Impact of baseline characteristics on the effects of GLP-1 receptor agonists on cardiovascular events in people with type 2 diabetes: a meta-analysis
Liang-Liang Ding, Mei Qiu, Xu-Bin Wei, Shu-Yan Liu

To enable PROSPERO to focus on COVID-19 registrations during the 2020 pandemic, this registration record was automatically published exactly as submitted. The PROSPERO team has not checked eligibility.

Citation

Review question
Do baseline characteristics have an impact on the effects of glucagon-like peptide 1 (GLP-1) receptor agonists on major adverse cardiovascular events (MACE) in individuals with type 2 diabetes?

Searches
We will systematically search the PubMed and Embase databases using a pre-defined search strategy, for relevant trials which are reported in English, without date restrictions.

Types of study to be included
All randomized, controlled, event-driven, cardiovascular outcome trials.

Condition or domain being studied
This meta-analysis will assess the effects of GLP-1 receptor agonists in reducing MACE in adult individuals with type 2 diabetes and different baseline characteristics.

Participants/population
Adults with type 2 diabetes.

Intervention(s), exposure(s)
Any of the GLP-1 receptor agonists (including but not limited to lixisenatide, liraglutide, semaglutide, exenatide, albiglutide, and dulaglutide). We will not consider doses and administration routes of drugs as effect modifiers.

Comparator(s)/control
Active or placebo control.

Main outcome(s)
Major adverse cardiovascular events (MACE), a composite of death from cardiovascular causes, nonfatal myocardial infarction (MI), or nonfatal stroke.

* Measures of effect
At the end of follow up, using hazard ratios (HRs) as reported by individual studies.

Additional outcome(s)
None.
* Measures of effect
Not applicable.

Data extraction (selection and coding)
The studies retrieved via the databases will be assessed for relevance according to the titles and abstracts, and then those potentially eligible studies will be assessed for final eligibility against the inclusion/exclusion criteria.
Two authors will then independently extract pre-specified data from the studies selected for inclusion using a standardized Excel data extraction sheet. The pre-specified data to be extracted contain study design, intervention characteristics, baseline characteristics of interest, study outcomes deriving from different subgroups, and risk of bias assessment results.
Any disagreements relevant with data extraction will be resolved through discussion with a third author.

Risk of bias (quality) assessment
Two authors will independently assess risk of bias using the Cochrane risk of bias tool.
Any disagreements relevant with risk of bias assessment will be resolved through discussion with a third author.

Strategy for data synthesis
We will perform random-effects meta-analysis in Stata (version 15.1) to estimate pooled hazard ratios (HRs) and 95% confidence intervals (CIs) based on trial-level survival data (i.e., HRs and 95% CIs from individual studies).
Heterogeneity across the studies eligible for inclusion will be estimated using the I² test.
Moreover, random-effects meta-regression will also be used to explore subgroup effects.

Analysis of subgroups or subsets
Subgroup analyses will be conducted according to the following seven baseline characteristics:
1. Sex: Female, Male
2. Duration of diabetes: ≥10 yr, <10 yr
3. History of congestive heart failure: Yes, No
4. Prior MI or stroke: Yes, No
5. Antihyperglycemic oral agent therapy: Yes, No
6. Insulin therapy: Yes, No
7. DPP-4 inhibitor therapy: Yes, No.
Moreover, the possible studies with slightly different grouping criteria used for subgroup analyses will be excluded for sensitivity analyses.

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Type and method of review
Intervention, Meta-analysis, Systematic review

Anticipated or actual start date
10 December 2019

Anticipated completion date
01 April 2020

Funding sources/sponsors
None.

Conflicts of interest
None known

Language
English

Country
China

Stage of review
Review Ongoing

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
MeSH headings have not been applied to this record

Date of registration in PROSPERO
28 April 2020

Date of first submission
10 December 2019

Stage of review at time of this submission

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The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions
This information has been provided by the named contact for this review. CRD has accepted this information in good faith and registered the review in PROSPERO. The registrant confirms that the information supplied for this submission is accurate and complete. CRD bears no responsibility or liability for the content of this registration record, any associated files or external websites.