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Citation bias in human literature on bisphenol A

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Background

- Scientific citations play a central role in the development of knowledge.
- Selection of citations might lead to distorted knowledge development and biased consensus.
- Citation bias: the likelihood of being cited depends on the study outcome.
- Citation network analysis will be performed to get insight into determinants of selective citations.

Research questions

Does citation bias occur in human literature on bisphenol A?

Which other factors drive selective citation in human literature on bisphenol A?

Bisphenol A

- Bisphenol A (BPA) is a chemical compound, widely used in plastic products such as food containers, toys and can linings.
- In vitro and animal studies show potential endocrine disruptive effects of BPA.
- Human studies on BPA are limited and BPA is linked to a big variety of health outcomes.
- Because of this big variety of health outcomes, human BPA literature might be vulnerable to citation bias

Citation Network Analysis

•Human studies on bisphenol A are identified via a systematic search in Web of Science – Core Collection.

•Via specific software, all potential and actual citation pathways between the publications are identified.

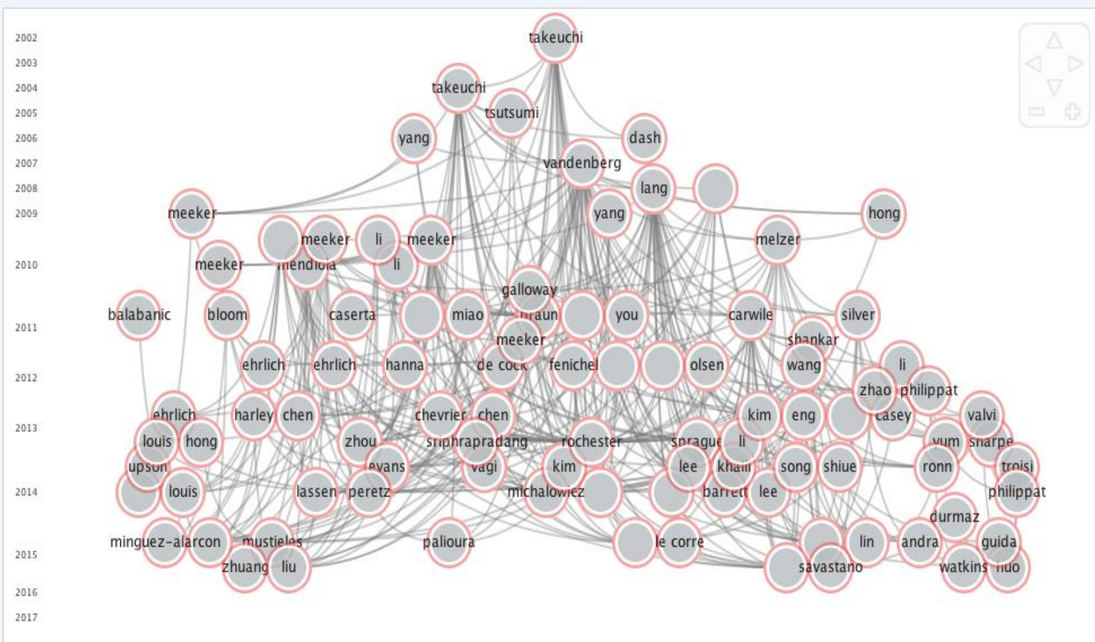

Figure 1. Network visualisation of human studies of bisphenol A

•Each publication is scored on various potential determinants of citation (table 1).

Statistical analysis

•Unit of analysis: potential citation pathway.

•Citation pathways are clustered in citing publication.

•Random effect logistic regression was applied:

1. Univariate - for all scored potential determinants of citation.
2. Multivariate - adjusted for study design.

Table 1. Potential determinants of citation

Study outcome
Funding source
Country
Number of affilliations
Language
Gender
Authority of the author
Self-citation
Journal impact factor
Study design
Sample size
Study quality

Results

- The network contains 169 publications with 12,432 potential citation pathways and 808 performed citations.
- *Results are confidential, due to unpublished work.*

Conclusion

- Citation bias is present in the human literature on bisphenol A, since positive studies are 1.5 times more likely to be cited compared to negative studies.
- As a consequence of citation bias, science based decision making (e.g. policy making, industry decisions) might get biased.
- The likelihood of being cited is largely influenced by the journal impact factor, authority of the author and self-citation. This might suggest that the research on bisphenol A is not solely evidence-based, but prone to be expert-based.

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