



The sensitivity of adverse effects search filters in MEDLINE, EMBASE and Science Citation Index (SCI)

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Background

Systematic reviews should use search strategies which aim to identify as many relevant papers as possible. However, searching for information on adverse effects is challenging, not least because adverse effects terms (either specific such as 'venous thrombolism' or 'weight gain' or generic such as 'adverse event' or 'side effect') may not be included in the title, abstract or indexing of bibliographic records in databases such as MEDLINE and EMBASE.

Objectives

To assess the feasibility of using adverse effects terms when searching electronic databases to retrieve papers that report adverse effects data.

Methods

Two hundred and forty-two included studies from 26 systematic reviews on adverse effects were analysed to ascertain whether the corresponding records in MEDLINE, EMBASE and Science Citation Index (SCI) included adverse effects terms in the title, abstract or indexing.

Published adverse effects search filters devised for MEDLINE and EMBASE were also tested to assess how many studies would have been missed had these filters been applied.

Results

Records in EMBASE (89%) were more likely to contain adverse effects terms in the title, abstract or indexing, than MEDLINE (80%) or Science Citation Index (SCI) (70%) (Table 1). The percentage of papers which would be missed with a combined search using adverse effects terms in MEDLINE and EMBASE was 8%. This figure is much lower than the 23% identified by a previous study by Derry et al 2001.¹

The sensitivity of published adverse effects search filters varied considerably (Table 2). Higher sensitivity was achieved when named adverse effects were included in the search strategies.

Conclusions

The proportion of records that include adverse effects terms in the title, abstract or indexing appears higher now (2011) than in 2001. Although no adverse effects search filters captured all the relevant records, high sensitivity could be achieved, particularly in EMBASE.

Table 1: Adverse effects terms in the title, abstract or indexing of electronic records in MEDLINE, EMBASE or Science Citation Index (SCI)

Database (number of records)	Generic adverse effects in title, abstract	Generic adverse effects in indexing or keywords	Generic adverse effects in subheadings	Any generic adverse effects in any field
MEDLINE (n=231)	147 (64%)	1 (0.4%)	122 (53%)	179 (77%)
EMBASE (n=222)	147 (66%)	147 (66%)	185 (83%)	197 (89%)
Science Citation Index (SCI) (n=238)	153 (64%)	16 (7%)	0 (0%)	155 (65%)
	Specific adverse effects in title, abstract	Specific adverse effects in indexing or keywords		Any specific adverse effects
MEDLINE (n=119)	28 (24%)	10 (8%)		31 (26%)
EMBASE (n=114)	29 (26%)	63 (56%)		66 (58%)
Science Citation Index (SCI) (n=127)	28 (22%)	18 (14%)		36 (28%)
	Any adverse effects terms (generic or specific) in title or abstract	Any adverse effects terms (generic or specific) in indexing, subheadings or keywords		Any adverse effects terms (generic or specific)
MEDLINE (n=231)	164 (71%)	122 (53%)		185 (80%)
EMBASE (n=222)	156 (70%)	192 (86%)		198 (89%)
Science Citation Index (SCI) (n=238)	162 (68%)	32 (13%)		167 (70%)

Table 2: Sensitivity for published MEDLINE and EMBASE search strategies for adverse effects

	Number of relevant records retrieved by search strategy	Sensitivity
Search strategies excluding specific adverse effects terms		
MEDLINE (n=231)		
Badgett ^{2,3}	166	72%
Golder ⁴	202	87%
EMBASE (n=222)		
Golder ⁴	195	88%
Search strategies including specific adverse effects terms		
MEDLINE (n=119)		
BMJ Clinical Evidence ⁵	27	23%
Buckingham ⁶ <i>Without the quick filter (hedge)</i>	8	7%
Buckingham ⁶ <i>With the quick filter (hedge)</i>	3	3%
Golder ⁴	111	93%
EMBASE (n=114)		
BMJ Clinical Evidence ⁵	65	57%
Golder ⁴	109	96%

Footnote:

$$\text{Sensitivity (\%)} = \frac{\text{Number of included records retrieved}}{\text{Total number of included records}} \times 100$$

References

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