Ineligible population
Shen B, Ji XY. Study on the efficacy and mechanism of Jiangzhi Ligan decoction in the treatment of T2DM with NAFLD based on NLRP3 inflammasome. Chin J Pharm Biotech. 2022;29(1):39–44. doi: 10.19526/j.cnki.1005-8915.20220107.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Shen XX, Wang JP, Chen YY, An YL, Gong QH, Zhang B et al. [Subjects with impaired glucose tolerance returned to normal glucose status for six years had lower long-term risk of diabetes: 20 years follow up of Daqing Diabetes Prevention Study]. Zhonghua Nei Ke Za Zhi. 2019;58(5):372–6. doi:10.3760/cma.j.issn.0578-1426.2019.05.008 (in Chinese).	Ineligible language
Shen Y, Yang X, Han X, Xi W, Jiang L, Wang S et al. Influence of GLP-1 receptor agonist on insulin dosage and blood glucose control of patients with type 2 diabetes mellitus. Am J Transl Res. 2021;13(10):11814–23. PMID: 34786110.	No eligible outcome
Sheng CS, Miao Y, Ding L, Cheng Y, Wang D, Yang Y et al. Prognostic significance of visit-to-visit variability, and maximum and minimum LDL cholesterol in diabetes mellitus. Lipids Health Dis. 2022;21(1):19. doi: 10.1186/s12944-022-01628-8.	Ineligible population
Shi C, Fang X, Yang Y, Bai R, Yu S, Sun G et al. Intensive multifactorial intervention improved renal impairment in short-duration type 2 diabetes: a randomized, controlled, 7-year follow-up trial. J Diabetes Complications. 2020;34(1):107468. doi: 10.1016/j.jdiacomp.2019.107468.	No eligible outcome
Shi LX, Liu XM, Shi YQ, Li QM, Ma JH, Li YB et al. Efficacy and safety of dulaglutide monotherapy compared with glimepiride in Chinese patients with type 2 diabetes: post-hoc analyses of a randomized, double-blind, phase III study. J Diabetes Investig. 2020;11(1):142–50. doi: 10.1111/jdi.13075.	Ineligible population
Shi S, Gouskova N, Najafzadeh M, Wei LJ, Kim DH. Intensive versus standard blood pressure control in type 2 diabetes: a restricted mean survival time analysis of a randomised controlled trial. BMJ Open. 2021;11(9):e050335. doi: 10.1136/bmjopen-2021-050335.	Ineligible population
Shin NR, Gu N, Choi HS, Kim H. Combined effects of *Scutellaria baicalensis* with metformin on glucose tolerance of patients with type 2 diabetes via gut microbiota modulation. Am J Physiol Endocrinol Metab. 2020;318(1):E52–61. doi: 10.1152/ajpendo.00221.2019.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Shuai Y, Yang G, Zhang Q, Li W, Luo Y, Ma J et al. Efficacy and safety of polyethylene glycol loxenatide monotherapy in type 2 diabetes patients: a multicentre, randomized, double-blind, placebo-controlled phase 3a clinical trial. Diabetes Obes Metab. 2021;23(1):116–24. doi: 10.1111/dom.14198.	Ineligible population
Shyangdan DS, Royle P, Clar C, Sharma P, Waugh N, Snaith A. Glucagon-like peptide analogues for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2011;(10):CD006423. doi: 10.1002/14651858.CD006423.pub2.	Systematic review
Siddiqui F, Lindblad U, Nilsson PM, Bennet L. Effects of a randomized, culturally adapted, lifestyle intervention on mental health among Middle-Eastern immigrants. Eur J Public Health. 2019;29(5):888–94. doi: 10.1093/eurpub/ckz020.	No eligible outcome
Siebenhofer A, Plank J, Berghold A, Jeitler K, Horvath K, Narath M et al. Short acting insulin analogues versus regular human insulin in patients with diabetes mellitus. Cochrane Database Syst Rev. 2006;(2):CD003287. doi: 10.1002/14651858.CD003287.pub4.	Systematic review
Silva MAVD, São-João TM, Cornelio ME, Mialhe FL. Effect of implementation intention on walking in people with diabetes: an experimental approach. Rev Saude Publica. 2020;54:103. doi: 10.11606/s1518-8787.2020054002024.	Ineligible population
Silveira EA, Rosa LPS, de Resende DP, Rodrigues APDS, da Costa AC, Rezende ATO et al. Positive effects of extra-virgin olive oil supplementation and DietBra on inflammation and glycemic profiles in adults with type 2 diabetes and class II/III obesity: a randomized clinical trial. Front Endocrinol. 2022;13:841971. doi: 10.3389/fendo.2022.841971.	No eligible outcome
Simeone P, Tripaldi R, Michelsen A, Ueland T, Liani R, Ciotti S et al. Effects of liraglutide vs lifestyle changes on soluble suppression of tumorigenesis-2 (sST2) and galectin-3 in obese subjects with prediabetes or type 2 diabetes after comparable weight loss. Cardiovasc Diabetol. 2022;21(1):36. doi: 10.1186/s12933-022-01469-w.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Simon MA, Raja BY, Varughese PC, Daniel LM, Sowjanya K, Kumar JS et al. Pharmacist led intervention towards management of type 2 diabetes mellitus and assessment of patient satisfaction of care: a prospective, randomized controlled study. Diabetes Metab Syndr. 2021;15(5):102208. doi: 10.1016/j.dsx.2021.102208.	No eligible outcome
Simpson FR, Pajewski NM, Nicklas B, Kritchevsky S, Bertoni A, Ingram F et al. Impact of multidomain lifestyle intervention on frailty through the lens of deficit accumulation in adults with type 2 diabetes mellitus. J Gerontol A Biol Sci Med Sci. 2020;75(10):1921–7. doi: 10.1093/gerona/glz197.	Ineligible population
Simpson FR, Pajewski NM, Beavers KM, Kritchevsky S, McCaffery J, Nicklas BJ et al. Does the impact of intensive lifestyle intervention on cardiovascular disease risk vary according to frailty as measured via deficit accumulation? J Gerontol A Biol Sci Med Sci. 2021;76(2):339–45. doi: 10.1093/gerona/glaa153.	Ineligible population
Sitorus J, Hadju V, Jafar N, Amiruddin R, Syam A, Mahmudiono T et al. *Artocarpus altilis* extract capsules reduce fasting blood glucose in prediabetes. Open Access Maced J Med Sci. 2022;10(A):315–20.	Ineligible follow-up duration
Sivapuram MS, Srivastava V, Kaur N, Anand A, Nagarathna R, Patil S et al. Ayurveda body–mind constitutional types and role of yoga intervention among type 2 diabetes mellitus population of Chandigarh and Panchkula regions. Ann Neurosci. 2020;27(3–4):214–23. doi: 10.1177/09727531211000040.	Ineligible follow-up duration
Smith JR, Greaves CJ, Thompson JL, Taylor RS, Jones M, Armstrong R et al. The community-based prevention of diabetes (ComPoD) study: a randomised, waiting list controlled trial of a voluntary sector-led diabetes prevention programme. Int J Behav Nutr Phys Act. 2019;16(1):112. doi: 10.1186/s12966-019-0877-3.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Sobral do Rosário F, Almeida DV, Oliveira J, Lima ML, Raposo JF. A randomized trial of the close reading and creative writing program: an alternative educational method for adult group care intervention in type 2 diabetes management. Can J Diabetes. 2020;44(3): 253–60. doi: 10.1016/j.jcjd.2019.07.149.	No eligible outcome
Soejima H, Ogawa H, Morimoto T, Okada S, Sakuma M, Nakayama M et al. One quarter of total myocardial infarctions are silent manifestation in patients with type 2 diabetes mellitus. J Cardiol. 2019;73(1):33–7. doi: 10.1016/j.jjcc.2018.05.017.	Ineligible population
Sokolovska J, Ostrovska K, Pahirko L, Varblane G, Krilatiha K, Cirulnieks A et al. Impact of interval walking training managed through smart mobile devices on albuminuria and leptin/adiponectin ratio in patients with type 2 diabetes. Physiol Rep. 2020;8(13):e14506. doi: 10.14814/phy2.14506.	No eligible outcome
Soltani R, Ghanadian SM, Iraj B, Homayouni A, Esfahani TS, Akbari M. The effects of *Berberis integerrima* fruit extract on glycemic control parameters in patients with type 2 diabetes mellitus: a randomized controlled clinical trial. Evid Based Complement Alternat Med. 2021;2021:5583691. doi: 10.1155/2021/5583691.	No eligible outcome
Son C, Makino H, Kasahara M, Tanaka T, Nishimura K, Taneda S et al. Comparison of efficacy between dipeptidyl peptidase-4 inhibitor and sodium-glucose cotransporter 2 inhibitor on metabolic risk factors in Japanese patients with type 2 diabetes mellitus: results from the CANTABILE study. Diabetes Res Clin Pract. 2021;180:109037. doi: 10.1016/j.diabres.2021.109037.	Ineligible population
Sridharan K, Mohan R, Ramaratnam S, Panneerselvam D. Ayurvedic treatments for diabetes mellitus. Cochrane Database Syst Rev. 2011;(12):CD008288. doi: 10.1002/14651858.CD008288.pub2.	Systematic review

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Reference	Reason for exclusion
Staite E, Bayley A, Al-Ozairi E, Stewart K, Hopkins D, Rundle J et al. A wearable technology delivering a web-based diabetes prevention program to people at high risk of type 2 diabetes: randomized controlled trial. JMIR Mhealth Uhealth. 2020;8(7):e15448. doi: 10.2196/15448.	No eligible comparator
Steffen PLS, Mendonça CS, Meyer E, Faustino-Silva DD. Motivational interviewing in the management of type 2 diabetes mellitus and arterial hypertension in primary health care: an RCT. Am J Prev Med. 2021;60(5):e203–12. doi: 10.1016/j.amepre.2020.12.015.	No eligible outcome
Stentz FB, Mikhael A, Kineish O, Christman J, Sands C. High protein diet leads to prediabetes remission and positive changes in incretins and cardiovascular risk factors. Nutr Metab Cardiovasc Dis. 2021;31(4):1227–37. doi: 10.1016/j.numecd.2020.11.027.	No eligible comparator
Strand MA, He M, Johnson R, Perry J, Yin Z. Process evaluation of a community-based diabetes prevention program in China: the Pathway to Health (PATH). Health Educ Res. 2019;34(5):521–31. doi: 10.1093/her/cyz023.	No eligible outcome
Stubbs EB, Fisher MA, Miller CM, Jelinek C, Butler J, McBurney C et al. Randomized controlled trial of physical exercise in diabetic veterans with length-dependent distal symmetric polyneuropathy. Front Neurosci. 2019;13:51. doi: 10.3389/fnins.2019.00051.	Ineligible population
Stultiens JMG, Top WMC, Kimenai DM, Lehert P, Bekers O, Stehouwer CDA et al. Metformin and high-sensitivity cardiac troponin I and T trajectories in type 2 diabetes patients: a post-hoc analysis of a randomized controlled trial. Cardiovasc Diabetol. 2022;21(1):49. doi: 10.1186/s12933-022-01482-z.	No eligible outcome
Suckling RJ, He FJ, MacGregor GA. Altered dietary salt intake for preventing and treating diabetic kidney disease. Cochrane Database Syst Rev. 2010;(12):CD006763. doi: 10.1002/14651858.CD006763.pub2.	Systematic review

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Reference	Reason for exclusion
Suijk DLS, van Baar MJB, van Bommel EJM, Iqbal Z, Krebber MM, Vallon V et al. SGLT2 inhibition and uric acid excretion in patients with type 2 diabetes and normal kidney function. Clin J Am Soc Nephrol. 2022;17(5):663–71. doi: 10.2215/CJN.11480821.	No eligible outcome
Sunil Kumar D, Prakash B, Subhash Chandra BJ, Kadkol PS, Arun V, Thomas JJ. An android smartphone-based randomized intervention improves the quality of life in patients with type 2 diabetes in Mysore, Karnataka, India. Diabetes Metab Syndr. 2020;14(5):1327–32. doi: 10.1016/j.dsx.2020.07.025.	No eligible outcome
Sunil Kumar D, Prakash B, Subhash Chandra BJ, Kadkol PS, Arun V, Thomas JJ et al. Technological innovations to improve health outcome in type 2 diabetes mellitus: a randomized controlled study. Clin Epidemiol Glob Health. 2021;9:53–6. doi: 10.1016/j.cegh.2020.06.011.	No eligible outcome
Sutkowska E, Fortuna P, Kaluza B, Sutkowska K, Wisniewski J, Prof AG. Metformin has no impact on nitric oxide production in patients with pre-diabetes. Biomed Pharmacother. 2021;140:111773. doi: 10.1016/j.biopha.2021.111773.	No eligible outcome
Swinnen SG, Simon ACR, Holleman F, Hoekstra JB, DeVries JH. Insulin detemir versus insulin glargine for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2011;(7):CD006383. doi: 10.1002/14651858.CD006383.pub2.	Systematic review
Szilágyi B, Kukla A, Makai A, Ács P, Járomi M. Sports therapy and recreation exercise program in type 2 diabetes: randomized controlled trial, 3-month follow-up. J Sports Med Phys Fitness. 2019;59(4):676–85. doi: 10.23736/S0022-4707.18.08591-2.	Ineligible population
Taheri S, Zaghloul H, Chagoury O, Elhadad S, Ahmed SH, El Khatib N et al. Effect of intensive lifestyle intervention on bodyweight and glycaemia in early type 2 diabetes (DIADEM-I): an open-label, parallel-group, randomised controlled trial. Lancet Diabetes Endocrinol. 2020;8(6):477–89. doi: 10.1016/S2213-8587(20)30117-0.	Ineligible population

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Reference	Reason for exclusion
Talavera GA, Castañeda SF, Mendoza PM, López-Gurrola M, Roesch S, Pichardo MS et al. Latinos understanding the need for adherence in diabetes (LUNA-D): a randomized controlled trial of an integrated team-based care intervention among Latinos with diabetes. Transl Behav Med. 2021;11(9):1665–75. doi: 10.1093/tbm/ibab052.	No eligible outcome
Tamborlane WV, Laffel LM, Shehadeh N, Isganaitis E, Van Name M, Ratnayake J et al. Efficacy and safety of dapagliflozin in children and young adults with type 2 diabetes: a prospective, multicentre, randomised, parallel group, phase 3 study. Lancet Diabetes Endocrinol. 2022;10(5):341–50. doi: 10.1016/S2213-8587(22)00052-3.	Ineligible population
Tamura H, Kondo Y, Ito K, Hasebe M, Satoh S, Terauchi Y. Comparison of the effects of empagliflozin and glimepiride on endothelial function in patients with type 2 diabetes: a randomized controlled study. PLOS One. 2022;17(2):e0262831. doi: 10.1371/journal.pone.0262831.	No eligible outcome
Tan X, Sun G, Yuan F, Qu L, Han A. Clinical effectiveness of a combination of metformin and ipragliflozin in the management of patients with type-2 diabetes mellitus. Trop J Pharm Res. 2021;20(4):783–8. doi: 10.4314/tjpr.v20i4.18.	Ineligible population
Tang F, Lin X. Effects of fasting-mimicking diet and specific meal replacement foods on blood glucose control in patients with type 2 diabetes: a randomized controlled trial. Oxid Med Cell Longev. 2020;2020:6615295. doi: 10.1155/2020/6615295.	No eligible outcome
Tanimura-Inagaki K, Nagao M, Harada T, Sugihara H, Moritani S, Sasaki J et al. Sitagliptin improves plasma apolipoprotein profile in type 2 diabetes: a randomized clinical trial of sitagliptin effect on lipid and glucose metabolism (SLIM) study. Diabetes Res Clin Pract. 2020;162:108119. doi: 10.1016/j.diabres.2020.108119.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Tao T, Zhang Y, Zhu YC, Fu JR, Wang YY, Cai J et al. Exenatide, metformin, or both for prediabetes in PCOS: a randomized, open-label, parallel-group controlled study. J Clin Endocrinol Metab. 2021;106(3):e1420–32. doi: 10.1210/clinem/dgaa692.	Ineligible population
Tay J, Thompson CH, Luscombe-Marsh ND, Noakes M, Buckley JD, Wittert GA et al. Nutritional adequacy of very low- and high-carbohydrate, low saturated fat diets in adults with type 2 diabetes: a secondary analysis of a 2-year randomised controlled trial. Diabetes Res Clin Pract. 2020;170:108501. doi: 10.1016/j.diabres.2020.108501.	No eligible outcome
Terada T, Boulé NG. Does metformin therapy influence the effects of intensive lifestyle intervention? Exploring the interaction between first line therapies in the Look AHEAD trial. Metabolism. 2019;94:39–46. doi: 10.1016/j.metabol.2019.01.004.	No eligible outcome
Terauchi Y, Utsunomiya K, Yasui A, Seki T, Cheng G, Shiki K et al. Safety and efficacy of empagliflozin as add-on therapy to GLP-1 receptor agonist (liraglutide) in Japanese patients with type 2 diabetes mellitus: a randomised, double-blind, parallel-group phase 4 study. Diabetes Ther. 2019;10(3):951–63. doi: 10.1007/s13300-019-0604-8.	Ineligible population
Terauchi Y, Nakama T, Spranger R, Amano A, Inoue T, Niemoeller E. Efficacy and safety of insulin glargine/lixisenatide fixed-ratio combination (iGlarLixi 1:1) in Japanese patients with type 2 diabetes mellitus inadequately controlled on oral antidiabetic drugs: a randomized, 26-week, open-label, multicentre study – the LixiLan JP-O2 randomized clinical trial. Diabetes Obes Metab. 2020;22(suppl 4):14–23. doi: 10.1111/dom.14036.	Ineligible population
Terauchi Y, Takada T, Yoshida S. A randomized controlled trial of a structured program combining aerobic and resistance exercise for adults with type 2 diabetes in Japan. Diabetol Int. 2021;13(1):75–84. doi: 10.1007/s13340-021-00506-5.	No eligible outcome

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Reference	Reason for exclusion
Terawaki Y, Iwaya C, Nomiyama T, Shimono D, Horikawa T, Fujimura-Tanaka Y et al. Efficacy and safety of a combination of an insulin secretagogue and a dipeptidyl peptidase-4 inhibitor in Japanese patients with type 2 diabetes mellitus; the repaglinide glucose oscillation study in Fukuoka (REGO-F). Diabetol Int. 2020;11(3):274–82. doi: 10.1007/s13340-020-00426-w.	Ineligible population
Thomas D, Elliott EJ. Low glycaemic index, or low glycaemic load, diets for diabetes mellitus. Cochrane Database Syst Rev. 2009;(1):CD006296. doi: 10.1002/14651858.CD006296.pub2.	Systematic review
Thomas D, Elliott EJ, Naughton GA. Exercise for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2006;(3):CD002968. doi: 10.1002/14651858.CD002968.pub2.	Systematic review
Thomas MK, Nikooienejad A, Bray R, Cui X, Wilson J, Duffin K et al. Dual GIP and GLP-1 receptor agonist tirzepatide improves beta-cell function and insulin sensitivity in type 2 diabetes. J Clin Endocrinol Metab. 2021;106(2):388–96. doi: 10.1210/clinem/dgaa863.	No eligible outcome
Tian J, Ohkuma T, Cooper M, Harrap S, Mancia G, Poulter N et al. Effects of intensive glycemic control on clinical outcomes among patients with type 2 diabetes with different levels of cardiovascular risk and hemoglobin A1c in the ADVANCE trial. Diabetes Care. 2020;43(6):1293–9. doi: 10.2337/dc19-1817.	Ineligible population
Tofte N, Lindhardt M, Adamova K, Bakker SJL, Beige J, Beulens JWJ et al. Early detection of diabetic kidney disease by urinary proteomics and subsequent intervention with spironolactone to delay progression (PRIORITY): a prospective observational study and embedded randomised placebo-controlled trial. Lancet Diabetes Endocrinol. 2020;8(4):301–12. doi: 10.1016/S2213-8587(20)30026-7.	Ineligible population
Toi PL, Anothaisintawee T, Chaikledkaew U, Briones JR, Reutrakul S, Thakkinstian A. Preventive role of diet interventions and dietary factors in type 2 diabetes mellitus: an umbrella review. Nutrients. 2020;12(9):2722. doi: 10.3390/nu12092722.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Tok Ö, Kişioğlu SV, Ersöz HÖ, Kahveci B, Göktaş Z. A 4-week diet with exercise intervention had a better effect on blood glucose levels compared to diet only intervention in obese individuals with insulin resistance. J Sports Med Phys Fitness. 2021;61(2):287–93. doi: 10.23736/S0022-4707.20.11188-5.	Ineligible follow-up duration
Trakarnvanich T, Satirapoj B, Suraamornkul S, Chirananthavat T, Sanpatchayapong A, Claimon T. Effect of dipeptidyl peptidase-4 (DPP-4) inhibition on biomarkers of kidney injury and vascular calcification in diabetic kidney disease: a randomized controlled trial. J Diabetes Res. 2021;2021:7382620. doi: 10.1155/2021/7382620.	No eligible outcome
Trento M, Fornengo P, Amione C, Salassa M, Barutta F, Gruden G et al. Self-management education may improve blood pressure in people with type 2 diabetes. A randomized controlled clinical trial. Nutr Metab Cardiovasc Dis. 2020;30(11):1973–9. doi: 10.1016/j.numecd.2020.06.023.	No eligible outcome
Tsapas A, Karagiannis T, Kakotrichi P, Avgerinos I, Mantsiou C, Tousinas G et al. Comparative efficacy of glucose-lowering medications on body weight and blood pressure in patients with type 2 diabetes: a systematic review and network meta-analysis. Diabetes Obes Metab. 2021;23(9):2116–24. doi: 10.1111/dom.14451.	Systematic review
Tuttolomondo A, Cirrincione A, Casuccio A, Del Cuore A, Daidone M, Di Chiara T et al. Efficacy of dulaglutide on vascular health indexes in subjects with type 2 diabetes: a randomized trial. Cardiovasc Diabetol. 2021;20(1):1. doi: 10.1186/s12933-020-01183-5.	Ineligible population
Ueki K, Sasako T, Okazaki Y, Miyake K, Nangaku M, Ohashi Y et al. Multifactorial intervention has a significant effect on diabetic kidney disease in patients with type 2 diabetes. Kidney Int. 2021;99(1):256–66. doi: 10.1016/j.kint.2020.08.012.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Umphonsathien M, Rattanasian P, Lokattachariya S, Suansawang W, Boonyasuppayakorn K, Khovidhunkit W. Effects of intermittent very-low calorie diet on glycemic control and cardiovascular risk factors in obese patients with type 2 diabetes mellitus: a randomized controlled trial. J Diabetes Investig. 2022;13(1):156–66. doi: 10.1111/jdi.13619.	Ineligible population
Utami NN, Lestari LA, Nurliyani, Harmayani E. Consumption of jelly dessert containing porang (*Amorphophallus oncophyllus*) glucomannan and inulin along with low-calorie diet contributes to glycemic control of obese adults: a randomized clinical trial. Food Res. 2021;5(3):152–62. doi: 10.26656/fr.2017.5(3).461.	Ineligible population
Utzschneider KM, Tripputi MT, Kozedub A, Barengolts E, Caprio S, Cree-Green M et al. Differential loss of beta-cell function in youth vs adults following treatment withdrawal in the Restoring Insulin Secretion (RISE) study. Diabetes Res Clin Pract. 2021;178:108948. doi: 10.1016/j.diabres.2021.108948.	No eligible outcome
Vadini F, Simeone PG, Boccatonda A, Guagnano MT, Liani R, Tripaldi R et al. Liraglutide improves memory in obese patients with prediabetes or early type 2 diabetes: a randomized, controlled study. Int J Obes (Lond). 2020;44(6):1254–63. doi: 10.1038/s41366-020-0535-5.	No eligible outcome
Valenta V, Sailer C, Muhlenbruch K, Fritz J, Roller G, Kaiserauer A et al. [Risk communication and use of prevention services for diabetes mellitus type 2 with the German Diabetes Risk Score.] Diabetol Stoffwechs. 2019;14(02):132–8. doi: 10.1055/a-0829-0273 (in German).	Ineligible population
Valentine N, Van de Laar FA, van Driel ML. Adenosine-diphosphate (ADP) receptor antagonists for the prevention of cardiovascular disease in type 2 diabetes mellitus. Cochrane Database Syst Rev. 2012;(11):CD005449. doi: 10.1002/14651858.CD005449.pub2.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
van der Aart-van der Beek AB, van Raalte DH, Guja C, Hoogenberg K, Suchower LJ, Hardy E et al. Exenatide once weekly decreases urinary albumin excretion in patients with type 2 diabetes and elevated albuminuria: pooled analysis of randomized active controlled clinical trials. Diabetes Obes Metab. 2020;22(9):1556–66. doi: 10.1111/dom.14067.	Ineligible population
van Eyk HJ, Paiman EHM, Bizino MB, de Heer P, Geelhoed-Duijvestijn PH, Kharagjitsingh AV et al. A double-blind, placebo-controlled, randomised trial to assess the effect of liraglutide on ectopic fat accumulation in South Asian type 2 diabetes patients. Cardiovasc Diabetol. 2019;18(1):87. doi: 10.1186/s12933-019-0890-5.	Ineligible population
van Eyk HJ, Paiman EHM, Bizino MB, Ijzermans SL, Kleiburg F, Boers TGW et al. Liraglutide decreases energy expenditure and does not affect the fat fraction of supraclavicular brown adipose tissue in patients with type 2 diabetes. Nutr Metab Cardiovasc Dis. 2020;30(4):616–24. doi: 10.1016/j.numecd.2019.12.005.	Ineligible population
van Eyk HJ, Blauw LL, Bizino MB, Wang Y, van Dijk KW, de Mutsert R et al. Hepatic triglyceride content does not affect circulating CETP: lessons from a liraglutide intervention trial and a population-based cohort. Sci Rep. 2019;9(1):9996. doi: 10.1038/s41598-019-45593-2.	Ineligible population
van Ruiten CC, van der Aart-van der Beek AB, Ijzerman RG, Nieuwdorp M, Hoogenberg K, van Raalte DH et al. Effect of exenatide twice daily and dapagliflozin, alone and in combination, on markers of kidney function in obese patients with type 2 diabetes: a prespecified secondary analysis of a randomized controlled clinical trial. Diabetes Obes Metab. 2021;23(8):1851–8. doi: 10.1111/dom.14410.	Ineligible population
Van Ryckeghem L, Keytsman C, De Brandt J, Verboven K, Verbaanderd E, Marinus N et al. Impact of continuous vs interval training on oxygen extraction and cardiac function during exercise in type 2 diabetes mellitus. Eur J Appl Physiol. 2022;122(4):875–87. doi: 10.1007/s00421-022-04884-9.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Van Stappen V, Cardon G, De Craemer M, Mavrogianni C, Usheva N, Kivelä J et al. The effect of a cluster-randomized controlled trial on lifestyle behaviors among families at risk for developing type 2 diabetes across Europe: the Feel4Diabetes-study. Int J Behav Nutr Phys Act. 2021;18(1):86. doi: 10.1186/s12966-021-01153-4.	Ineligible population
Van Syoc E, Rogers CJ, Ganda E. Global metagenomics analyses demonstrate metformin-induced changes in the gut mycobiome in subjects with type 2 diabetes. FASEB J. 2022;36(suppl 1):36. doi: 10.1096/fasebj.2022.36.S1.R4993.	Conference abstract
Varma S, Lee CJ, Brown TT, Maruthur NM, Schweitzer M, Magnuson T et al. Comparative effects of medical versus surgical weight loss on body composition: a pilot randomized trial. Obes Surg. 2019;29(8):2503–10. doi: 10.1007/s11695-019-03879-4.	No eligible outcome
Vasconcelos C, Almeida A, Cabral M, Ramos E, Mendes R. The impact of a community-based food education program on nutrition-related knowledge in middle-aged and older patients with type 2 diabetes: results of a pilot randomized controlled trial. Int J Environ Res Public Health. 2019;16(13):2403. doi: 10.3390/ijerph16132403.	Ineligible population
Vasconcelos C, Cabral M, Ramos E, Mendes R. The impact of a community-based food education programme on dietary pattern in patients with type 2 diabetes: results of a pilot randomised controlled trial in Portugal. Health Soc Care Community. 2021;29(6): e318–27. doi: 10.1111/hsc.13356.	Ineligible population
Vencio S, Manosalva JP, Mathieu C, Proot P, Lozno HY, Paldánius PM. Exploring early combination strategy in Latin American patients with newly diagnosed type 2 diabetes: a sub-analysis of the VERIFY study. Diabetol Metab Syndr. 2021;13(1):68. doi: 10.1186/s13098-021-00686-9.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Verma S, Bain SC, Buse JB, Idorn T, Rasmussen S, Orsted DD et al. Occurrence of first and recurrent major adverse cardiovascular events with liraglutide treatment among patients with type 2 diabetes and high risk of cardiovascular events: a post hoc analysis of a randomized clinical trial. JAMA Cardiol. 2019;4(12):1214–20. doi: 10.1001/jamacardio.2019.3080.	Ineligible population
Verma S, Bain SC, Honoré JB, Mann JFE, Nauck MA, Pratley RE et al. Impact of microvascular disease on cardiovascular outcomes in type 2 diabetes: results from the LEADER and SUSTAIN 6 clinical trials. Diabetes Obes Metab. 2020;22(11):2193–8. doi: 10.1111/dom.14140.	Ineligible population
Vidanage D, Prathapan S, Hettiarachchi P, Wasalathanthri S. Impact of aerobic exercises on taste perception for sucrose in patients with type 2 diabetes mellitus: a randomized controlled trial. BMC Endocr Disord. 2022;22(1):22. doi: 10.1186/s12902-022-00936-5.	Ineligible population
Vinitha R, Nanditha A, Snehalatha C, Satheesh K, Susairaj P, Raghavan A et al. Effectiveness of mobile phone text messaging in improving glycaemic control among persons with newly detected type 2 diabetes. Diabetes Res Clin Pract. 2019;158:107919. doi: 10.1016/j.diabres.2019.107919.	No eligible outcome
Vluggen S, Candel M, Hoving C, Schaper NC, de Vries H. A web-based computer-tailored program to improve treatment adherence in patients with type 2 diabetes: randomized controlled trial. J Med Internet Res. 2021;23(2):e18524. doi: 10.2196/18524.	Ineligible population
Vo MT, Uratsu CS, Estacio KR, Altschuler A, Kim E, Alexeeff SE et al. Prompting patients with poorly controlled diabetes to identify visit priorities before primary care visits: a pragmatic cluster randomized trial. J Gen Intern Med. 2019;34(6):831–8. doi: 10.1007/s11606-018-4756-4.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
von Storch K, Graaf E, Wunderlich M, Rietz C, Polidori MC, Woopen C. Telemedicine-assisted self-management program for type 2 diabetes patients. Diabetes Technol Ther. 2019;21(9):514–21. doi: 10.1089/dia.2019.0056.	No eligible outcome
Vos RC, van Heusden L, Eikelenboom NWD, Rutten G. Theory-based diabetes self-management education with pre-selection of participants: a randomized controlled trial with 2.5 years' follow-up (ELDES Study). Diabet Med. 2019;36(7):827–35. doi: 10.1111/dme.13907.	Ineligible population
Wadi NM, Asantewa-Ampaduh S, Rivas C, Goff LM. Culturally tailored lifestyle interventions for the prevention and management of type 2 diabetes in adults of Black African ancestry: a systematic review of tailoring methods and their effectiveness. Public Health Nutr. 2022;25(2):422–36. doi: 10.1017/S1368980021003682.	Systematic review
Walker EA, Gonzalez JS, Tripputi MT, Dagogo-Jack S, Matulik MJ, Montez MG et al. Long-term metformin adherence in the Diabetes Prevention Program Outcomes Study. BMJ Open Diabetes Res Care. 2020;8(1):e001537. doi: 10.1136/bmjdrc-2020-001537.	Ineligible study design
Waller K, Furber S, Bauman A, Allman-Farinelli M, van den Dolder P, Hayes A et al. Effectiveness and acceptability of a text message intervention (DTEXT) on HbA1c and self-management for people with type 2 diabetes. A randomized controlled trial. Patient Educ Couns. 2021;104(7):1736–44. doi: 10.1016/j.pec.2020.11.038.	No eligible outcome
Wang B, Mu XL, Zhao J, Jiang HP, Li SS, Yan G et al. Effects of lifestyle interventions on rural patients with type 2 diabetes mellitus. World J Diabetes. 2020;11(6):261–8. doi: 10.4239/wjd.v11.i6.261.	Ineligible population
Wang F, Mao Y, Wang H, Liu Y, Huang P. Semaglutide and diabetic retinopathy risk in patients with type 2 diabetes mellitus: a meta-analysis of randomized controlled trials. Clin Drug Investig. 2022;42(1):17–28. doi: 10.1007/s40261-021-01110-w.	Systematic review

Table A2.1. contd

Reference	Reason for exclusion
Wang H, Deng JL, Yue J, Li J, Hou YB. Prostaglandin E1 for preventing the progression of diabetic kidney disease. Cochrane Database Syst Rev. 2010;(5):CD006872. doi: 10.1002/14651858.CD006872.pub2.	Systematic review
Wang J, Li HQ, Xu XH, Kong XC, Sun R, Jing T et al. The effects of once-weekly dulaglutide and insulin glargine on glucose fluctuation in poorly oral-antidiabetic controlled patients with type 2 diabetes mellitus. BioMed Res Int. 2019;2019:2682657. doi: 10.1155/2019/2682657.	Ineligible population
Wang L, Liu X, Yang W, Lai J, Yu X, Liu J et al. Comparison of blood glucose variability between exenatide and biphasic insulin aspart 30 in Chinese participants with type 2 diabetes inadequately controlled with metformin monotherapy: a multicenter, open-label, randomized trial. Diabetes Ther. 2020;11(10):2313–28. doi: 10.1007/s13300-020-00904-z.	Ineligible population
Wang LX, Wang GY, Su N, Ma J, Li YK. Effects of different doses of metformin on bone mineral density and bone metabolism in elderly male patients with type 2 diabetes mellitus. World J Clin Cases. 2020;8(18):4010–16. doi: 10.12998/wjcc.v8.i18.4010.	No eligible outcome
Wang W, Nevarez L, Filippova E, Song KH, Tao B, Gu L et al. Efficacy and safety of once-weekly dulaglutide versus insulin glargine in mainly Asian patients with type 2 diabetes mellitus on metformin and/or a sulphonylurea: a 52-week open-label, randomized phase III trial. Diabetes Obes Metab. 2019;21(2):234–43. doi: 10.1111/dom.13506.	Ineligible population
Wang X, Liang J, Yang W. A randomized, controlled trial exploring collaborative nursing intervention on self-care ability and blood glucose of patients with type 2 diabetes mellitus. Dis Markers. 2022;2022:7829454. doi: 10.1155/2022/7829454.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Wang X, Liu D, Du M, Hao R, Zheng H, Yan C. The role of text messaging intervention in Inner Mongolia among patients with type 2 diabetes mellitus: a randomized controlled trial. BMC Med Inform Decis Mak. 2020;20(1):90. doi: 10.1186/s12911-020-01129-7.	Ineligible population
Wang X, Zhao X, Gu Y, Zhu X, Yin T, Tang Z et al. Effects of exenatide and humalog mix25 on fat distribution, insulin sensitivity, and β-cell function in normal BMI patients with type 2 diabetes and visceral adiposity. J Diabetes Res. 2020;2020:9783859. doi: 10.1155/2020/9783859.	Ineligible population
Wani K, Alfawaz H, Alnaami AM, Sabico S, Khattak MNK, Al-Attas O et al. Effects of a 12-month intensive lifestyle monitoring program in predominantly overweight/obese Arab adults with prediabetes. Nutrients. 2020;12(2):464. doi: 10.3390/nu12020464.	No eligible outcome
Warrilow A, Somerset S, Pumpa K, Fleet R. Metformin use in prediabetes: is earlier intervention better? Acta Diabetol. 2020;57(11):1359–66. doi: 10.1007/s00592-020-01559-9.	No new data from this paper (study included)
Watada H, Takami A, Spranger R, Amano A, Hashimoto Y, Niemoeller E. Efficacy and safety of 1:1 fixed-ratio combination of insulin glargine and lixisenatide versus lixisenatide in Japanese patients with type 2 diabetes inadequately controlled on oral antidiabetic drugs: the LixiLan JP-O1 randomized clinical trial. Diabetes Care. 2020;43(6):1249–57. doi: 10.2337/dc19-2452.	Ineligible population
Webb DR, Htike ZZ, Swarbrick DJ, Brady EM, Gray LJ, Biglands J et al. A randomized, open-label, active comparator trial assessing the effects of 26 weeks of liraglutide or sitagliptin on cardiovascular function in young obese adults with type 2 diabetes. Diabetes Obes Metab. 2020;22(7):1187–96. doi: 10.1111/dom.14023.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Webb D, Dales J, Zaccardi F, Hill S, Moore C, Farooqi A et al. Intensive versus standard multifactorial cardiovascular risk factor control in screen-detected type 2 diabetes:5-year and longer-term modelled outcomes of the ADDITION-Leicester study. Diabetes Metab Res Rev. 2019;35(3):e3111. doi: 10.1002/dmrr.3111.	Ineligible study design
Wei L, Wang J, Li Z, Zhang Y, Gao Y. Design and implementation of an Omaha System-based integrated nursing management model for patients with newly-diagnosed diabetes. Prim Care Diabetes. 2019;13(2): 142–9. doi: 10.1016/j.pcd.2018.11.001.	Ineligible study design
Wei S, Brejnrod AD, Trivedi U, Mortensen MS, Johansen MY, Karstoft K et al. Impact of intensive lifestyle intervention on gut microbiota composition in type 2 diabetes: a post-hoc analysis of a randomized clinical trial. Gut Microbes. 2022;14(1):2005407. doi: 10.1080/19490976.2021.2005407.	No eligible outcome
Wei X, Zhang Z, Chong MKC, Hicks JP, Gong W, Zou G et al. Evaluation of a package of risk-based pharmaceutical and lifestyle interventions in patients with hypertension and/or diabetes in rural China: a pragmatic cluster randomised controlled trial. PLOS Med. 2021;18(7):e1003694. doi: 10.1371/journal.pmed.1003694.	Ineligible population
Wei Y, Chen Y, Zhao Y, Rothman R, Ming J, Wang L et al. Health literacy and exercise interventions on clinical outcomes in Chinese patients with diabetes: a propensity score-matched comparison. BMJ Open Diabetes Res Care. 2020;8(1):e001179. doi: 10.1136/bmjdrc-2020-001179.	Ineligible study design
Wen Q, Hu M, Lai M, Li J, Hu Z, Quan K et al. Effect of acupuncture and metformin on insulin sensitivity in women with polycystic ovary syndrome and insulin resistance: a three-armed randomized controlled trial. Hum Reprod. 2022;37(3):542–52. doi: 10.1093/humrep/deab272.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Weng J, Zeng L, Zhang Y, Qu S, Wang X, Li P et al. Henagliflozin as add-on therapy to metformin in patients with type 2 diabetes inadequately controlled with metformin: a multicentre, randomized, double-blind, placebo-controlled, phase 3 trial. Diabetes Obes Metab. 2021;23(8):1754–64. doi: 10.1111/dom.14389.	Ineligible population
Wernicke K, Grischke J, Stiesch M, Zeissler S, Krüger K, Bauer P et al. Influence of physical activity on periodontal health in patients with type 2 diabetes mellitus. A blinded, randomized, controlled trial. Clin Oral Investig. 2021;25(11):6101–7. doi: 10.1007/s00784-021-03908-6.	No eligible outcome
West DS, Dutton G, Delahanty LM, Hazuda HP, Rickman AD, Knowler WC et al. Weight loss experiences of African American, Hispanic, and non-Hispanic white men and women with type 2 diabetes: the Look AHEAD trial. Obesity (Silver Spring). 2019;27(8):1275–84. doi: 10.1002/oby.22522.	No eligible comparator
Wharton S, Yin P, Burrows M, Gould E, Blavignac J, Christensen RAG et al. Extended-release naltrexone/bupropion is safe and effective among subjects with type 2 diabetes already taking incretin agents: a post-hoc analysis of the LIGHT trial. Int J Obes (Lond). 2021;45(8):1687–95. doi: 10.1038/s41366-021-00831-4.	Ineligible population
Whelan ME, Orme MW, Kingsnorth AP, Sherar LB, Denton FL, Esliger DW. Examining the use of glucose and physical activity self-monitoring technologies in individuals at moderate to high risk of developing type 2 diabetes: randomized trial. JMIR Mhealth Uhealth. 2019;7(10):e14195. doi: 10.2196/14195.	Ineligible follow-up duration
White RO, Chakkalakal RJ, Wallston KA, Wolff K, Gregory B, Davis D et al. The Partnership to Improve Diabetes Education trial: a cluster randomized trial addressing health communication in diabetes care. J Gen Intern Med. 2020;35(4):1052–9. doi: 10.1007/s11606-019-05617-z.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Widjajakusuma EC, Jonosewojo A, Hendriati L, Wijaya S, Ferawati, Surjadhana A et al. Phytochemical screening and preliminary clinical trials of the aqueous extract mixture of *Andrographis paniculata* (Burm. f.) Wall. ex Nees and *Syzygium polyanthum* (Wight.) Walp leaves in metformin treated patients with type 2 diabetes. Phytomedicine. 2019;55:137–47. doi: 10.1016/j.phymed.2018.07.002.	Ineligible follow-up duration
Williams SL, To Q, Vandelanotte C. What is the effectiveness of a personalised video story after an online diabetes risk assessment? A randomised controlled trial. PLOS One. 2022;17(3):e0264749. doi: 10.1371/journal.pone.0264749.	Ineligible follow-up duration
Willis A, Crasto W, Gray LJ, Dallosso H, Waheed G, Davies M et al. Effects of an electronic software "prompt" with health care professional training on cardiovascular and renal complications in a multiethnic population with type 2 diabetes and microalbuminuria (the GP-Prompt study): results of a pragmatic cluster-randomized trial. Diabetes Care. 2020;43(8):1893–901. doi: 10.2337/dc19-2243.	Ineligible population
Wills AC, Vázquez Arreola E, Olaiya MT, Curtis JM, Hellgren MI, Hanson RL et al. Cardiorespiratory fitness, BMI, mortality, and cardiovascular disease in adults with overweight/obesity and type 2 diabetes. Med Sci Sports Exerc. 2022;54(6):994–1001. doi: 10.1249/MSS.0000000000002873.	Ineligible population
Wilmoth S, Carrillo L, Correa L, Pan M, Parra-Medina D, Sosa E et al. Building a Healthy Temple diabetes self-management education support program in Hispanic faith community settings: a cluster randomized controlled trial. Contemp Clin Trials. 2020;99:106192. doi: 10.1016/j.cct.2020.106192.	No eligible outcome
Withidpanyawong U, Lerkiatbundit S, Saengcharoen W. Family-based intervention by pharmacists for type 2 diabetes: a randomised controlled trial. Patient Educ Couns. 2019;102(1):85–92. doi: 10.1016/j.pec.2018.08.015.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Wittert G, Bracken K, Robledo KP, Grossmann M, Yeap BB, Handelsman DJ et al. Testosterone treatment to prevent or revert type 2 diabetes in men enrolled in a lifestyle programme (T4DM): a randomised, double-blind, placebo-controlled, 2-year, phase 3b trial. Lancet Diabetes Endocrinol. 2021;9(1):32–45. doi: 10.1016/S2213-8587(20)30367-3.	Ineligible population
Wollny A, Altiner A, Daubmann A, Drewelow E, Helbig C, Loscher S et al. Patient-centered communication and shared decision making to reduce HbA1c levels of patients with poorly controlled type 2 diabetes mellitus: results of the cluster-randomized controlled DEBATE trial. BMC Fam Pract. 2019;20(1):87. doi: 10.1186/s12875-019-0977-9.	No eligible outcome
Woodard L, Amspoker AB, Hundt NE, Gordon HS, Hertz B, Odom E et al. Comparison of collaborative goal setting with enhanced education for managing diabetes-associated distress and hemoglobin A1c levels: a randomized clinical trial. JAMA Netw Open. 2022;5(5):e229975. doi: 10.1001/jamanetworkopen.2022.9975.	Ineligible population
Woods-Giscombe CL, Gaylord SA, Li Y, Brintz CE, Bangdiwala SI, Buse JB et al. A mixed-methods, randomized clinical trial to examine feasibility of a mindfulness-based stress management and diabetes risk reduction intervention for African Americans with prediabetes. Evid Based Complement Alternat Med. 2019;2019:3962623. doi: 10.1155/2019/3962623.	No eligible outcome
Wysham CH, Rosenstock J, Vetter ML, Wang H, Hardy E, Iqbal N. Further improvement in glycemic control after switching from exenatide two times per day to exenatide once-weekly autoinjected suspension in patients with type 2 diabetes:52-week results from the DURATION-NEO-1 study. BMJ Open Diabetes Res Care. 2020;8(1):e000773. doi: 10.1136/bmjdrc-2019-000773.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Xiao X, Wang C, Lai X, Zhang B, Gu L, Hou J et al. Achieving the composite end-point of glycated hemoglobin < 7.0% without weight gain or hypoglycemia with once-weekly dulaglutide in Chinese patients with type 2 diabetes: a post-hoc analysis. J Diabetes Investig. 2020;11(3):647–52. doi: 10.1111/jdi.13187.	Ineligible population
Xu C, Dong Z, Zhang P, Chang G, Xiang Q, Zhang M et al. Effect of group cognitive behavioural therapy on psychological stress and blood glucose in people with type 2 diabetes mellitus: a community-based cluster randomized controlled trial in China. Diabet Med. 2021;38(2):e14491. doi: 10.1111/dme.14491.	No eligible outcome
Xu Z, Geng J, Zhang S, Zhang K, Yang L, Li J et al. A mobile-based intervention for dietary behavior and physical activity change in individuals at high risk for type 2 diabetes mellitus: randomized controlled trial. JMIR Mhealth Uhealth. 2020;8(11):e19869. doi: 10.2196/19869.	Ineligible population
Yabe D, Kuwata H, Fujiwara Y, Sakaguchi M, Moyama S, Makabe N et al. Dietary instructions focusing on meal-sequence and nutritional balance for prediabetes subjects: an exploratory, cluster-randomized, prospective, open-label, clinical trial. J Diabetes Complications. 2019;33(12):107450. doi: 10.1016/j.jdiacomp.2019.107450.	No eligible outcome
Yabe D, Nakamura J, Kaneto H, Deenadayalan S, Navarria A, Gislum M et al. Safety and efficacy of oral semaglutide versus dulaglutide in Japanese patients with type 2 diabetes (PIONEER 10): an open-label, randomised, active-controlled, phase 3a trial. Lancet Diabetes Endocrinol. 2020;8(5):392–406. doi: 10.1016/S2213-8587(20)30074-7.	Ineligible population
Yadav P, Joshi B, Geetha Bhavani A. Clinical diagnosis and safety of vildagliptin versus glimepiride with metformin over patients of type-2 diabetes mellitus. Int J Pharm Sci Res. 2022;13(1):384–91. doi: 10.13040/IJPSR.0975-8232.13(1).384-91.	Ineligible follow-up duration

Table A2.1. contd

Reference	Reason for exclusion
Yamada Y, Yabe D, Hertz CL, Horio H, Nakamura J, Nielsen AM et al. Efficacy and safety of oral semaglutide by baseline age in Japanese patients with type 2 diabetes: a subgroup analysis of the PIONEER 9 and 10 Japan trials. Diabetes Obes Metab. 2022;24(2):321–6. doi: 10.1111/dom.14571.	Ineligible population
Yamada Y, Katagiri H, Hamamoto Y, Deenadayalan S, Navarria A, Nishijima K et al. Dose-response, efficacy, and safety of oral semaglutide monotherapy in Japanese patients with type 2 diabetes (PIONEER 9): a 52-week, phase 2/3a, randomised, controlled trial. Lancet Diabetes Endocrinol. 2020;8(5):377–91. doi: 10.1016/S2213-8587(20)30075-9.	Ineligible population
Yamaoka K, Tango T. Efficacy of lifestyle education to prevent type 2 diabetes: a meta-analysis of randomized controlled trials. Diabetes Care. 2005;28(11):2780–6. doi: 10.2337/diacare.28.11.2780.	Systematic review
Yan RN, Cai TT, Jiang LL, Jing T, Cai L, Xie XJ et al. Real-time flash glucose monitoring had better effects on daily glycemic control compared with retrospective flash glucose monitoring in patients with type 2 diabetes on premix insulin therapy. Front Endocrinol. 2022;13:832102. doi: 10.3389/fendo.2022.832102.	No eligible outcome
Yancy WS Jr, Crowley MJ, Dar MS, Coffman CJ, Jeffreys AS, Maciejewski ML et al. Comparison of group medical visits combined with intensive weight management vs group medical visits alone for glycemia in patients with type 2 diabetes: a noninferiority randomized clinical trial. JAMA Intern Med. 2020;180(1):70–9. doi: 10.1001/jamainternmed.2019.4802.	No eligible outcome
Yang W, Ma J, Hong T, Liu M, Miao H, Peng Y et al. Efficacy and safety of insulin degludec/insulin aspart versus biphasic insulin aspart 30 in Chinese adults with type 2 diabetes: a phase III, open-label, 2:1 randomized, treat-to-target trial. Diabetes Obes Metab. 2019;21(7):1652–60. doi: 10.1111/dom.13703.	Ineligible population

Table A2.1. contd

Reference	Reason for exclusion
Yang W, Xu X, Lei T, Ma J, Li L, Shen J et al. Efficacy and safety of linagliptin as add-on therapy to insulin in Chinese patients with type 2 diabetes mellitus: a randomized, double-blind, placebo-controlled trial. Diabetes Obes Metab. 2021;23(2):642–7. doi: 10.1111/dom.14231.	Ineligible follow-up duration
Yao WY, Han MG, De Vito G, Fang H, Xia Q, Chen Y et al. Physical activity and glycemic control status in Chinese patients with type 2 diabetes: a secondary analysis of a randomized controlled trial. Int J Environ Res Public Health. 2021;18(8):4292. doi: 10.3390/ijerph18084292.	No eligible outcome
Yari Z, Naser-Nakhaee Z, Karimi-Shahrbabak E, Cheraghpour M, Hedayati M, Mohaghegh SM et al. Combination therapy of flaxseed and hesperidin enhances the effectiveness of lifestyle modification in cardiovascular risk control in prediabetes: a randomized controlled trial. Diabetol Metab Syndr. 2021;13(1):3. doi: 10.1186/s13098-020-00619-y.	Ineligible follow-up duration
Yasmin F, Nahar N, Banu B, Ali L, Sauerborn R, Souares A. The influence of mobile phone-based health reminders on patient adherence to medications and healthy lifestyle recommendations for effective management of diabetes type 2: a randomized control trial in Dhaka, Bangladesh. BMC Health Serv Res. 2020;20(1):520. doi: 10.1186/s12913-020-05387-z.	No eligible outcome
Yeap BB, Wittert GA. Testosterone, diabetes risk, and diabetes prevention in men. Endocrinol Metab Clin North Am. 2022;51(1):157–72. doi: 10.1016/j.ecl.2021.11.004.	Ineligible study design
Yoo SJ, Chang SA, Sohn TS, Kwon HS, Lee JM, Moon S et al. Long-term glycaemic durability of early combination therapy strategy versus metformin monotherapy in Korean patients with newly diagnosed type 2 diabetes mellitus. Diabetes Metab J. 2021;45(6):954–9. doi: 10.4093/dmj.2020.0173.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Young HM, Miyamoto S, Dharmar M, Tang-Feldman Y. Nurse coaching and mobile health compared with usual care to improve diabetes self-efficacy for persons with type 2 diabetes: randomized controlled trial. JMIR Mhealth Uhealth. 2020;8(3):e16665. doi: 10.2196/16665.	No eligible outcome
Yu HM, Park KS, Hong JH, Park KY, Lee JM, Ku BJ et al. Comparison of the efficacy and safety of insulin detemir administered once daily according to two titration algorithms (3–0–3 and 2–4–6–8) in patients with type 2 diabetes mellitus. Endocrinol Metab (Seoul). 2020;35(1):142–48. doi: 10.3803/EnM.2020.35.1.142.	Ineligible follow-up duration
Yu HM, Kim SJ, Chun SW, Park KY, Lim DM, Lee JM et al. A comparison study on efficacy, insulin sensitivity and safety of Glimepiride/Metformin fixed dose combination versus glimepiride single therapy on type 2 diabetes mellitus patients with basal insulin therapy. Diabetes Res Clin Pract. 2019;155:107796. doi: 10.1016/j.diabres.2019.107796.	Ineligible follow-up duration
Yu J, Arnott C, Neuen BL, Heersprink HL, Mahaffey KW, Cannon CP et al. Cardiovascular and renal outcomes with canagliflozin according to baseline diuretic use: a post hoc analysis from the CANVAS Program. ESC Heart Fail. 2021;8(2):1482–93. doi: 10.1002/ehf2.13236.	Ineligible population
Yu M, Yuan GY, Zhang B, Wu HY, Lv XF. Efficacy and safety of dulaglutide by baseline HbA1c in Chinese patients with type 2 diabetes: a post hoc analysis. Diabetes Ther. 2020;11(5):1147–59. doi: 10.1007/s13300-020-00804-2.	No eligible outcome
Yu M, Shankar RR, Zhang R, Zhang Y, Lin J, O'Neill EA et al. Efficacy and safety of sitagliptin added to treatment of patients with type 2 diabetes inadequately controlled with premixed insulin. Diabetes Obes Metab. 2019;21(2):408–11. doi: 10.1111/dom.13517.	Ineligible population
Yuan X, Dai X, Liu L, Hsue C, Miller JD, Fang Z et al. Comparing the effects of 6 months aerobic exercise and resistance training on metabolic control and beta-cell function in Chinese patients with prediabetes: a multicenter randomized controlled trial. J Diabetes. 2020;12(1):25–37. doi: 10.1111/1753-0407.12955.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Yun Q, Ji Y, Liu S, Shen Y, Jiang X, Fan X et al. Can autonomy support have an effect on type 2 diabetes glycemic control? Results of a cluster randomized controlled trial. BMJ Open Diabetes Res Care. 2020;8(1):e001018. doi: 10.1136/bmjdrc-2019-001018.	No eligible outcome
Zahedi M, Akhlagh SA, Aboomardani M, Alipoor R, Hosseini SA, Shahmirzadi AR. Efficacy of Mediterranean diet on blood biochemical factors in type II diabetic patients: a randomized controlled trial. Gazi Med J. 2021;31(4A):714–18. doi: 10.12996/gmj.2020.166.	No eligible outcome
Zang L, Han Y, Chen L, Hu D, Jin H, Yang N et al. Comparison of the effectiveness and safety of vildagliptin add-on to metformin versus other oral dual antidiabetes agents in patients with type 2 diabetes: the China Prospective Diabetes Study. Diabetes Ther. 2019;10(4):1391–405. doi: 10.1007/s13300-019-0645-z.	Ineligible study design
Zarnigar SK, Khan S. The effect of *Bergenia ligulata* WALL in prediabetes: a randomized single-blind placebo-controlled study. Int J Pharm Res. 2022;14(1): 161–4. doi: 10.31838/ijpr/2022.14.01.024.	Ineligible follow-up duration
Zaromytidou E, Koufakis T, Dimakopoulos G, Drivakou D, Konstantinidou S, Antonopoulou V et al. The effect of vitamin D supplementation on glycemic status of elderly people with prediabetes: a 12-month open-label, randomized-controlled study. Expert Rev Clin Pharmacol. 2022;15(1):89–97. doi: 10.1080/17512433.2022.2043153.	Ineligible intervention
Zeidi IM, Morshedi H, Alizadeh Otaghvar H. A theory of planned behavior-enhanced intervention to promote health literacy and self-care behaviors of type 2 diabetic patients. J Prev Med Hyg. 2021;61(4):E601–13. doi: 10.15167/2421-4248/jpmh2020.61.4.1504.	No eligible outcome
Zhai Y, Yu W. A mobile app for diabetes management: impact on self-efficacy among patients with type 2 diabetes at a community hospital. Med Sci Monit. 2020;26:e926719. doi: 10.12659/MSM.926719.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Zhang HZ, Zhang P, Chang GQ, Xiang QY, Cao H, Zhou JY et al. Effectiveness of cognitive behavior therapy for sleep disturbance and glycemic control in persons with type 2 diabetes mellitus: a community-based randomized controlled trial in China. World J Diabetes. 2021;12(3):292–305. doi: 10.4239/wjd.v12.i3.292.	No eligible outcome
Zhang Y, Han H, Chu L. Effectiveness of restricted diet with a plate in patients with type 2 diabetes: a randomized controlled trial. Prim Care Diabetes. 2022;16(3):368–74. doi: 10.1016/j.pcd.2022.03.007.	No eligible outcome
Zhang Y, Xie H, Tian Y, Zhou L, Yan R, Xie C. Efficacy of Shenqi compound particle on blood glucose and oxidative stress compared with metformin for patients with newly diagnosed type 2 diabetes mellitus: randomized clinical trial. Int J Clin Exp Med. 2019;12(7):8271–80.	Ineligible follow-up duration
Zhao X, Yu X, Zhang X. The role of peer support education model in management of glucose and lipid levels in patients with type 2 diabetes mellitus in Chinese adults. J Diabetes Res. 2019;2019:5634030. doi: 10.1155/2019/5634030.	No eligible outcome
Zheng F, Liu S, Liu Y, Deng L. Effects of an outpatient diabetes self-management education on patients with type 2 diabetes in China: a randomized controlled trial. J Diabetes Res. 2019;2019:1073131. doi: 10.1155/2019/1073131.	Ineligible follow-up duration
Zhou L, Cai X, Luo Y, Zhang F, Ji L. Baseline triglyceride level affected the efficacy of vildagliptin in treating type 2 diabetes: a post hoc analysis of the VISION study. J Diabetes Res. 2019;2019:9347132. doi: 10.1155/2019/9347132.	Ineligible population
Zhu R, Fogelholm M, Poppitt SD, Silvestre MP, Moller G, Huttunen-Lenz M et al. Adherence to a plant-based diet and consumption of specific plant foods-associations with 3-year weight-loss maintenance and cardiometabolic risk factors: a secondary analysis of the PREVIEW intervention study. Nutrients. 2021;13(11):3916. doi: 10.3390/nu13113916.	No eligible outcome

Table A2.1. contd

Reference	Reason for exclusion
Zhu R, Larsen TM, Fogelholm M, Poppitt SD, Vestentoft PS, Silvestre MP et al. Dose-dependent associations of dietary glycemic index, glycemic load, and fiber with 3-year weight loss maintenance and glycemic status in a high-risk population: a secondary analysis of the Diabetes Prevention Study PREVIEW. Diabetes Care. 2021;44(7):1672–81. doi: 10.2337/dc20-3092.	Ineligible study design
Zhyzhneuskaya SV, Al-Mrabeh A, Peters C, Barnes A, Aribisala B, Hollingsworth KG et al. Time course of normalization of functional β-cell capacity in the Diabetes Remission Clinical Trial after weight loss in type 2 diabetes. Diabetes Care. 2020;43(4):813–20. doi: 10.2337/dc19-0371.	Ineligible population
Zobel EH, Ripa RS, von Scholten BJ, Rotbain Curovic V, Kjaer A, Hansen TW et al. Effect of liraglutide on expression of inflammatory genes in type 2 diabetes. Sci Rep. 2021;11(1):18522. doi: 10.1038/s41598-021-97967-0.	No eligible outcome
Zurbau A, Smircic Duvnjak L, Magas S, Jovanovski E, Miocic J, Jenkins AL et al. Co-administration of viscous fiber, Salba-chia and ginseng on glycemic management in type 2 diabetes: a double-blind randomized controlled trial. Eur J Nutr. 2021;60(6):3071–83. doi: 10.1007/s00394-020-02434-7.	Ineligible follow-up duration

Table A2.2. Articles in the Russian language search that were excluded after full-text review

Reference	Reason for exclusion
Боева, Валентина Владимировна, and А. Н. Завьялов. Медикаментозная профилактика сахарного диабета 2-го типа у пациентов с ранними нарушениями углеводного обмена: эффективность и клинические исходы при длительном наблюдении. [Boeva VV, Zavyalov AN. Preventive pharmacotherapy of type 2 diabetes mellitus in patients with early carbohydrate metabolism disorders: long-term efficacy and clinical outcomes]. Вестник Российского государственного медицинского университета 2 (2020): 74–80. doi: 10.24075/brsmu.2020.014.	Ineligible study design
Демидова ИЮ, Боева ВВ, Завьялов АН. Отдаленные результаты медикаментозной коррекции предиабета. [Demidova IYu, Boeva VV, Zavyalov AN. Long-term results of pharmacological correction of prediabetes]. Endocrinol News Opin Train. 2020;1(30):27–34.	Ineligible study design
Демидова ИЮ, Боева ВВ. Ранняя диагностика и лечение начальных стадий нарушений углеводного обмена [Demidova IYu, Boyeva VV. Early diagnosis and treatment of initial stages of carbohydrate metabolism disorders]. Bull RSMU. 2013;1:9–13.	Ineligible study design
Dreval' AV, Misnikova IV, Barsukov IA, Dzebisashvili GG. [Risk of type 2 diabetes mellitus and acute cardiovascular disorders in patients with early disturbances of carbohydrate metabolism.] Klin Med (Mosk). 2012;90(11):30–4. PMID: 23516850.	Ineligible study design
Кушунина ДВ, Калинина АМ, Горный БЕ, Дубовой ИИ, Антонов КА Драпкина ОМ. Динамика частоты гиперхолестеринемии и гипергликемии у пациентов разного возраста, регулярно проходящих диспансеризацию [Kushunina DV, Kalinina AM, Gorny BE, Dubovoy II, Antonov KA, Drapkina OM. Dynamics of the frequency of hypercholesterolemia and hyperglycemia in patients of different ages regularly undergoing medical examination]. Profil Med. 2021; 24(3):51–7. doi: 10.17116/profmed20212406151 (in Russian).	Ineligible study design

Table A2.2. contd

Reference	Reason for exclusion
Романенко ИА, Маврычева НВ, Полятыкина ТС, Романенко АВ, Гринштейн ВБ. К вопросу профилактики сахарного диабета 2-го типа у лиц с нарушенной толерантностью к глюкозе. [Romanenko IA, Mavrycheva NV, Polyatykina TS, Romanenko AV, Grinshtein VB. To the issue of prophylaxis of type 2 diabetes mellitus in individuals with impaired glucose tolerance]. Med Almanac. 2014;5(35):115–17.	Ineligible study design
Romanenko LA, Polyatykina TS, Mavrycheva NV, Budnikova NV, Grinshtein VB. [Dynamics of metabolic characteristics, markers of oxidative stress and vascular wall damage during treatment of obese prediabetic patients.] Klin Med (Mosk). 2016;94(3):221–4. PMID: 27522729.	Ineligible study design
Шишкова ВН, Мамедов МН, Анциферов МБ, Оганов РГ. Эффективность и безопасность антигипергликемической терапии у пациентов с метаболическим синдромом и предиабетом [Shishkova V, Mamedov Antsiferov MM, Oganov R. Efficacy and safety of antiglycemic therapy in patients with metabolic syndrome and prediabetes]. Doctor. 2008;3:2–5.	Ineligible follow up

ANNEX 3. INCLUDED STUDIES

Table A3.1 outlines the data extracted from the included studies. Table A3.2 gives the detailed health outcomes with pharmacological interventions and Table A3.3 gives the detailed health outcomes with lifestyle interventions.

Table A3.1. Characteristics of included studies

Study: reference by first author and publication year	Data category	Description
ACT NOW Study: DeFronzo, 2011 (25)	Study design	RCT
	Setting	8 clinical centres, United States
	Age of participants (mean years (SD))	52.3 (0.5)
	IHG diagnosis	IGT (plasma glucose 7.8–11.0 mmol/L at 2 h during single OGTT)
	Intervention	G1: pioglitazone 30 mg/day for 1 month, increased to 45 mg/day
	Comparator	G2: placebo
	Total study duration	Median: 2.4 years; mean: 2.2 years
	Participants in each arm	G1: 303 G2: 299
	Relevant outcomes	T2DM (plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load), non-fatal myocardial infarction
	Study quality	Fair[a]
Ackermann, 2015 (26)	Study design	RCT
	Setting	Primary care clinics, United States
	IHG diagnosis	FPG 5.6–7.0 mmol/L, IGT 7.8–11.0 mmol/L 2 h after ingestion of oral glucose load, or HbA1c 5.7–6.9%
	Intervention	G1: group-based YMCA (youth organization) adaptation of the DPP, lifestyle intervention

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Comparator	G2: usual care plus brief counselling and information on community resources
	Total study duration	1 year
	Participants in each arm	G1: 257 G2: 252
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Good[a]
Aekplakorn, 2019 (27)	Study design	RCT
	Setting	68 primary care units in 8 provinces, Thailand
	IHG diagnosis	IGT (plasma glucose ≥ 7.8 mmol/L and < 11.1 mmol/L 2 h after ingestion of 75-g oral glucose load)
	Intervention	G1: lifestyle intervention
	Comparator	G2: usual care with one-time educational programme
	Total study duration	24 months
	Participants in each arm	G1: 1030 G2: 873
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L, or a plasma glucose ≥ 11.1 mmol/L 2-h after 75-g oral glucose load)
	Study quality	Good[a]
Amer, 2020 (28)	Study design	Parallel RCT
	Setting	Hospital patients, Saudi Arabia
	IHG diagnosis	Impaired fasting glucose (2017 ADA criteria (108)): 5.6–6.9 mmol/L

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Intervention	G1: intensive lifestyle intervention, including strict lifestyle modification with tailored counselling for improving diet and exercise behaviours
	Comparator	G2: general advice for lifestyle modifications
	Total study duration	18 months
	Participants in each arm	G1: 73 G2: 85
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	High risk of bias[b]
Bhopal, 2014 (29)	Study design	Non-blinded family cluster RCT
	Setting	National Health Service Lothian and Greater Glasgow and Clyde Health Board, Scotland (United Kingdom)
	IHG diagnosis	IGT or impaired fasting glucose according to WHO 1999 criteria (16)
	Intervention	G1: 15 visits from a dietitian over 3 years
	Comparator	G2: control with 4 visits over 3 years
	Total study duration	3 years
	Participants in each arm	G1: 85 G2: 86
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Fair[a]
CANOE Trial: Zinman, 2010 (30)	Study design	RCT
	Setting	Clinics in Ontario, Canada

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Age of participants (median (IQR))	G1: 50.0 (44.0–61.0) G2: 55.0 (46.0–61.0)
	IHG diagnosis	IGT (FPG ≥ 7.0 mmol/L and plasma glucose 7.8–11.0 mmol/L 2 h after 75-g oral glucose load)
	Intervention	G1: rosiglitazone 2 mg and metformin 500 mg twice daily and lifestyle intervention
	Comparator	G2: placebo and lifestyle intervention
	Total study duration	median 3.9 years (IQR: 3.0–4.6)
	Participants in each arm	G1: 103 G2: 104
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L or plasma glucose > 11.0 mmol/L at 2 h during OGTT)
	Study quality	Good[a]
Dai, 2019 (31); Yan, 2019 (92)	Study design	Parallel RCT
	Setting	Health service centres, China
	Age of participants (mean years)	59.0
	IHG diagnosis	"Prediabetes" (2018 ADA criteria (6)): FPG 5.6–7.0 mmol/L and/or plasma glucose 7.8–11.1 mmol/L at 2 h after oral glucose load and/or HbA1c 5.7–6.4%
	Intervention	G1: aerobic training G2: resistance training G3: aerobic and resistance training
	Comparator	G4: no intervention
	Total study duration	2 years

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Participants in each arm	G1: 34 G2: 31 G3: 37 G4: 35
	Relevant outcomes	T2DM (2018 ADA criteria (6)): FPG ≥ 7.0 mmol/L and/or FPG ≥ 11.1 mmol/L at 2 h during OGTT and/or HbA1c ≥ 6.5% (48 mmol/mol)
	Study quality	High risk of bias[b]
DAISI Trial: Nijpels, 2008 (32)	Study design	RCT
	Setting	Invited subjects invited from population register in Hoorn, Netherlands (Kingdom of the)
	Age of participants (mean years (SD))	G1: 58.5 (7.9) G2: 56.5 (7.0)
	IHG diagnosis	FPG 7.8 mmol/L, plasma glucose 8.6–11.1 mmol/L 2 h after oral glucose load, HbA1c ≤ 7.0%
	Intervention	G1: acarbose 50 mg 3 times a day
	Comparator	G2: placebo
	Total study duration	3 years
	Participants in each arm	G1: 60 G2: 58
	Relevant outcomes	T2DM: FPG (≥ 7.8 mmol/L and/or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load) and IGT (FPG < 7.8 mmol/L and/or plasma glucose ≥ 7.8 to < 11.1 mmol/L 2 h after oral glucose load)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Da Qing Study Group: Pan 1997 (33); Li 2008, 2014 (34,35); Gong, 2019, 2021 (36,37)	Study design	RCT
	Setting	33 primary care clinics in Da Qing, China
	Age of participants (median years (SE))	Baseline FPG < 5.6 mmol/L G1: 44.6 (0.7) G2: 47.2 (1.1) Baseline FPG ≥ 5.6 mmol/L G3: 44.8 (0.6) G4: 46.0 (1.1)
	IHG diagnosis	IGT 7.8–11.1 mmol/L at 2 h during 75 g OGTT
	Intervention	G1: one of 3 lifestyle interventions for 6 years: diet, exercise or diet plus exercise
	Comparator	G2: standard medical care
	Total study duration	6-year study and 30-year follow-up
	Participants in each arm	576 overall Baseline FPG < 5.6 mmol/L G1: 214 G2 73 Baseline FPG ≥ 5.6 mmol/L G3: 224 G4: 65
	Relevant outcomes	T2DM (IGT ≥ 11.1 mmol/L at 2 h during a 75-g OGTT), all-cause mortality, cardiovascular mortality, retinopathy, nephropathy, neuropathy
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Diabetes Community Lifestyle Improvement Program: Weber, 2016 (39); Ford, 2019 (38)	Study design	RCT
	Setting	Community-based recruitment in Chennai, India
	Age of participants (mean years (SD))	G1: 44.8 (9.0) G2: 44.0 (9.5)
	IHG diagnosis	IFG (FPG 5.6–6.9 mmol/L), and/or IGT (plasma glucose 7.8–11.0 mmol/L 2 h after oral glucose load)
	Intervention	G1: stepwise intervention of adapted DPP lifestyle classes plus metformin 500 mg twice daily at 4 months if at high risk of developing diabetes
	Comparator	G2: standard of care
	Total study duration	3 years (mean: 2.54; range: 4–48 months)
	Participants in each arm	G1: 283 G2: 295
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load)
	Study quality	Fair[a]
Díaz-Rizzolo, 2021 (40)	Study design	Parallel RCT
	Setting	Primary care, Spain
	Age of participants (mean years)	71.2
	IHG diagnosis	IFG 5.6–7.0 mmol/L
	Intervention	G1: nutritional advice + sardines (source of taurine)
	Comparator	G2: nutritional advice
	Total study duration	1 year

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Participants in each arm	G1: 75 G2: 77
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	High risk of bias[b]
DMagic RCT: Fottrell, 2019 (41)	Study design	Cluster RCT
	Setting	General population, Bangladesh
	Age of participants	Not reported
	IHG diagnosis	WHO 2006 criteria (2): impaired fasting glucose (FPG > 6.1 mmol/L to < 7.0 mmol/L *and* plasma glucose < 7.8 mmol/L 2 h after 75-g oral glucose load) or impaired FPG < 7.0mmol/L *and* plasma glucose > 7.8 mmol/L to < 11.1 mmol/L 2 h after 75-g oral glucose load)
	Intervention	G1: m-health (behaviour change via mobile phone messages) G2: participatory and learning
	Comparator	G3: treatment as usual
	Total study duration	2 years
	Participants in each arm	G1: 717 G2: 665 G3: 712
	Relevant outcomes	T2DM (WHO 2006 criteria (2)): FPG > 7.0 mmol/L *or* plasma glucose > 11.1 mmol/L 2 h after 75-g oral glucose load
	Study quality	High risk of bias[b]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
DPP 2002–2019: Knowler, 2002, 2009 (42,43); Ratner, 2005 (44); DPP Research Group, 2009, 2012, 2015, 2019, 2021 (45–48)	Study design	RCT
	Setting	Clinical centres, United States
	Age of participants (median years (SD))	G1: 50.6 (11.3) G2: 50.9 (10.3) G3: 50.3 (10.4)
	IHG diagnosis	FPG 5.2–7.0 mmol/L (≤ 7.0 mmol/L for American Indians), and plasma glucose 7.8–10. mmol/L 2 h after a 75-g oral glucose load
	Intervention	G1: intensive lifestyle intervention G2: standard lifestyle recommendations plus metformin 850 mg twice daily
	Comparator	G3: standard lifestyle recommendation plus placebo twice daily
	Total study duration	2.8 years (DPP), 15 years (DPPOS)
	Participants in each arm	G1: 1079 (910 enrolled in DPPOS) G2: 1073 (924 enrolled in DPPOS) G3: 1082 (932 enrolled in DPPOS)
	Relevant outcomes	T2DM (ADA 1997 criteria (109): FPG ≥ 7.0 mmol/L and ≥ 11.1 mmol/L 2 h after a 75-g oral glucose load), all-cause mortality
	Study quality	Good (DPP),[b] fair (DPPOS)[b]
DREAM Trial Investigators: Bosch, 2006 (49); Gerstein, 2006 (50); Dagenais, 2008 (51)	Study design	RCT
	Setting	Multiple countries

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	IHG diagnosis	Impaired FPG ≥ 6.1 to <7.0 mmol/L and plasma glucose < 11.1 mmol/L at 2 h oral glucose load, or IGT (FPG < 7.0 mmol/L and plasma glucose ≥ 7.8 to < 11.1 mmol/L at 2 h after oral glucose load) or isolated impaired FPG (≥ 6.1 to < 7.0 mmol/L and plasma glucose < 7.8 mmol/L 2 h after 75-g oral glucose load)
	Intervention	G1: ramipril 15 mg/day G2: rosiglitazone 0.8 mg/day
	Comparator	G3: placebo (for ramipril) G4: placebo (for rosiglitazone)
	Total study duration	Median: 3 years
	Participants in each arm	G1: 2623 G2: 2635 G3: 2646 G4: 2634
	Relevant outcomes	T2DM (FPG at least 7.0 mmol/L or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load), all-cause mortality, cardiovascular mortality
	Study quality	Good[a]
Dreval, 2008 (52)	Study design	RCT
	Setting	Community, Russian Federation
	Age of participants (mean years)	56.4
	IHG diagnosis	IFG (FPG 6.1–6.9 mmol/L) or IGT (7.8–11.1 mmol/ at 2 h during OGTT)
	Intervention	G1: metformin 1700 mg daily with standard lifestyle modification recommendation G2: acarbose 150 mg daily

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Comparator	G3: standard lifestyle modification recommendation
	Total study duration	6 months
	Participants in each arm	G1: 15 G2: 10 G3: 10
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L, at 2 h during 75 g OGTT)
	Study quality	Some concern[b]
European Diabetes Prevention RCT: Penn, 2009 (53)	Study design	RCT
	Setting	Hospital clinical research facility Newcastle upon Tyne, United Kingdom
	Age of participants (median years (IQR))	G1: 56.8 (40–72) G2: 57.4 (38–74)
	IHG diagnosis	IGT (plasma glucose 7.8–11.0 mmol/L 2 h after oral glucose load from 2 consecutive standard OGTTs (glucose load 75 g))
	Intervention	G1: individual behavioural intervention
	Comparator	G2: usual care and standard health promotion advice
	Total study duration	Mean follow-up 3.1 years
	Participants in each arm	G1: 51 G2: 51
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Finnish Diabetes Prevention Study: Tuomilehto, 2001 (54); Uusitupa, 2009 (55); Aro, 2019 (56)	Study design	RCT
	Setting	Not reported, Finland
	IHG diagnosis	IGT (plasma glucose ≥ 7.8 mmol/L and < 11.1 mmol/L 2 h after ingestion of 75-g oral glucose load)
	Intervention	G1: individual counselling for weight reduction, healthy diet, physical activity
	Comparator	G2: standard care
	Total study duration	Median 4 years of intervention
	Participants in each arm	G1: 265 G2: 257
	Relevant outcomes	All-cause mortality
	Study quality	Fair[a]
HELP PD: Vitolins, 2019 (57)	Study design	Parallel RCT
	Setting	General population, United States
	Age of participants (mean years)	G1: 57.0 G2: 58.0
	IHG diagnosis	FPG 5.3–6.9 mmol/L
	Intervention	G1: lifestyle maintenance (self-directed, group directed)
	Comparator	G2: 2 individual visits with a registered dietitian/nutritionist and monthly newsletters with information on healthy lifestyle behaviours and community resources
	Total study duration	72 months
	Participants in each arm	G1: 71 G2: 90
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Hellgren, 2014, 2021 (58,59)	Study design	RCT
	Setting	Primary care, Sweden
	Age of participants (mean years)	71.0
	IHG diagnosis	FPG (≥ 6.1 to < 7.0 mmol/L with normal glucose tolerance) and/or IGT (capillary glucose ≥ 8.9 to < 12.2 mmol/L at 2 h after oral glucose load with FPG < 7.0 mmol/L)
	Intervention	G1: lifestyle (exercise, 2 versions combined)
	Comparator	G2: treatment as usual
	Total study duration	8 year
	Participants in each arm	G1: 46 G2: 28
	Relevant outcomes	T2DM (method and criteria not reported), all-cause mortality
	Study quality	Fair[a]
Hu, 2017 (60)	Study design	RCT
	Setting	Yiyang City, Hunan Province, China
	Age of participants (mean years)	69.5
	IHG diagnosis	Impaired FPG (6.1–7.0 mmol/L and plasma glucose < 7.8 mmol/L 2 h after oral glucose load), IGT (FPG 6.1 mmol/L and plasma glucose 7.8–11.1 mmol/L 2 h after 75-g oral glucose load)
	Intervention	G1: intensive synthetic intervention (lifestyle education and intervention, self-monitoring blood glucose, support group)
	Comparator	G2: standard health advice

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Total study duration	1 year
	Participants in each arm	G1: 214 G2: 220
	Relevant outcomes	T2DM (FPG ≥ 7.8 mmol/L and/or plasma glucose ≥ 11.1 mmol/L at 2 h during OGTT)
	Study quality	Fair[a]
Indian Diabetes Prevention Programme: Ramachandran, 2006 (61)	Study design	RCT
	Setting	Community, India
	Age of participants (median years (SD))	G1: 46.1 (5.7) G2: 45.9 (5.9) G3: 46.3 (5.7) G4: 45.2 (5.7)
	IHG diagnosis	IGT (FPG < 7.0 mmol/L, plasma glucose ≥ 7.8 to < 11.1 mmol/L at 2 h during OGTT)
	Intervention	G1: lifestyle intervention G2: metformin G3: lifestyle intervention + metformin
	Comparator	G4: standard health-care advice
	Total study duration	3 years
	Participants in each arm	G1: 133 G2: 133 G3:129 G4: 136
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L and/or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load in OGTT)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Indian Diabetes Prevention Programme 2: Ramachandran, 2009 (62)	Study design	RCT
	Setting	Community, India
	Age of participants (median years (SD))	G1: 45.1 (6.1) G2: 45.5 (6.3)
	IHG diagnosis	IGT (plasma glucose ≥ 7.8 to < 11.1 mmol/L at 2 h during OGTT)
	Intervention	G1: pioglitazone 30 mg daily + lifestyle modification
	Comparator	G2: placebo + lifestyle modification
	Total study duration	3 years
	Participants in each arm	G1: 204 G2: 203
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L and/or plasma glucose ≥ 11.1 mmol/L at 2 h by OGTT), normoglycaemia, mortality
	Study quality	Fair[a]
Japan Diabetes Prevention Program: Sakane, 2011 (63)	Study design	RCT
	Setting	32 community health-care institutions and company clinics, Japan
	Age of participants (median years (SD))	G1: 51.0 (7.0) G2: 51.0 (6.0)
	IHG diagnosis	FPG ≥ 5.6–6.9 mmol/L, casual plasma glucose ≥ 7.8 mmol/L but < 11.1 mmol/L when blood drawn within 2 h after a meal, or capillary plasma glucose 6.1–7.8 mmol/L when blood drawn 2 h or more after a meal, or IGT as indicated by a previous OGTT

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Intervention	G1: repeated sessions of group and individual lifestyle modification intervention
	Comparator	G2: one group session at baseline on healthy lifestyle and prevention of diabetes
	Total study duration	3 years
	Participants in each arm	G1: 152 G2: 152
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L by OGTT)
	Study quality	Fair[a]
J-DOIT1: Sakane, 2015 (96)	Study design	RCT
	Setting	17 community/company health-care divisions, Japan
	Age of participants (mean years (SD))	G1: 48.9 (7.8) G2: 48.9 (7.5)
	IHG diagnosis	FPG 5.6–6.9 mmol/L
	Intervention	G1: 1-year telephone-delivered lifestyle support intervention
	Comparator	G2: control (periodic newsletters about diabetes)
	Total study duration	4.2 years (median)
	Participants in each arm	G1: 1240 G2: 1367
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L, a diagnosis of diabetes, use of antidiabetic drugs)
	Study quality	Fair

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Juul, 2016 (64)	Study design	RCT
	Setting	19 general practices in Holstebro, Denmark
	Age of participants (median years)	58.0
	IHG diagnosis	FPG 6.1–6.9 mmol/L and/or HbA1c 6.0% to < 6.5%
	Intervention	G1: 2-h group sessions over 5 weeks plus further session after 1 and 6 months
	Comparator	G2: standard care
	Total study duration	1 year
	Participants in each arm	G1: 63 G2: 64
	Relevant outcomes	All-cause mortality
	Study quality	Fair[a]
Kosaka, 2005 (65)	Study design	RCT
	Setting	Hospital medical centre, Japan
	Age of participants	Not reported
	IHG diagnosis	IGT (FPG < 7.8 mmol/L and plasma glucose of 8.9–13.1 mmol/L at 2 h during 100 g OGTT)
	Intervention	G1: lifestyle intervention
	Comparator	G2: usual care
	Total study duration	4 years
	Participants in each arm	G1: 356 G2: 102
	Relevant outcomes	T2DM (FPG ≥ 7.8 mmol/L)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Let's Prevent Diabetes RCT: Davies, 2016 (66)	Study design	RCT
	Setting	44 general practices, England (United Kingdom)
	Age of participants (mean years)	63.9
	IHG diagnosis	IFG (FPG 6.1–6.9 mmol/L) and/or IGT (7.8–11.0 mmol/L at 2 h after oral glucose load)
	Intervention	G1: 6-h group structured education programme with an annual refresher course and regular phone contact
	Comparator	G2: standard care
	Total study duration	Follow-up for 3 years
	Participants in each arm	G1: 447 G2: 433
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L and/or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load)
	Study quality	Fair[a]
Lindahl, 2009 (67)	Study design	RCT
	Setting	Various centres, northern Sweden
	Age of participants (median years (SD))	G1: 52.2 (9.0) G2: 53.5 (8.4)
	IHG diagnosis	Plasma glucose during an OGTT in the range for IGT
	Intervention	G1: intensive lifestyle with 1-month residential stay
	Comparator	G2: usual care
	Total study duration	5 years

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Participants in each arm	G1: 151 (randomized, but only 100 directly invited; 50 assigned as substitutes) G2: 150 (randomized, but only 100 directly invited; 50 assigned as substitutes)
	Relevant outcomes	T2DM (FPG 7.0 mmol/L)
	Study quality	Fair[a]
Luo, 2022 (68)	Study design	Parallel RCT
	Setting	Outpatient clinic, China
	Age of participants (mean years)	53.0
	IHG diagnosis	FPG ≥ 6.1 to < 7.0 mmol/L and plasma glucose < 7:8 mmol/L 2 h after 75-g oral glucose load, or FPG < 7:0 mmol/L and plasma glucose ≥ 7:8 to < 11.1 mmol/L during a single OGTT
	Intervention	G1: lifestyle (diet and exercise) + placebo G2: pioglitazone 30 mg/day (+ standard education) G3: lifestyle (diet and exercise) + pioglitazone 30 mg/day
	Comparator	G4: treatment as usual (standard education) + placebo
	Total study duration	3 years
	Participants in each arm	G1: 490 G2: 492 G3: 483 G4: 480
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	High risk of bias[b]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Moore, 2011 (69)	Study design	Parallel RCT
	Setting	Primary care, Australia
	Age of participants (mean years)	62.5
	IHG diagnosis	Impaired FPG (6.1–7.0 mmol/L), IGT (plasma glucose 7.8–11.0 mmol/L 2 h after oral glucose load) or both IFG and IGT (via OGTT)
	Intervention	G1: lifestyle (diet and exercise)
	Comparator	G2: waiting list
	Total study duration	6 months
	Participants in each arm	G1: 183 G2: 91
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol and/or IGT ≥ 11.0 mmol/L)
	Study quality	Poor[a]
Morey, 2012 (70)	Study design	RCT
	Setting	Primary care clinics of Durham Veterans Affairs Medical Centre, United States
	Age of participants (mean years (SD))	G1: 67.1 (6.3) G2: 67.7 (6.2)
	IHG diagnosis	IGT (FPG 5.6–7.0 mmol/L)
	Intervention	G1: home-based multicomponent physical activity counselling programme including one in-person baseline counselling session, regular telephone counselling, physician endorsement in clinic with monthly automated encouragement, and customized mailed materials; all study participants, including controls, received a consultation in a Veterans Affairs weight management programme

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Comparator	G2: usual care
	Total study duration	1 year
	Participants in each arm	G1: 108 G2: 122
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Fair[a]
Nanditha, 2020 (71)	Study design	Parallel RCT
	Setting	Primary care, India and United Kingdom
	Age of participants (mean years)	52.0
	IHG diagnosis	HbA1c 6.0–6.4%
	Intervention	G1: lifestyle (diet and exercise at baseline, followed by motivational texts)
	Comparator	G2: treatment as usual (advice at baseline)
	Total study duration	2 years
	Participants in each arm	G1: 1031 G2: 1031
	Relevant outcomes	T2DM ("international criteria for FPG or HbA1c")
	Study quality	Some concerns[b]
NAVIGATOR Study Group: Holman, 2010 (72); McMurray, 2010 (73); Currie, 2017 (74)	Study design	RCT
	Setting	Clinical centres

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Age of participants (mean years)	G1: 63.7 (6.8) G2: 63.8 (6.9) G3: 63.7 (6.8) G4: 63.8 (6.8)
	IHG diagnosis	IGT (plasma glucose ≥ 7.8 mmol/L to < 11.1 mmol/L 2 h after a 75-g oral glucose load and FPG ≥ 5.3 mmol/L to < 7.0 mmol/L)
	Intervention	G1: nateglinide 60 mg 3 times daily G2: valsartan 160 mg once a day
	Comparator	G3: placebo (for nateglinide) G4: placebo (for valsartan)
	Total study duration	Median: 5 years
	Participants in each arm	G1: 4645 G2: 4631 G3: 4661 G4: 4675
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load, confirmed by OGTT), all-cause mortality, cardiovascular mortality, amputations, revascularization, end-stage renal disease
	Study quality	Good[a]
Nepi ANtidiabetes StudY: Lindblad, 2011 (75)	Study design	RCT
	Setting	Primary care, Sweden
	Age of participants (median years (SD))	G1: 60.4 (6.8) G2: 59.6 (6.7)
	IHG diagnosis	IFG (2 consecutive (10-h overnight) FPG ≥ 5.6 mmol/L, with mean 5.6–6.0 mmol/L)
	Intervention	G1: glimepiride 1 mg/daily

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Comparator	G2: placebo
	Total study duration	Mean 3.7 years
	Participants in each arm	G1: 136 G2: 138
	Relevant outcomes	T2DM (2 consecutive FPG ≥ 6.1 mmol/L)
	Study quality	Fair[a]
Norfolk Diabetes Prevention Study: Sampson, 2021 (76)	Study design	Parallel RCT
	Setting	Primary care, England (United Kingdom)
	Age of participants (mean years)	G1: 66.5 G2: 66.7 G3: 65.3
	IHG diagnosis	HbA1c 6.0–6.4%, IFG 5.6–7.0 mmol/L
	Intervention	G1: standard lifestyle advice (diet and exercise) G2: enhanced lifestyle advice (diet, exercise, motivational phone calls)
	Comparator	G3: standard care
	Total study duration	3 years 10 months
	Participants in each arm	G1: 424 G2: 426 G3: 178
	Relevant outcomes	T2DM (HbA1c ≥ 6.5%, FPG ≥ 7.0 mmol/L)
	Study quality	High risk of bias[b]
Oldroyd, 2006 (77)	Study design	Parallel RCT
	Setting	General population, England (United Kingdom)
	Age of participants (mean years)	G1: 58.2 G2: 57.5

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	IHG diagnosis	FPG (< 7.8 mmol/L), IGT (plasma glucose 7.8–11.0 mmol/L 2 h after oral glucose load)
	Intervention	G1: lifestyle (diet and exercise)
	Comparator	G2: nothing
	Total study duration	2 years
	Participants in each arm	G1: 37 G1: 32
	Relevant outcomes	T2DM (FPG ≥ 7.8 mmol/L or plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load)
	Study quality	High risk of bias[b]
PREVENT-DM Trial: O'Brien, 2017 (78)	Study design	RCT
	Setting	Health centre in Philadelphia, United States
	Age of participants (mean years (SD))	G1: 45.5 (12.3) G2: 45.8 (11.7) G3: 44.0 (13.6)
	IHG diagnosis	Impaired fasting glucose (FPG 5.6–7.0 mmol/L), HbA1c 5.7–6.4% or both
	Intervention	G1: intensive group-based adaptation of the DPP lifestyle intervention delivered by *promotoras* (community health-care workers) G2: metformin 850 mg twice daily
	Comparator	G3: standard care plus written educational materials on diabetes prevention
	Total study duration	1 year

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Participants in each arm	G1: 33 G2: 29 G3: 30
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Fair[a]
PROPELS RCT: Khunti, 2021 (79)	Study design	Stratified RCT
	Setting	Primary care, England (United Kingdom)
	Age of participants (mean years)	G1: 59.4 G2: 59.3 G3: 59.4
	IHG diagnosis	HbA1c 6.0–6.4%, FPG 5.5–6.9 mmol/L, or glucose 7.8–11.0 mmol/L at 2 h after 75-g oral glucose
	Intervention	G1: walkaway (exercise, diabetes knowledge) G2: walkaway + (exercise, diabetes knowledge, text messages)
	Comparator	G3: advice on IHG and exercise
	Total study duration	4 years
	Participants in each arm	G1: 450 G2: 456 G3: 460
	Relevant outcomes	T2DM (HbA1c ≥ 6.5%)
	Study quality	Some concerns[b]
RISE Consortium: Sam, 2021 (80)	Study design	Parallel RCT
	Setting	3 clinical centres, United States
	Age of participants (mean years)	53.9

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	IHG diagnosis	FPG 5.3–6.9 mmol/L, plasma glucose ≥ 7.8 mmol/L at 2 h in OGTT, and HbA1c ≤ 7%
	Intervention	G1: metformin 500 mg titrated to 1000 mg twice daily over 4 weeks (or to tolerated dose) G2: glargine insulin for 3 months (titrated based on daily self-monitored fasting blood glucose); after 3 months, glargine insulin stopped and metformin initiated and titrated to 1000 mg twice daily (or the maximum tolerated dose) for the remainder of the intervention G3: liraglutide titrated from 0.6 to 1.2 mg then to a final dose of 1.8 mg daily (as tolerated); metformin subsequently added and titrated to 1000 mg twice daily (or the maximum tolerated dose) for the remainder of the intervention period
	Comparator	G4: placebo
	Total study duration	12 months
	Participants in each arm	G1: 65 G2: 67 G3: 68 G4: 67
	Relevant outcomes	T2DM (HbA1c ≥ 6.5% or FPG ≥ 7.0 mmol/L or plasma glucose ≥ 11.0 mmol/L at 2 h during OGTT, or a random plasma glucose ≥ 11.1 mmol/L in patients with classic symptoms of hyperglycaemia or hyperglycaemic crisis)
	Study quality	High risk of bias[b]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
SCALE Obesity Prediabetes NN8022-1839 Study: le Roux, 2017 **(81)**	Study design	RCT
	Setting	191 clinical research sites in 27 countries
	Age of participants (median years (SD))	G1: 47.5 (11.7) G2: 47.3 (11.8)
	IHG diagnosis	HbA1c 5.7–6.4%, FPG 5.6–6.9 mmol/L, or plasma glucose 7.8–11.0 mmol/L 2 h after 75-g oral glucose load
	Intervention	G1: liraglutide
	Comparator	G2: placebo
	Total study duration	160 weeks
	Participants in each arm	G1: 1505 G2: 749
	Relevant outcomes	T2DM (HbA1c ≥ 6.5% or FPG ≥ 7.0 mmol/L or plasma glucose ≥ 11.1 mmol/L at 2 h during OGTT) or a random plasma glucose ≥ 11.1 mmol/L in patients with classic symptoms of hyperglycaemia or hyperglycaemic crisis, all-cause mortality, cardiovascular mortality, non-fatal stroke, non-fatal myocardial infarction
	Study quality	Fair[a]
SLIM Study: Roumen, 2008 **(82)**	Study design	Stratified RCT
	Setting	General population, Netherlands (Kingdom of the)
	Age of participants (mean years)	G1: 54.2 G2: 58.4
	IHG diagnosis	Mean 2-h glucose concentration 7.8–12.5 mmol/L from 2 OGTTs and FPG < 7.8 mmol/L

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Intervention	G1: lifestyle (diet and exercise)
	Comparator	G2: brief advice about diet/exercise
	Total study duration	3 years
	Participants in each arm	G1: 61 G2: 60
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L, plasma glucose ≥ 11.1 mmol/L 2 h after oral glucose load)
	Study quality	High risk of bias[b]
STEP 6: Kadowaki, 2022 (83)	Study design	Stratified RCT
	Setting	General population, Japan and Republic of Korea
	Age of participants	Not reported
	IHG diagnosis	FPG 5.6–6.9 mmol/L, plasma glucose 7.8–11.0 mmol/L at 2 h during OGTT, HbA1c 5.7–6.4%
	Intervention	G1: semaglutide 1.7 mg G2: semaglutide 2.4 mg
	Comparator	G3: placebo
	Total study duration	75 weeks
	Participants in each arm	G1: 20 G2: 43 G3: 25
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L; plasma glucose ≥ 11.1 mmol/L at 2 h during OGTT; HbA1c ≥ 6.5%; a random plasma glucose ≥ 11.1 mmol/L in patients with classic symptoms of hyperglycaemia or hyperglycaemic crisis)
	Study quality	Some concerns[b]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
STOP-NIDDM Trial: Chiasson, 2002, 2003 **(84,85)**	Setting	Hospitals in Austria, Canada, Denmark, Finland, Germany, Israel, Norway, Sweden, Spain
	Age of participants (mean years (SD))	54.5 (7.9)
	IHG diagnosis	IGT (plasma glucose ≥7.8 mmol/l but < 11.1 mmol/l 2 h after 75-g oral glucose load)
	Intervention	G1: acarbose 3 times a day
	Comparator	G2: placebo
	Total study duration	Mean follow-up 3.3 years (SD: 1.15)
	Participants in each arm	G1: 714 G2: 715
	Relevant outcomes	T2DM (plasma glucose ≥ 7.8 mmol/L and < 11.1 mmol/L 2 h after 75-g oral glucose load based on one OGTT)
	Study quality	Fair[a]
Toro-Ramos, 2020 **(86)**	Study design	Parallel RCT
	Setting	Primary care, United States
	Age of participants (mean years)	G1: 55.7 G2: 57.5
	IHG diagnosis	IFG (FPG 5.6–6.9 mmol/L) or IGT (plasma glucose 7.8–11.0 mmol/L 2 h after 75-g oral glucose load during OGTT) or HbA1c 5.7–6.4%
	Intervention	G1: lifestyle (delivered via mobile phone)
	Comparator	G2: written advice
	Total study duration	12 months
	Participants in each arm	G1: 103 G2: 99

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Relevant outcomes	T2DM (HbA1c ≥ 6.5%)
	Study quality	Some concerns[b]
Van Name, 2016 (87)	Study design	Parallel group RCT
	Setting	Urban community, United States
	Age of participants (median years (SD))	G1: 43.8 (10.8) G2: 43 (9.7)
	IHG diagnosis	FPG 5.6–6.9 mmol/L, or plasma glucose 7.8–11.0 mmol/L at 2 h during OGTT
	Intervention	G1: intensive lifestyle intervention (modified DPP: 14 weeks of group sessions focused on food choices, behaviour change, physical activity, weight loss)
	Comparator	G2: usual care
	Total study duration	1 year
	Participants in each arm	G1: 65 G2: 65
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Fair[a]
Voglibose Ph-3 Study Group: Kawamori, 2009 (88)	Study design	RCT
	Setting	Multicentre, Japan
	Age of participants (mean (SD))	G1: 55.7 (9.1) G2: 55.7 (9.2)
	IHG diagnosis	FPG < 6.9 mmol/L, plasma glucose 7.8–11.0 mmol/L at 2 h during OGTT, HbA1c < 6.5% plus at least one risk factor for T2DM

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Intervention	G1: voglibose 0.2 mg 3 times a day
	Comparator	G2: placebo
	Total study duration (mean (SD))	48.1 (36.3) G1: 45.0 (34.7) G2: 51.3 (37.6)
	Participants in each arm	G1: 897 G2: 883
	Relevant outcomes	T2DM (HbA1c ≥ 6·5%, and, on 2 separate occasions, at least one of the following: (i) plasma glucose ≥ 11.1 mmol/L at 2 h after oral glucose load, (ii) FPG ≥ 7·0 mmol/L, (iii) random plasma glucose ≥ 11.1 mmol/L)
	Study quality	Good[a]
Wong, 2013, 2018 (89,90)	Study design	RCT
	Setting	Community health project, China (Hong Kong SAR)
	Age of participants (median years (SD))	G1: 54.1 (6.1) G2: 55.2 (6.5)
	IHG diagnosis	FPG 5.6–6.9 mmol/L or plasma glucose 7.8–11.0 mmol/L 2 h after a 75-g glucose load
	Intervention	G1: short message service intervention
	Comparator	G2: usual care
	Total study duration	5 years
	Participants in each arm	G1: 54 G2: 50
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Xu, 2013 (91)	Study design	Stratified RCT
	Setting	Primary care, China
	Age of participants (mean years)	G1: 60.4 G2: 56.6
	IHG diagnosis	FPG 5.6–6.9 mmol/L or plasma glucose 7.8–11.0 mmol/L 2 h after a 75-g glucose load
	Intervention	G1: lifestyle (diet and exercise)
	Comparator	G2: general healthy living advice
	Total study duration	9 months
	Participants in each arm	G1: 41 G2: 40
	Relevant outcomes	T2DM (method and criteria not reported)
	Study quality	Some concerns[b]
Yates, 2009 (93)	Study design	RCT
	Setting	Leicester, United Kingdom
	Age of participants (mean years (SD))	G1: 66 (8) G2: 64 (7) G3: 65 (10)
	IHG diagnosis	IGT (FPG < 7.0 mmol/L and plasma glucose 7.8–11.0 mmol/L 2 h after 75-g oral glucose load during OGTT)
	Intervention	G1: physical activity intervention with pedometer use G2: physical activity intervention without pedometer use
	Comparator	G3: control, usual care
	Total study duration	1 year

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
	Participants in each arm	G1: 29 G2: 29 G3: 29
	Relevant outcomes	T2DM (FPG ≥ 7 mmol/L or plasma glucose ≥ 11.1 mmol/L 2 h after 75-g oral glucose load in OGTT)
	Study quality	Fair[a]
Zensharen Study: Saito, 2011 (94)	Study design	RCT
	Setting	Hospitals and clinics, Japan
	Age of participants (median years (IQR))	G1: 50 (44–54) G2: 48 (41–54)
	IHG diagnosis	FPG 5.6–7.0 mmol/L
	Intervention	G1: frequent intervention (individual instructions and follow-up support for lifestyle modification 9 times over 36 months)
	Comparator	G2: control group (individual instructions and follow-up support for lifestyle modification 4 times over 12 months)
	Total study duration	3 years
	Participants in each arm	G1: 311 G2: 330
	Relevant outcomes	T2DM (FPG ≥ 7.0 mmol/L, plasma glucose ≥ 11.1 mmol/L at 2 h in 75 g OGTT)
	Study quality	Fair[a]

Table A3.1. contd

Study: reference by first author and publication year	Data category	Description
Zhou, 2011 (95)	Study design	Cluster RCT
	Setting	Urban residents, China
	Age of participants (mean years)	62.1
	IHG diagnosis	Impaired fasting glucose (FPG 5.6–6.9 mmol/L), and/or IGT (plasma glucose 7.8–11.0 mmol/L 2 h after oral glucose load in OGTT)
	Intervention	G1: exercise G2: diet G3: exercise + diet
	Comparator	G4: control, no intervention
	Total study duration	6 months
	Participants in each arm	G1: 58 G2: 57 G3: 59 G4: 58
	Relevant outcomes	T2DM (FPG ≥ 7.0mmol/L or plasma glucose ≥ 11.1mmol/L at 2 h during OGTT)
	Study quality	Some concerns[b]

ADA: American Diabetes Association; DPPOS: Diabetes Prevention Program Outcomes Study; FPG: fasting plasma glucose; IFG: impaired fasting glycaemia; IGT: impaired glucose tolerance; IHG: intermediate hyperglycaemia; IQR: interquartile range; OGTT: oral glucose tolerance test; SD: standard deviation.

[a] Rating according to the USPSTF Quality Rating Criteria (21).

[b] Rating according to the Cochrane Risk of Bias Tool-2 (105).

Table A3.2. Detailed health outcomes with pharmacological interventions

Outcome	Intervention	Proportion with outcome of interest[a]		Relative risk (95% CI)[b]
		Intervention	Control	
All-cause mortality	Metformin + lifestyle (42)	NR	NR	NR
	Metformin + lifestyle (61)	0.8	0.7	1.05 (0.07–16.68)
	Metformin + lifestyle (39)	0	0	NA
	Metformin (61)	0	0.7	NA
	Ramipril (49)	1.2	1.2	0.98 (0.60–1.60)
	Rosiglitazone (50)	1.1	1.3	0.91 (0.56–1.49)
	Voglibose (88)	0.7	0	NA
	Liraglutide (81)	0.1	0.3	0.50 (0.07–3.35)
	Glimepiride (75)	3.7	1.4	2.54 (0.50–12.85)
	Nateglinide + lifestyle (72)	6.7	6.7	1.00 (0.86–1.16)
	Valsartan + lifestyle (73)	6.4	7.0	0.91 (0.78–1.06)
	Acarbose (32)	1.7	5.2	0.23 (0.03–3.01)
	Pioglitazone (62)	1.0	0.5	1.99 (0.18–21.78)
Cardiovascular mortality	Metformin + standard lifestyle (44)	0.1	0.4	0.25 (0.03–2.25)
	Ramipril (51)	0.5	0.4	1.21 (0.52–2.80)
	Rosiglitazone (51)	0.5	0.4	1.20 (0.52–2.78)
	Liraglutide (81)	0.1	0	NA
	Glimepiride (75)	0.7	1.4	0.51 (0.05–5.53)

Table A3.2. contd

Outcome	Intervention	Proportion with outcome of interest[a]		Relative risk (95% CI)[b]
		Intervention	Control	
	Nateglinide + lifestyle (72)	2.7	2.5	1.07 (0.84–1.37)
	Valsartan + lifestyle (73)	2.8	2.5	1.11 (0.87–1.43)
Non-fatal stroke	Liraglutide (81)	0.1	0.3	0.50 (0.07–3.35)
Non-fatal myocardial infarction	Liraglutide (81)	0.2	0.1	1.49 (0.16–14.33)
	Pioglitazone (25)	0.7	0.3	1.97 (0.18–21.65)
End-stage renal disease	Valsartan (74)	0.1	0.1	1.01 (0.29–3.48)
Amputation	Nateglinide (72)	0.02	0.1	0.17 (0.02–1.39)
	Valsartan (74)	0.1	0.04	2.52 (0.49–13.00)
Revascularization	Nateglinide (72)	7.1	6.8	1.06 (0.91–1.23)
	Valsartan (73)	6.8	7.1	0.96 (0.83–1.12)

NA: not applicable; NR: not reported.

[a] Percentage of people randomized to each arm (intervention or control) that had the outcome of interest.

[b] No results were statistically significant.

Table A3.3. Detailed health outcomes with lifestyle interventions

Outcome	Intervention	Proportion with outcome of interest[a]		Relative risk (95% CI)[b]
		Intervention	Control	
All-cause mortality	Clinical trial (59)	10.7	7.7	1.39 (0.40–4.86)
	Community setting (64)	0	0	NA
	Primary care in Durham Veterans Affairs Medical Center (70)	0.7	0.8	1.36 (0.12–14.79)
	Da Qing Diabetes Prevention Outcome Study (37)	46	56	**0.82 (0.69–0.98)**
	Finnish Diabetes Prevention (55)	2.3	4.0	0.58 (0.21–1.57)
	Indian Diabetes Prevention Programme (61)	0.8	0.7	1.02 (0.06–16.18)
	Zensharen Study (94)	0.3	0	NA
	Diabetes Prevention Programme (42)	NR	NR	NR
Cardiovascular mortality	Diabetes Prevention Programme (44)	0.2	0.1	0.50 (0.09–2.73)
	Da Qing Diabetes Prevention Outcome Study (37)	20.3	29	**0.70 (0.51–0.97)**
Retinopathy	Da Qing Diabetes Prevention Outcome Study (37)	12.8	18.8	0.68 (0.44–1.04)

Table A3.3. contd

Outcome	Intervention	Proportion with outcome of interest[a]		Relative risk (95% CI)[b]
		Intervention	Control	
Nephropathy	Da Qing Diabetes Prevention Outcome Study (37)	3.7	5.1	0.72 (0.30–1.71)
Neuropathy	Da Qing Diabetes Prevention Outcome Study (37)	9.5	5.1	1.86 (0.78–4.48)

NA: not applicable; NR: not reported.

[a] Percentage of people randomized to each arm (intervention or control) that had the outcome of interest.

[b] Statistically significant results in bold.

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World Health Organization
Regional Office for Europe
UN City, Marmorvej 51, DK-2100 Copenhagen Ø, Denmark
Tel.: +45 45 33 70 00
Fax: +45 45 33 70 01
Email: eurocontact@who.int
Website: www.who.int/europe