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A critical overview of homeopathy

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Abstract (Document Summary)

Homeopathy is a 200-year-old therapeutic system that uses small doses of various substances to stimulate autoregulatory and self-healing processes. Homeopathy selects substances by matching a patient's symptoms with symptoms produced by these substances in healthy individuals. Medicines are prepared by serial dilution and shaking, which proponents claim imprints information into water. Although many conventional physicians find such notions implausible, homeopathy had a prominent place in 19th-century health care and has recently undergone a worldwide revival. In the United States, patients who seek homeopathic care are more affluent and younger and more often seek treatment for subjective symptoms than those who seek conventional care. Homeopathic remedies were allowed by the 1939 Pure Food and Drug Act and are available over the counter. Some data-both from randomized, controlled trials and laboratory research-show effects from homeopathic remedies that contradict the contemporary rational basis of medicine. Three independent systematic reviews of placebo-controlled trials on homeopathy reported that its effects seem to be more than placebo, and one review found its effects consistent with placebo. There is also evidence from randomized, controlled trials that homeopathy may be effective for the treatment of influenza, allergies, postoperative ileus, and childhood diarrhea. Evidence suggests that homeopathy is ineffective for migraine, delayed-onset muscle soreness, and influenza prevention. There is a lack of conclusive evidence on the effectiveness of homeopathy for most conditions. Homeopathy deserves an open-minded opportunity to demonstrate its value by using evidence-based principles, but it should not be substituted for proven therapies.

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[Headnote]

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The increasing use and reported success of homeopathy worldwide suggest that we should take a serious look at it. This article describes the history and principles of homeopathy, its practice patterns, and current research.

THE ORIGIN AND PRINCIPLES OF HOMEOPATHY

The "Principle of Similars"

A German physician, Samuel Christian Hahnemann (1755-1843), developed homeopathy at the end of the 18th century (1). As the story goes, Hahnemann was translating an herbal text from English to German when he found that Cinchona bark (China officalis) cured malaria because it was bitter. He thought this explanation was preposterous and took repeated doses of Cinchona to personally determine its effects, which appeared remarkably similar to the symptoms of malaria. Hahnemann hypothesized that one may select therapies on the basis of how closely a patient's toxicologic symptoms matched the symptoms of the patient's disease. He called this the "Principle of Similars." He subsequently gave repeated doses of many common remedies to healthy volunteers and carefully recorded the symptoms they produced. This procedure is called a 11 proving" or, in modern homeopathy, a "human pathogenic trial." Hahnemann then attempted to select his treatments for sick patients by matching these drug symptom pictures to symptoms in sick patients (2).

The Minimum Dose and Avagadro's Number

The second and most controversial tenet in homeopathy is that remedies retain biological activity if they are diluted in a series (usually in a 1:10 or 1:100 diluent-- volume ratio) and agitated or shaken between each dilution. Hahnemann began this process to reduce toxicity, but later he claimed that this "potenization" process extracted the "vital" or "spirit-like" nature of these substances (2). The limit of molecular dilution (Avagadro's number) was not discovered until the later part of Hahnemann's life; by then homeopaths all over the world were reporting that even very high potencies (dilutions lower than Avagadro's number) produced clinical effects. The implausibility of such claims has led many to dismiss any evidence of homeopathy's effectiveness as artifact or delusion (3).

Holism and the Totality of Symptoms

The third principle in homeopathy is that remedies are most effective when they are selected on the "total" characteristic set of symptoms, not just those of the disease (4). For example, a homeopath would treat a patient with a cold whose primary symptoms are lacrimation, stinging and irritation of the eyes, and thin, clear nasal discharge with a potency prepared from onion extracts (Allium cepa) because these symptoms mimic those produced by onions. However, another patient with a cold might have thick, yellow nasal discharge, have lost all thirst, and want cool, fresh air. That person would be treated with a potency of the purple cone flower (Pulsatilla) because these symptoms are more characteristic of those produced by this plant. Both patients have the same diagnosis (upper respiratory tract infection), but each is treated with a different homeopathic drug based on their characteristic symptoms. This situation can complicate clinical research in homeopathy when the experimental sample is selected according to conventional criteria but the therapy is based on homeopathic criteria (5). In addition, homeopathy has developed numerous approaches to this matching process over the last 200 years, further complicating establishment of a uniform prescribing standard.

THE RISE, FALL, AND RISE OF HOMEOPATHY IN THE UNITED STATES

Soon after its discovery, homeopathy spread rapidly across Europe and to other countries, especially the United States. Its rise is partly attributed to the barbaric practices in orthodox medicine of the time, such as bloodletting, high-dose cathartics, and heavy metals (6). By the turn of the century, 8% of all medical practitioners in the United States were homeopaths and there were 20 homeopathic medical colleges, including Boston University School of Medicine, New York Medical College, and Hahnemann Medical College (7,8).

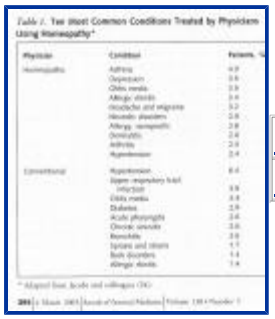

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Table 1.

Allopathic medicine's reaction to homeopathy was consistent and harsh (9). The American Medical Association (AMA) was

formed a year after the American Institute of Homeopathy, partly to combat such "irregulars" (10). In 1852, the predecessor journal of The New England Journal of Medicine proclaimed that homeopathy is "a cheat" with little advantage "over the Indian meal and table salt (placebos) of an earlier date and worthy of the disembodied spirits in the Paradise of Odin, where the inhabitants feed on shadows" (11,12). Foreshadowing contemporary debates, homeopaths responded with statistics and helped pioneer comparative quantitative information and large-scale comparative trials (13-16). For example, during the cholera epidemic of 1854, homeopathic hospitals had dramatically lower mortality rates than allopathic institutions (17). Obviously, such outcomes could have many explanations, such as homeopaths' eschewing violent purgatives. Orthodox physicians criticized the quality of the data and questioned the reliability of any "complex" mathematical method that portrayed homeopathy favorably (15,17).

Toward the end of the century, a rapprochement between homeopaths and conventional physicians gradually unfolded. Exchanges took place: Homeopaths adopted new orthodox treatments, such as diphtheria antitoxin, while allopaths borrowed homeopathic remedies, such as nitroglycerin (18,19). In 1903, after long antagonism, the AMA-in need of homeopathic referrals for its newly proliferating medical specialties and allies to oppose emerging alternatives, such as osteopathy-invited homeopaths to join. This merger greatly accelerated the assimilation and demise of homeopathy (20,21).

A new revival of homeopathy in the United States began in the 1960s and 1970s and is closely allied to interpretations of homeopathy that emphasize "high" potencies and psychological symptomology (22). The resurgence continues: The number of patients using homeopathy in the United States is estimated to have increased 500% in the last 7 years, most involving self-treatment with overthe-counter remedies (23).

HOMEOPATHIC PRACTICE

Patterns of Practice

In the United States, patients seen by homeopathic physicians tend to be more affluent, more frequently be white, present more subjective symptoms, and be younger than patients seen by conventional physicians (24). Conventional physicians see almost twice the number of patients older than 65 years of age, spend less than half as much time with each patient (12 minutes vs. 30 minutes), and order more tests than homeopathic physicians (24). In the United States, much homeopathic practice is integrated with conventional care because homeopathic physicians use conventional medications in a quarter of the patients they see (28% for homeopathic physicians vs. 69% for conventional physicians) (24). Table 1 compares the 10 most common diagnoses seen by homeopathic and conventional primary care physicians.

Patients seeking homeopathic care are liable to find various approaches depending on their clinician's philosophy and training. "Classical" homeopathy usually involves a detailed history (often lasting over an hour) and infrequent doses (every month or less) of a single remedy. The total patient response is followed and evaluated for specific patterns of improvement characteristic of a healing response. "Clinical" homeopathy uses combinations of remedies to "cover" the symptomatic variations of a clinical condition, similar to conventional drug treatment. The American Institute of Homeopathy is the oldest organization for licensed health care professionals, and there are licensing organizations for chiropractors, naturopaths, and, more recently, "professional" homeopaths who do not hold medical degrees. While the classical approach to homeopathy is fairly standardized, some practitioners use electronic instruments, electroacupuncture devices, pendulums, their own intuition, or metaphysical principles to select remedies, with little regulatory oversight of these approaches. This presents a confusing array of approaches for patients under the term "homeopathy" (1). In addition, many patients self-prescribe homeopathic remedies and never consult a practitioner.

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Table 2.

Adverse Events and Drug Labeling

The Food, Drug, and Cosmetic Act of 1939 allowed homeopathic medicines to be on the market. These medicines are classified as safe for over-the-counter use. The U.S. Homeopathic Pharmacopoeia Convention meets regularly with members of the Food and Drug Administration to set standards for good laboratory practices and assure quality and uncontaminated production of homeopathic medicines. Dilutions in a ratio of 1:10 are labeled with an X or a D (for decimal), and those diluted in a ratio of 1:100 are labeled with a C (for centesimal). Thus, 6X (or 6D) has been diluted 1:10 six times

and 6C has been diluted 1:100 six times. Because of the small doses, almost all authorities assume that homeopathy is safe and will not interact with conventional drugs as long as patients also receive good conventional care. However, the benign nature of high dilutions should not be assumed without systematic investigation. Adverse effects have been reported with homeopathy in both the clinic and the laboratory (25,26).

DOES HOMEOPATHY WORK?

The evidence for homeopathy's effectiveness includes three areas of research: 1) general comparisons of homeopathic remedies and placebos; 2) studies of homeopathy's effectiveness for particular clinical conditions; and 3) studies looking for biological effects from potencies, especially ultra-high dilutions. Data for general effectiveness include systematic reviews and meta-analyses of randomized, placebo-controlled trials. Some investigators believe that it is reasonable to combine trials of different populations, interventions, and outcome measures when the question is whether comparison groups (homeopathic and placebo) are generally different (27), but others are skeptical of such approaches. Data for the effectiveness of homeopathy for specific clinical conditions require homogeneous sets of studies with similar populations, diagnoses, and outcomes. Data on the biological effects of high dilutions are investigated with laboratory studies under carefully controlled conditions (5). We orient the reader to these three types of evidence.

Is the Homeopathic Remedy More Effective than Placebo?

Four comprehensive, independent systematic reviews or meta-analyses have examined the question of whether homeopathic therapies behave like placebo in randomized, placebo-controlled trials (Table 2). These have comprehensively searched for all clinical trials and have used standard methods for quality evaluation and analysis of clinical trials. These reviews have found that, overall, the quality of clinical research in homeopathy is low. When only high-- quality studies have been selected for analysis (such as those with adequate randomization, blinding, sample size, and other methodologic criteria that limit bias), a surprising number show positive results. For example, Kleijnen and colleagues (28) did a detailed quality evaluation of 60 homeopathic clinical trials and concluded that they "would be ready to accept that homeopathy can be efficacious, if only the mechanism of action were more plausible." Linde and colleagues (29) reviewed 119 placebo-controlled trials of homeopathy and evaluated them with an established quality scale for clinical research (the Jadad scale [34]) and a rigorous internal validity scale that examined detailed trial characteristics known to bias results. Multiple subset and sensitivity analyses on many quality variables reduced but did not eliminate an effect in favor of homeopathy. One could eventually eliminate the effect in favor of homeopathy by applying combinations of unusually selective criteria (such as picking a few of the very best studies and simultaneously adjusting their results for both small sample size and presumed publication bias), thereby decreasing the number of studies included (30, 31). There are other reviews of the clinical homeopathic literature, but these have not been comprehensive, did not use acceptable systematic review methods, or focused on a subtype of homeopathic practice (32, 33, 35) (Table 2). Unfortunately, even the best systematic reviews cannot disentangle components of bias that may exist in small trials, nor can they rule out that true effects may be obscured with pooling of heterogeneous studies (36, 37), thereby making it impossible to draw definitive conclusions.

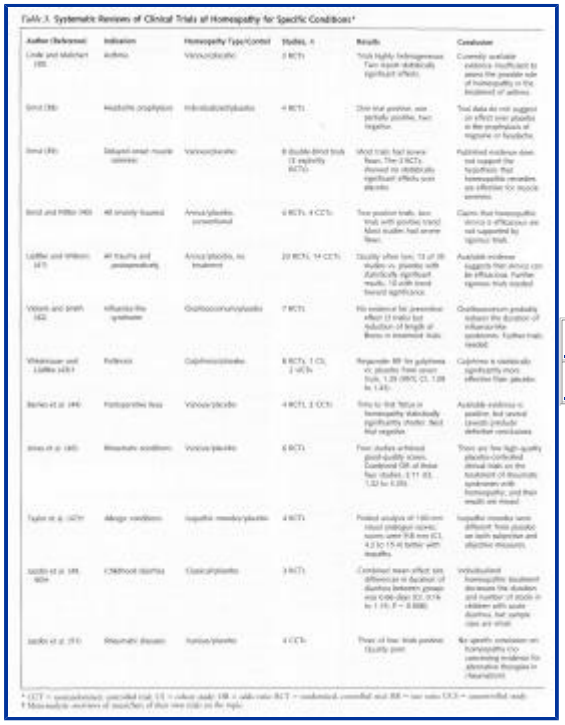

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Table 3.

Is Homeopathy Effective for Particular Conditions?

Patients and most clinicians want to know whether a treatment works for a particular condition, not whether homeopathy is more effective than placebo in general. Several series of randomized, placebo-controlled trials have been done on single conditions with homeopathy and have been reviewed by using good-quality criteria. These studies provide evidence that classical homeopathy does not prevent migraine (38) and that the homeopathic remedy Arnica montana does not alleviate delayed-onset muscle soreness after exercise (39). The quality reviews on the effects of Arnica montana for postoperative recovery are mixed (40,41). Some evidence shows that the homeopathic preparation Oscillococcinum is effective for the treatment of influenza but not for its prevention (42) and that the remedy Galphimia glauca is efficacious for the treatment of allergic rhinitis (43). In several other conditions, most notably postoperative ileus (44), asthma (45), and arthritis (46), the evidence from controlled trials is inconclusive; independent replications have not been attempted or the results of trials are mixed.

Recently, Taylor and colleagues (47) published the fourth in a series of high-quality, double-blind, placebocontrolled trials of homeopathic immunotherapy. In these trials, patients with allergic rhinitis or asthma were given homeopathic (serially agitated) dilutions of their primary allergen or a placebo after a 2-week placebo run-in phase. Visual analogue scales used to measure symptomatic change have consistently shown greater improvement in the homeopathically treated groups (47). A larger study using a similar protocol did not reproduce this clinical effect, although it reported immunologic findings with homeopathic immunotherapy that were different from those seen with placebo (48). In a series of three high-quality double-blind, placebo-controlled studies on childhood diarrhea, Jacobs and colleagues (49, 50) reported that classical homeopathy reduced the duration of loose stools by about 0.7 day. Double-blind randomized, placebo-controlled trials on a few other conditions have also been published (Table 3).

Do Ultra-High Dilutions Produce Effects in the Laboratory?

Clinical trials are less sensitive for determining whether ultra-high dilutions have specific effects than laboratory research, where more rigorously controlled conditions are possible. The publication of laboratory investigations of ultra-high dilutions has produced considerable controversy and mixed results on attempted replication (52-54). Still, unusual effects of ultra-high dilutions in rigorous laboratory studies continue to be reported (5559). Multiple independent replications of this research have not yet been done because there are few investigators in the field (60). Future research should focus on simple clinical or laboratory models that can be easily attempted by multiple investigators. In addition, better data are needed to examine the use and effects of homeopathy by the public and in actual practice (5,29,61).

CONCLUSIONS

Homeopathy is an alternative therapeutic system based on the "Principle of Similars" and the use of "minimum" doses. Homeopathy was a prominent component of 19th-- century health care and recently has undergone a revival in the United States and around the world. Despite skepticism about the plausibility of homeopathy, some randomized, placebo-controlled trials and laboratory research report unexpected effects of homeopathic medicines. However, the evidence on the effectiveness of homeopathy for specific clinical conditions is scant, is of uneven quality, and is generally poorer quality than research done in allopathic medicine (61). More and better research is needed, unobstructed by belief or disbelief in the system (62). Until homeopathy is better understood, it is important that physicians be open-minded about homeopathy's possible value and maintain communication with patients who use it. As in all of medicine, physicians must know how to prevent patients from abandoning effective therapy for serious diseases and when to permit safe therapies even if only for their nonspecific value.

[Sidebar]
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[Sidebar]
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[Sidebar]
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[Sidebar]
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