Supplemental digital contents

Supplemental digital content 1. Search strategy for Ovid MEDLINE® and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions® (1946-present)

39	limit 38 to english language
38	(34 and 35 and 37) not 24
37	36 not 25
36	or/26-33
35	or/16-23
34	or/1-15
33	nest* case*.ab,ti.
32	prospective$.ab,ti.
31	retrospective$.ab,ti.
30	longitudinal.ab,ti.
29	follow up.ab,ti.
28	cohort analy$.ab,ti.
27	cohort*.ab,ti.
26	exp Cohort Studies/
25	"review"/ or consensus development conference/ or consensus development conference, nih/ or letter/
24	exp animals/ not (exp humans/ and exp animals/)
23	still$ disease.tw.
22	(sjogren$ adj2 syndrome).tw.
21	rheumatoid vasculitis.tw.
20	rheumatoid nodule.tw.
19	(caplan$ adj2 syndrome).tw.
18	(felty$ adj2 syndrome).tw.
17	(arthritis adj2 rheumat$).tw.
16	exp arthritis, rheumatoid/
15	T1D.ab,ti.
14	T1DM.ab,ti.
13	T2D.ab,ti.
12	T2DM.ab,ti.
11	metabolic$ syndrom$.ti,ab.
10	(insulin$ defic$ adj6 (absolut$ or relativ$)).ti,ab.
9	((keto$ resist$ or nonketo$ or non keto$ or adult$ onset or matur$ onset or late$ onset or slow onset or stabl$) adj6 (DM or DM2)).ti,ab.
8	((keto$ prone or autoimmun$ or auto immun$ or sudden onset) adj6 (DM or DM1)).ti,ab.
7	((juvenil$ or child$ or keto$ or labil$ or brittl$ or earl$ onset) adj6 (DM or DM1)).ti,ab.
6	(("typ$ 2" or typ$ II) adj6 DM).ti,ab.
5	(("typ$ 1" or typ$ I) adj6 DM).ti,ab.
4	((impaired glucose tolerance or glucose intoleran$ or insulin$ resist$) and (DM or DM2)).ti,ab.
3	(MODY or DM2 or NIDDM).mp. or IIDM.ti,ab.
2	(DKA or IDDM).mp. or DMI.ab,ti.
1	diabetes mellitus/ or exp diabetes mellitus, experimental/ or exp diabetes mellitus, type 1/ or exp diabetes mellitus, type 2/ or exp diabetic ketoacidosis/ or exp donohue syndrome/ or exp latent autoimmune diabetes in adults/

Supplemental digital content 2. Search strategy for Embase (1974- present)

46	limit 45 to english language
45	(37 and 38 and 44) not 24
44	39 not 43
43	25 or 40 or 41 or 42
42	exp note/
41	exp erratum/
40	exp editorial/
39	or/26-36
38	or/16-23
37	or/1-15
36	nest* case*.ab,ti.
35	prospective$.ab,ti.
34	retrospective$.ab,ti.
33	longitudinal.ab,ti.
32	follow up.ab,ti.
31	cohort*.ab,ti.
30	prospective study/
29	retrospective study/
28	longitudinal study/
27	follow up/
26	cohort analysis/
25	exp review/ or exp consensus development/ or letter/
24	(exp animal/ or animal.hw. or nonhuman/) not (exp human/ or human cell/ or (human or humans).ti.)
23	still$ disease.tw.
22	(sjogren$ adj2 syndrome).tw.
21	rheumatoid vasculitis.tw.
20	rheumatoid nodule.tw.
19	(caplan$ adj2 syndrome).tw.
18	(felty$ adj2 syndrome).tw.
17	(arthritis adj2 rheumat$).tw.
16	exp arthritis, rheumatoid/
15	T1D.ab,ti.
14	T1DM.ab,ti.
13	T2D.ab,ti.
12	T2DM.ab,ti.
11	metabolic$ syndrom$.ti,ab.
10	(insulin$ defic$ adj6 (absolut$ or relativ$)).ti,ab.
9	((keto$ resist$ or nonketo$ or non keto$ or adult$ onset or matur$ onset or late$ onset or slow onset or stabl$) adj6 (DM or DM2)).ti,ab.
8	((keto$ prone or autoimmun$ or auto immun$ or sudden onset) adj6 (DM or DM1)).ti,ab.
7	((juvenil$ or child$ or keto$ or labil$ or brittl$ or earl$ onset) adj6 (DM or DM1)).ti,ab.
6	(("typ$ 2" or typ$ II) adj6 DM).ti,ab.
5	(("typ$ 1" or typ$ I) adj6 DM).ti,ab.
4	((impaired glucose tolerance or glucose intoleran$ or insulin$ resist$) and (DM or DM2)).ti,ab.
3	(MODY or DM2 or NIDDM).mp. or IIDM.ti,ab.
2	(DKA or IDDM).mp. or DMI.ab,ti.
1	diabetes mellitus/ or exp diabetic complication/ or exp diabetic obesity/ or exp experimental diabetes mellitus/ or exp impaired glucose tolerance/ or exp insulin dependent diabetes mellitus/ or exp lipoatrophic diabetes mellitus/ or exp "maternally inherited diabetes and deafness"/ or exp non insulin dependent diabetes mellitus/ or exp wolfram syndrome/

Supplemental digital content 3. Search strategy for Web of Science Core Collection (1900-present)

6	(4 not5) and language: (English)
5	ti=(review or meta-analy*)
4	1 and 2 and 3
3	TS=("cohort analy*" OR "Cohort Stud*" OR cohort* OR longitud* OR retrospect* OR prospect* or follow*-up OR (nest* case*))
2	TS=(rheumat* NEAR/2 arthritis or caplan* NEAR/2 syndrome or felty* NEAR/2 syndrome or "rheumatoid nodule*" or "rheumatoid vasculitis" or sjogren* NEAR/2 syndrome or "still* disease")
1	TS=diabet*

Supplemental digital content 4. The Newcastle-Ottawa Scale (NOS) for assessing the quality of eligible studies

Subhead	Components	Studies of RA						
		Solomon	Schmidt	Su	Jafri	Wilson	Gonzalez	Mathew
		2010	2015	2013	2018	2019	2007	2013
Selection	Representativeness of the exposed cohort	1	1	1	1	1	1	1
	Selection of the non exposed cohort	1	1	1	1	1	1	1
	Ascertainment of exposure	1	1	1	1	1	1	1
	Demonstration that outcome of interest was not present at start of study	1	1	1	1	1	1	1
Comparability	Comparability of cohorts on the basis of the design or analysis	1	1	0	1	1	1	1
Outcome	Assessment of outcome	1	1	1	1	1	1	1
	Was follow-up long enough for outcomes to occur/ 5 years	1	1	1	1	1	1	1
	Adequacy of follow up of cohorts	0	0	0	0	0	0	0
Total number of stars		7	7	7	7	7	7	8

Supplemental digital content 5. Subgroup Analyses of the incidence of diabetes in people with rheumatoid arthritis compared with controls

Subgroups	No of studies	RR (95% CI)	*P*[a]
Country/ region			0.02
USA	2	0.92 (0.52, 1.63)	
Canada	2	1.53 (1.31, 1.78)	
UK	2	1.21 (1.17, 1.25)	
Taiwan	1	1.18 (1.08, 1.28)	
Study design			0.30
Age and gender-matched	4	1.14 (0.96, 11.36)	
Not matched	3	1.33 (1.06, 1.67)	

RR: risk ratio; [a] For heterogeneity among subgroups

Supplemental digital content 6

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	3
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	3
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Supplementary Data S1
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	4-5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	N/A
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5-6
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	5-6

Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	5-6
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	5-6
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	6
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	6-7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	N/A
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	8-9
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	8-9
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	8-9
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	9-11
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	11-12
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	The authors have declared no conflicts of interest.