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Letter to the Editor

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Are older studies lost in database searches for systematic reviews?

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We appreciate that Firth and colleagues undertook writing a systematic review on nutritional interventions for schizophrenia (Firth *et al.* 2017). Our concern is finding all relevant original studies for a systematic review.

The paper claims electronic searches were made for several databases from inception to July 2016. After identification, screening and assessment for eligibility, 18 studies were included, the oldest from 1990.

As database searches were not restricted to certain years, we notice that some papers published before 1990, which probably fulfilled the authors' criteria were not included. Thus, we are interested if there may be relevant studies not identified in the data extraction process. We find the search words in Supplement 1 highly relevant, but the full search strategy is not described. As the reader is not informed which studies were excluded, providing an extensive search strategy would have facilitated replications of the search.

We found two reviews with a focus comparable with the Firth review. In 1991 a paper (Kleijnen & Knipschild, 1991) reviewed controlled trials of the vitamins B3 and B6 in mental disorders. For schizophrenia 17 trials in adults, published between 1955 and 1978, were included. Nine studies were described as randomized controlled trials and double-blinded (Hoffer *et al.* 1957; Hoffer, 1962; Ramsay *et al.* 1970; Ananth *et al.* 1972; 1973; McGrath *et al.* 1972; Altman *et al.* 1973; Wittenborn *et al.* 1973; Deutsch *et al.* 1977). However, one reference (Hoffer, 1962) is a book and may not have been eligible for the Firth review. We are concerned whether the other eight original publications, were excluded or not identified, respectively, in the Firth paper.

In 2011 a systematic review (Smedslund & Berg, 2011) included 22 studies from 1957 to 2006 with vitamin interventions. Eight of these were the papers referred above from the Kleijnen review. Four studies were not included in the reviews by Firth or Kleijnen. Two of these were indexed in PubMed (Lohr & Caligiuri, 1996; Vaughan & McCohagny, 1999), and two were found in Google Scholar (Joshi & Eswaran, 1980; Lerner & Miodownik, 2007).

Thus, we found 12 studies included by Smedslund but not by Firth. Inclusion of any of these original studies may or may not have had implications for the main results. However, to be able to draw sound conclusions on the body of evidence, all relevant original studies meeting a review's criteria have to be retrieved and included in a systematic review. Otherwise, results may be incomplete or false.

Even if librarians or information specialists participate in database searching, as recommended (Higgins & Green, 2008), older studies may not be found for different reasons. Database indexing may be incorrect or non-existent and papers may lack abstract. However, studies should not be discarded because of their age. Systematic reviews are becoming increasingly common, and maintaining a high quality is important.

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