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Selective citation in biomedical sciences: an overview of six research fields

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Selective Citation

- It is not possible to cite all relevant literature → selective citations
- Citation bias: Chance of being cited is associated with the study outcome
- Consequently, the general understanding of the topic and research agenda-setting gets driven into a direction that is not based on evidence



Citation network analyses

- Study aim: ***Is the chance of being cited associated with study outcome?***
- Secondary aim: which other determinants influence the chance of citation?
- Citation network analyses applied to six biomedical research fields

Potential determinants of citation

Justified determinants	Grey area	Unjustified determinants
Study quality	Study design	Study outcome
	Sample size	
	Journal Impact Factor	
	Number of references	
	Continent	
	Self-citation	
	Number of affiliations involved	
	Authority of the author	
	Gender	
	Funding source	



Citation network analysis methodology

- Step 1: Identify relevant publications via Web of Science-Core Collection
- Step 2: Score each publication in the network on potential determinants of citation
- Step 3: Make an overview of all potential and all performed citations via specialized software
- Step 4: Analyse the association between each determinant and the chance of citation, via random effect logistic regression



Six citation network analyses

- Trans fatty acids intake and serum cholesterol
- Swimming in chlorinated water and childhood asthma
- Epidemiological studies on bisphenol A
- Hygiene hypothesis
- Epidemiological studies on phthalates
- Diesel emission and lung cancer



Characteristics of six citation networks

	Trans fatty acids	Swimming in chlorinated water	Bisphenol A	Hygiene hypothesis	Phthalates	Diesel exposure
Number of publications	108	36	169	110	112	96
Median number of citations	2	4	1	1	2	5
Maximum number of citations	73	26	64	35	33	34
Percentage of actual citations	13%	34%	6%	7%	10%	16%



Association between publication characteristics and the likelihood of being cited

	Trans fatty acids	Swimming in chlorinated water	Bisphenol A	Hygiene hypothesis	Phthalates	Diesel exposure
Positive vs negative conclusion	2.4 (1.9-3.1)	1.4 (0.9-2.3)	1.7 (1.3-2.0)	3.1 (2.2-4.3)	0.8 (0.7-0.9)	1.4 (1.1-1.7)
Empirical vs review design	3.9 (3.2-4.8)	3.6 (2.3-5.7)	1.6 (1.3-1.9)	4.3 (3.2-5.7)	1.1 (0.9-1.4)	1.1 (0.9-1.4)
High vs low JIF	5.4 (3.7-7.8)	1.7 (1.1-2.8)	1.2 (1.1-1.4)	4.9 (3.2-7.6)	1.5 (1.3-1.8)	4.0 (3.0-5.5)
Self-citation	-	5.4 (3.2-9.2)	5.2 (3.8-7.0)	6.1 (3.7-9.9)	3.2 (2.5-4.1)	4.1 (2.9-5.7)



Conclusions

- Number of citations are skewed distributed over the publications within each network, only a small number of publications is highly cited
- Occurrence and degree of citation bias differs between biomedical research fields
- Factors that show consistently a positive association with citation:
 - Journal impact factor
 - Authority of the author
 - Self-citation

Questions?



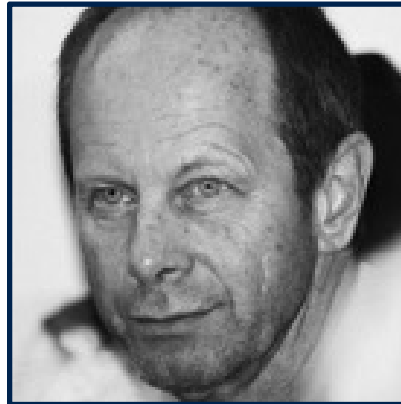
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