Systematic reviews in pandemic influenza: education is needed to improve quality

Systematic reviews should incorporate the findings of all relevant research that they attempt to summarize (Ziai et al, 2017). This must include unpublished as well as published research.

Systematic reviewers should therefore search for unpublished data or studies, they should search the grey literature (including proceedings or abstracts of conferences, research reports and research dissertations), and they should contact the authors of original papers. They should also assess for evidence of publication bias by creating a funnel plot or performing Egger's test. This is true of all systematic reviews – including those that cover the field of serious infectious diseases (and especially pandemic diseases). If this does not happen, the results of systematic reviews will be biased. So, does this actually happen in practice? And how thorough are systematic reviewers in searching for and incorporating the results of all relevant studies (including those in the grey literature)? The short answer is that they might not be as thorough as they should be.

Pandemic influenza

Pandemic influenza is an important disease that can cause considerable morbidity and mortality. It is vital that the research literature in this field is reliable. However, even in this important field, it is not difficult to find systematic reviews that do not follow best practice in ensuring that they are not affected by publication bias.

Four systematic reviews in this field made no mention that a search was made for unpublished studies (Mukerji et al, 2015; Guo et al, 2016; Jackson et al, 2016; Rainey et al, 2016). In another systematic review, the authors stated explicitly that they did not search for unpublished papers (Smith et al, 2016b). In a further systematic review, the authors stated that they did not search for unpublished papers, but they did assess for publication bias by funnel plot and Egger's linear regression test – even though they recommended that the results of these tests should be interpreted with caution as theirs was a 'small-sample metaanalyses' (Yang et al, 2015). Some reviews do attempt to search for unpublished studies, but their searches do not always follow best practice. For example, Smith et al (2016a) stated that they searched the grey literature for unpublished data. However, these searches were limited to the past 5 years and they did not state specifically how they searched the grey literature.

What is best practice?

There are some examples which show that best practice can be followed. For example, in one systematic review, the reviewers contacted the authors of identified papers to request any manuscripts based on the identified abstract (in cases where a full report was not available) (Saunders-Hastings et al, 2016). The search was also complemented by looking at reference lists of included reviews and at Google Scholar. But methodological heterogeneity of the included papers precluded the use of funnel plots to assess the potential for publication bias.

Another review outlined a comprehensive strategy to access the grey literature (Hirve et al, 2016). Researchers 'contacted institutions, networks and individuals known to be involved in influenza research, used snow-balling technique to further identify other influenza researchers and searched conference proceedings and agency reports to identify ongoing or unpublished studies. Researchers were requested to share preliminary summaries of unpublished studies to assess their eligibility for inclusion in the review.' The researchers also used funnel plots to look for publication bias.

Reducing bias

Publication and/or reporting bias can significantly affect the scientific literature. However, systematic reviews do not always give a comprehensive account of how the researchers search for unpublished data and control for the effect of publication bias. This can affect the scientific literature in fields of medicine that are vital to population and public health (such as pandemic influenza). There is a clear need for better education of authors who write systematic reviews which will result in higher quality systematic

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reviews. This should ultimately result in a more accurate and balanced scientific record in the important field of pandemic infectious diseases. **BJHM**

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KEY POINTS

- Systematic reviews should incorporate the findings of all relevant research that they attempt to summarize.
- Systematic reviewers should search for unpublished data or studies, they should search the grey literature, and they should contact the authors of original papers.
- However, many systematic reviews do not follow best practice in ensuring that they are not affected by publication bias.
- There is a clear need for better education of authors who write systematic reviews which will result in higher quality systematic reviews.