

Supplementary material:

Search equation used for the bibliographic analysis

Exploratory Search: 2011-11-28

PubMed search equations:

Search #1 ("diabetes mellitus, type 1/epidemiology" [Mesh Terms]) AND ("incidence" [MeSH Terms] OR "models, statistical"[MeSH Terms] OR cohort studies [MH])

Search #2 ((trend [TI] AND incidence [TI]) OR (trends [TI] AND incidence [TI]) OR (onset [TI] AND Incidence [TI]) OR "birth cohort"[TIAB] OR "age period cohort"[TIAB] OR age-period-cohort [TIAB]) OR "incidence" [TIAB])

Search #3 Journal Article [PT] NOT (Letter [PT] OR comment [PT] OR editorial [PT] OR news [PT]) AND ("1990/1/1" [PDAT]: "2011/11/28" [PDAT]). Limits: Humans.

At the end the equation was search ((#1) AND #2) AND #3)

Web of Science search equation:

Topic = (cohort studies OR (trend* OR incidence* OR tendency*) OR epidemiology*) AND

Title = ("type 1 diabetes" OR "IDDM" OR "childhood diabetes" OR "juvenile diabetes" OR "diabetes") AND

Title = ((trend AND incidence) OR (trends AND incidence) OR (onset AND Incidence) OR "birth cohort" OR "age period cohort" OR age-period-cohort).

The search was refined excluding: document type = (proceedings paper OR editorial material OR letter OR correction OR note). Databases=SCI-EXPANDED. Lemmatization=Off.

Original Search: 2012-03-29

After carried out the exploratory search 92 references were selected then we proposed a new search following 7 steps to get an optimal query:

Step 1. To perform an analysis of the MeSH terms presented in 92 selected articles after carried out the preliminary search equations.

Step 2. To carry out new queries in the MeSH Advanced Search Builder of PubMed¹ with an account of the main MeSH terms found in step 1.

Step 3. To check the MeSH terms for irrelevant references, so as to recognized the most common irrelevant MeSH terms.

Step 4. To introduce at the equation query of step 1 the most common MeSH terms found in irrelevant papers using the builder NOT to exclude irrelevant articles.

Step 5. To compare references linked in the different alternative queries. For example if we have two queries, query **A** and query **B**, using a strategy such as Venn diagrams ($A \cup B$, $A \cap B$), the references linked in the queries will be explored: query A, NOT query B, and query B, NOT query A. The first 60 references in each query will be examined: query A, query B, query A NOT B, and query B NOT A so as to analyze if they are relevant papers, and which one is the most accurate. To repeat steps 3 to 5 in the selected query until at least 50% (25/60) of the articles examined are pertinent. In this strategy we will identify the queries to which with a specific number can be assigned according to formulation of the queries.

Step 6. To examine the results of the selected query to verify that all 92 database references are included.

Step 7. Repeat steps 2 to 7 until a majority of 92 articles are included.

After repeating the step 2 to step 6, nine times we retrieve all the 92 articles included in the preliminary query in addition to new information.

Final Query Equation Diaz et al [10]

("diabetes mellitus, type 1/epidemiology"[MAJR]) AND (("incidence"[MeSH Major Topic] OR incidence[Title/Abstract]) AND (age[Title/Abstract] OR "age distribution"[MeSH Terms] OR "age factors"[MeSH Terms] OR "age groups"[MeSH Terms]) AND "humans"[MeSH Terms]) AND (Journal Article[ptyp] AND English[lang]) NOT ("Diabetic Neuropathies"[MeSH Terms] OR "Diabetic Nephropathies"[MeSH Terms] OR "Autoantibodies"[MeSH Terms] OR "Cholesterol"[MeSH Terms] OR "Antigens"[MeSH Terms] OR "histocompatibility antigens class ii"[MeSH Terms] OR "insulin"[MeSH Terms] OR "Vitamin D"[MeSH Terms] OR "Diabetic ketoacidosis"[MeSH Terms] OR "Vascular Diseases" [MeSH Terms] OR "Arteriosclerosis" [MeSH Terms] OR "Lipoproteins" [MeSH Terms] OR "Vascular Endothelial Growth Factors" [MeSH Terms] OR
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"Comorbidity" [MeSH Terms])

The final search equation was updated on 29 Apr. 2013 and 30 Jan. 2014.

Final Query Equation in the updated systematic review
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((("diabetes mellitus. type 1/epidemiology"[MAJR]) AND ("incidence"[MeSH Major Topic] OR incidence[Title/Abstract]) AND (age[Title/Abstract] OR "age distribution"[MeSH Terms] OR "age factors"[MeSH Terms] OR "age groups"[MeSH Terms]) AND "humans"[MeSH Terms]) AND (Journal Article[ptyp] NOT ("Diabetic Neuropathies"[MeSH Terms] OR "Diabetic Nephropathies"[MeSH Terms] OR "Cholesterol"[MeSH Terms] OR "Antigens"[MeSH Terms] OR "insulin"[MeSH Terms] OR "Vitamin D"[MeSH Terms] OR "Diabetic ketoacidosis"[MeSH Terms] OR "Vascular Diseases" [MeSH Terms] OR "Arteriosclerosis" [MeSH Terms] OR "Lipoproteins" [MeSH Terms] OR "Vascular Endothelial Growth Factors" [MeSH Terms]))) AND ("2014/01/01"[Date - Publication] : "3000"[Date - Publication])
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Final equation to search the electronic database Medline was on April 17th 2017