Homeopathy: what does the "best" evidence tell us?

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ABSTRACT

Objective: To evaluate the evidence for and against the effectiveness of homeopathy.

Data sources: The Cochrane Database of Systematic Reviews (generally considered to be the most reliable source of evidence) was searched in January 2010.

Study selection: Cochrane reviews with the term "homeopathy" in the title, abstract or keywords were considered. Protocols of reviews were excluded. Six articles met the inclusion criteria.

Data extraction: Each of the six reviews was examined for specific subject matter; number of clinical trials reviewed; total number of patients involved; and authors' conclusions. The reviews covered the following conditions: cancer, attention-deficit hyperactivity disorder, asthma, dementia, influenza and induction of labour.

Data synthesis: The findings of the reviews were discussed narratively (the reviews' clinical and statistical heterogeneity precluded meta-analysis).

Conclusions: The findings of currently available Cochrane reviews of studies of homeopathy do not show that homeopathic medicines have effects beyond placebo.

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The debate about the value of homeopathy — a therapeutic method that often uses highly diluted preparations of substances whose effects when administered to healthy subjects correspond to the manifestation of the disorder in the unwell patient[1] — is as old as homeopathy itself. In recent decades, about 150 controlled clinical trials of homeopathy have been published. The results were neither all negative nor all positive. In such situations, some commentators resort to "cherry picking" — choosing those findings that fit their own preconceptions. The problem of selective citation is most effectively overcome by evaluating all reliable evidence, an aim best met by systematic reviews.

Even at the level of systematic reviews, the evidence on homeopathy is not entirely uniform. For instance, a *Lancet* review of 1997 concluded that "the clinical effects of homeopathy are not completely due to placebo",[2] while another systematic review, published in the same journal in 2005, concluded that "the clinical effects of homeopathy are placebo effects".[3] In 2002, I conducted a systematic review of 17 systematic reviews and concluded that "the best clinical evidence for homeopathy available to date does not warrant positive recommendations of its use in clinical practice".[4]

Homeopaths have argued that systematic reviews that fail to generate positive conclusions about homeopathy are biased.[5] It is therefore necessary to seek out those systematic reviews of research into homeopathy that are least likely to be biased. Several authors have demonstrated that Cochrane reviews tend to be superior to other reviews; they are more rigorous, more transparent, less biased and more up to date.[6] In a word, they might be considered the "best". Therefore, the aim of this article is to summarise and appraise the findings from Cochrane reviews of studies of homeopathy.

METHODS

I searched the Cochrane Database of Systematic Reviews in January 2010 for reviews that had the term "homeopathy" in their title, abstract or keywords. Articles were excluded if they referred to protocols only, or if they were not specifically about homeopathy but included it among other forms of health care for a given condition. I read all articles in full and extracted key data according to predefined criteria: subject matter; number of clinical trials reviewed; total number of patients involved; and authors' conclusions. I considered undertaking a meta-analysis but, because of the clinical and statistical heterogeneity of the primary data, abandoned this plan.

RESULTS

The search generated 13 hits. I excluded four articles because they were not specifically about homeopathy,[7-10] and three because they were protocols of systematic reviews in progress. Six systematic reviews were included (Box).[11-16]

The six articles that met the inclusion criteria related to the following conditions: cancer,[11] attention-deficit hyperactivity disorder,[12] asthma,[13] dementia,[14] influenza[15] and induction of labour.[16] Most were authored or coauthored by homeopaths. Key data from these reviews are summarised in the Box. None of these articles concluded that homeopathy is an effective treatment. One review[15] was recently withdrawn from the database as the authors were unable to update it. For the purpose of this overview, I have therefore used the 2006 version of that article.[15]

DISCUSSION

Collectively, the six reviews that I appraised failed to provide compelling evidence for the effectiveness of homeopathic remedies. These reviews, being Cochrane reviews, are likely to be more reliable than other sources of evidence.[6] Furthermore, as most were authored by homeopaths, it seems unlikely that they were biased against homeopathy. In fact, one might argue that they were biased in favour of homeopathy. For instance, the conclusion that "it is not possible to comment . . ."[14] on the basis of an "empty" review (a review that did not include a single primary study) might have been phrased more critically. The authors could have pointed out that, whenever no trial data exist, it makes little sense to use homeopathy (or any other therapy) for dementia (or any other condition).

Many systematic reviews of homeopathy have been published outside the Cochrane database. Most arrive at similarly negative conclusions[3,4,17] and, in recent years, the evidence seems to have become less and less convincing.[18] Numerous authors have pointed out that the main assumptions of homeopathy are biologically implausible.[19] Reviewers of basic research studies of homeopathy have noted the low quality of the data and lack of replications,[20] and others have concluded that "no positive result was stable enough to be reproduced by all investigators".[21] These findings indicate that homeopathic remedies are unlikely to have clinical effects beyond placebo. Homeopaths tend to deny this and produce lower-level evidence to the contrary.[22,23] Closer inspection of this evidence, however, regularly

Cochrane systematic reviews of studies of homeopathy

First author (year published)	Subject	Stated objective	No. of included trials (total no. of patients)	Authors' conclusions	Appraisal
Kassab (2009)[11]	Adverse effects of cancer treatments	"Evaluate effectiveness and safety of homeopathic medicines used to prevent or treat adverse effects of cancer."	8 (664)	"This review found preliminary data in support ..."	The two remedies supported by good evidence were not highly diluted
Heirs (2007)[12]	Attention-deficit hyperactivity disorder	"To assess the safety and effectiveness of homeopathy as a treatment for attention-deficit hyperactivity disorder."	4 (168)	"There is currently little evidence for the efficacy of homeopathy ..."	No significant benefit
McCarney (2004)[13]	Chronic asthma	"... to assess the effects of homeopathy in people with chronic stable asthma."	6 (556)	"There is not enough evidence ..."	No significant benefit
McCarney (2003)[14]	Dementia	"To evaluate the effectiveness and safety profile of homeopathically prepared medications used in treating dementia ..."	0 (0)	"... it is not possible to comment on the use of homeopathy in treating dementia."	An "empty" review (no primary data)
Vickers (2006)[15]	Oscillococcinum for preventing and treating influenza and influenza-like syndromes	"Determine whether homoeopathic Oscillococcinum or similar medicines are more effective than placebo in the prevention and treatment of influenza and influenza-like syndromes"	7 (2265)	"Though promising the data were not strong enough ..."	Only review to include a meta-analysis; no significant benefit
Smith (2003)[16]	Induction of labour	"To determine the effects of homoeopathy for third trimester cervical ripening or induction of labour."	2 (133)	"There is insufficient evidence to recommend the use of homeopathy as a method of induction"	Both primary studies were flawed; no significant benefit

reveals bias. For instance, one reviewer deliberately set out to select only the positive evidence and omit all negative evidence.[22]

Homeopaths also point to observational studies that seem to suggest that homeopathy is effective.[23] Some then tend to interpret the discrepancy between this evidence and that from controlled studies in a most unusual way: they claim it shows that the controlled clinical trial is not suited for the study of homeopathy and that observational data demonstrate the true value of homeopathy.[23] A more rational explanation would be that the positive outcomes of observational studies are caused by the non-specific effects of homeopathic treatments (eg, the empathic and lengthy consultation typical of homeopathic services), while the controlled trials demonstrate that homeopathic remedies are placebos.[21,24,25]

The Cochrane review by Kassab and colleagues[11] found preliminary evidence in support of homeopathy (Box). This evidence resulted from studies of material dilutions. However, if dilutions are prepared according to homeopathic rules, they are technically homeopathic remedies even if they are not highly diluted. This means that, while a typical homeopathic remedy is devoid of pharmacologically active ingredients, some homeopathic remedies do contain active molecules. One could thus manufacture a homeopathic preparation of aspirin that is pharmacologically identical to conventional aspirin. It is not surprising that such medicines can have pharmacological effects, but concluding that homeopathic medicines are effective, on the basis of such data, would be misleading.

In conclusion, the most reliable evidence — that produced by Cochrane reviews — fails to demonstrate that homeopathic medicines have effects beyond placebo.

COMPETING INTERESTS

None identified.

AUTHOR DETAILS

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