

The Impact of Homeopathy on American Public Health

Dr. Simanchala Narhari Panigrahi

Professor

Homoeopathic Medical College & Hospital, Jalgaon

Abstract

A little over 2% of Americans turn to homeopathy for relief from musculoskeletal, otorhinolaryngology, and respiratory issues. Only 19% of Americans who use homeopathy actually see a provider, despite the fact that those who do are more likely to report positive outcomes from the treatment. In all likelihood, the remaining individuals depend on OTC remedies. Infectious illnesses, pain treatment, mental health, and cancer care are just a few areas where homeopathy has shown promise in recent clinical studies, suggesting that it might contribute to better public health overall. This literature review looks at current research in these areas, specifically at studies that have evaluated the safety, costs, and regulations of homeopathic treatment in the US. There is evidence that homeopathy may have a positive impact on public health, particularly in the treatment of fibromyalgia and upper respiratory infections.

Keywords : homeopathy public health review respiratory tract infections fibromyalgia Homeopathy Use in the United States

Big, population-based surveys on complementary and integrative therapy usage provide statistics on homeopathic use in the US, as they do in other industrialized nations. The National Health Interview Survey (NHIS) is an annual survey of the civilian, non-institutionalized population in the US conducted by the Centers for Disease Control (CDC) and the National Center for Health Statistics (NCHS). The complicated sampling method ensures that this thorough, in-person survey is representative of the population. Trained interviewers conduct the interviews. The survey questions cover a wide range of health conditions, change annually, and the data is used to influence health policy. This study has inquired about Americans' use of complementary and integrative therapies every five years since 2002. According to the latest current statistics, which are based on a 2012 study, 2.2% of adults and 1.8% of children in the US utilized homeopathy in the last year.^{1,2} After looking at statistics on homeopathy in other industrialized nations, researchers came up with estimations ranging from 2% for adults in the UK to 27% for youngsters in Germany.^{3, 4} To get a better understanding of homeopathy in the US, we recently examined data from the 2012 NHIS survey of adults.⁵ Adults in the United States who used homeopathy were more likely to be white, female, between the ages of 30 and 44, residing in the western region of the country, married, possess a high school diploma or equivalent, and have a lower body mass index than those who used other forms of complementary and integrative medicine (CIM). Patients using homeopathy were more likely to utilize CIM treatments overall, with the exception of chiropractic and osteopathic manipulation, and they used more CIM therapies overall than patients not using homeopathy. Notably, only 19% of those who used homeopathy had actually seen a homeopath. So, most Americans who use homeopathy are doing it on their own, using OTC remedies they can get at any drugstore, with little to no supervision from medical professionals. This use is probably a result of the widespread availability of both single and combination homeopathic remedies for short-lived ailments (such as the common cold, allergic rhinitis, and muscular and joint discomfort). The following illnesses were most often treated with homeopathy: respiratory and otolaryngologic complaints (18.5%), musculoskeletal complaints (12.3%), fatigue, sleep disturbances, stress, or chronic pain (7.7%), gastrointestinal issues (5.0%), and neurologic conditions (3.4%). Importantly, there is considerable overlap between the top

diseases that American doctors who practice homeopathy often recommend to individuals who seek it out (Table 1).⁶ Perceived usefulness was also examined among people who used homeopathy to treat a health condition. One growing trend in gauging the efficacy of treatments is the use of patient-reported outcomes (PROs).⁷ While the NHIS survey does not include data on traditional PROs, it does get data on how useful CIM treatments are judged to be. We discovered that compared to persons who took dietary supplements without homeopathy, those who used homeopathy without a practitioner were more likely to feel that it greatly improved their health state and was crucial for sustaining overall wellness.⁵ People who sought out homeopathic therapy from a practitioner were much more inclined to think it was beneficial than those who did not. The disparities in perceived efficacy among these three user groups are remarkable and call for additional research, despite the many plausible explanations for these findings (such as selection bias, therapeutic effect of the clinical relationship, actual benefit of the medications used, and enhanced efficacy of individualized homeopathic prescriptions).

Considering these facts in light of modern homeopathic research and US health care policy, one would reasonably wonder what, if any, part homeopathy might play in promoting global and national health. Although this study does not aim to be comprehensive or systematic, it does highlight research in four separate areas of public health that need more investigation: cancer, infectious illnesses, pain, and mental health symptoms. It wraps off with talking about health care expenses, safety, and some of the problems the sector is facing right now.

Homeopathy and Infectious Diseases

A 2011 health technology assessment from Switzerland concluded, based on evidence from studies evaluating homeopathy in the context of upper respiratory tract infections (URTIs) and allergic rhinitis, that in terms of “real-world effectiveness,” homeopathy falls within the category of “effectiveness likely.”⁹ Since that time, several additional studies using homeopathic medicines to treat URTIs have been published. Though perhaps more of a nuisance than a serious threat, URTIs account for 25 million visits to family physicians and 20 to 22 million days of absence from work and school in the United States each year.¹⁰ Thus, URTIs pose a significant cost to society. Approximately 28% of all annual OTC medication expenditures in the United States are for cold and flu treatments.¹¹ In addition, 55% of antibiotics prescribed in the United States in 1998 were for infections unlikely to have a bacterial etiology.¹² More recent data suggest this trend has not improved significantly.¹³ Antibiotic over-prescribing and inappropriate prescribing is a serious issue, contributing to the development of antibiotic-resistant organisms, reduced clinical effectiveness, disruption of the gastrointestinal microbiome, and sometimes serious drug-related side effects.^{14–16} The American Institute of Homeopathy recently published an open letter calling for greater use of homeopathy to help reduce overuse and misuse of antibiotics.¹⁷ A recent observational study from France supports this possibility. The EPI3 cohort study analyzed 518 adults who presented to primary care for treatment of rhinopharyngitis symptoms.¹⁸ The analysis was divided into those individuals who saw conventional general practitioners (GPs), those who saw GPs who used a combination of conventional medicine and homeopathy, and those who saw GPs who were certified in homeopathy. Although the patient populations who saw these three types of physicians were different (those seeing homeopathic GPs were more likely to be females, had completed high school, and were non-smokers), after multivariable analysis adjusting for a variety of demographic factors, those who saw a homeopathic GP were significantly less likely to use an antibiotic or antipyretic with similar symptom resolution at 1-month follow-up. However, the authors also

Table 1 Most frequent conditions for which homeopathy is used in the United States by the general population and prescribed by physicians

General population, Dossett et al ⁵		Prescribing physicians, Jacobs et al ⁶	
Conditions	%	Conditions	%
Respiratory or ear/nose/throat	18.5	Asthma, otitis media, allergic rhinitis	11.8
Musculoskeletal	12.3	Arthritis	2.50
Fatigue, sleep problem, stress, or chronic pain	7.70		
Gastrointestinal	5.00		
Neurologic	3.40	Headache/migraine	3.20
Mental health	2.10	Depression and neurotic disorders	6.40
		Allergy (nonspecific)	2.80
		Dermatitis, eczema	2.60
		Hypertension	2.40

noted a nonsignificant trend for an increase in infections in this group, a finding which needs to be further explored.

A randomized controlled trial from the United States of a commercial homeopathic ear drop preparation also suggests that homeopathic medicines can reduce antibiotic use.¹⁹ In that study, 210 children aged 6 months to 11 years with acute otitis media in whom delayed antibiotic therapy was deemed appropriate were randomized to receive standard therapy or standard therapy plus the homeopathic ear drops. Those receiving the ear drops were less likely to fill the antibiotic prescription compared with standard therapy alone (26.9% vs. 41.2%, $p = 0.032$).

Several randomized controlled trials have examined different combination homeopathic products for URTIs. One multicenter study conducted in Germany and the Ukraine examined a combination of *Aconitum* D3, *Bryonia* D2, *Eupatorium perfoliatum* D1, *Gelsemium* D3, *Ipecacuanha* D3, and *Phosphorus* D5 in 523 adults and children with acute URTIs.²⁰ Both the homeopathic group and the control group were permitted to use standard treatment, which consisted of on-demand paracetamol, ambroxol, and/or oxymetazoline. Their primary outcomes showed a significant increase in the percent of individuals who were fever free at day 4

(76.8% in the homeopathic group compared with 56.7% in the standard treatment group, $p < 0.001$) and in the percent of subjects with very mild or no symptoms by day 4 (17% in

the homeopathic group compared with 7.5% in the standard treatment group, $p = 0.0012$). The average time to symptom alleviation was 6.6 days in the homeopathic group compared with 8.5 days in the standard treatment group. Compared with the homeopathic treatment group, the standard treatment group had increased symptom severity, increased use of standard on-demand therapies, slower resolution of fever, and slower

resolution of nasal breathing impairment. A sub-analysis of pediatric subjects yielded similar findings.²¹

A randomized controlled study of a different combination OTC product in the United States compared a syrup containing *Allium cepa* 6×, *Hepar sulph* 12×, *Natrum muriaticum* 6×, *Phosphorus* 12×, *Pulsatilla* 6×, *Sulfur* 12×, and *Hydrastis* 6× to a placebo control syrup in children from 2 to 5 years.²² A total of 261 children were randomized and treated for 3 days. Although there was no difference in symptom diaries immediately after taking the product, the investigators did find significant improvement in a composite cold score at 12 and 24 hours in the homeopathy group compared with the placebo group; however, thereafter, improvements were similar in both the groups. Notably, the homeopathy group had a worse cough during 5 to 10 days of follow-up, which the authors speculated may have been rebound symptoms after stopping therapy.

A RCT from Brazil compared two different homeopathic preparations (a live influenza nosode 30dH or a complex of *Streptococcus*, *Staphylococcus*, and inactivated influenza virus, all 30dH) versus placebo in 600 children followed in the public health system in a mountainous region of the country.²³ Children were treated with the compounds twice daily for 30 days and then followed monthly over the course of a year by health agents. Approximately one-quarter of children were lost to follow-up across the board due to

changes in residency or acquisition of private insurance. Approximately two-thirds of children in all three groups remained healthy throughout the entire year. However, those children in the placebo group who became sick tended to have more total infections than the children treated with homeopathy. Of the children treated with homeopathy, they tended to get sick a month after treatment, whereas children treated with placebo were more likely to get sick 3 months after treatment and to have more infections overall.

A study from Spain compared a combination of *Agaricus nutans* 5CH and *Thuja occidentalis* 5CH daily plus *Kalium muriaticum* 9CH and *Arsenicum iodatum* 9CH twice daily to placebo in 97 children with otitis media with effusion for 3 months.²⁴ Children in both groups received aerosolized ambroxol and budesonide in saline for the first 20 days. There was no significant difference in the percent of patients cured by 90 days in the two groups (61.9% in the homeopathy group versus 56.6% in the placebo group, $p = 0.63$). However, the

adverse event analysis was notable for only 3 URTIs in the homeopathy group versus 13 in the placebo group ($p = 0.009$).

Finally, an earlier review of homeopathic medicines for children with acute otitis media or URTIs found evidence that homeopathic treatment resulted in (1) faster resolution of symptoms than with conventional treatment (including antibiotics), (2) lower fill rates of watchful waiting antibiotic prescriptions, (3) fewer or less serious side effects, and (4) less parental sick time leave from work.²⁵

While URTIs and otitis media are the most frequently studied infectious conditions in the modern homeopathic research literature, reports from the nineteenth and early twentieth centuries suggest that homeopathy may have a role in treating and preventing more serious infections as well.²⁶ Dr André Saine reviewed this literature for case reports of mortality rates in pneumonia and has found that the mortality rate under homeopathic treatment was 3.4% compared with 24.4% with conventional treatment in the pre-antibiotic era and 13.7% in the modern era for community-acquired pneumonia.²⁷ Frass and colleagues have successfully used homeopathy combined with conventional medical care to treat sepsis in the ICU and found a significant improvement in survival at 180 days.²⁸ Work by Bracho and colleagues

strongly suggests control of a leptospirosis outbreak in Cuba using a homeopathically prepared leptospirosis nosode.^{29,30}

Homeopathy for Pain

According to the National Institutes of Health (NIH), pain affects more Americans than diabetes, heart disease, and cancer combined.³¹ It is the most common reason Americans access the health care system and it is the leading cause of disability and a major contributor to health care costs. Pain manifests in a variety of different conditions and can be acute or chronic. Co-occurrence of depression or other mental health conditions can exacerbate pain and make it more difficult to treat. Several recent studies have examined the use of homeopathy to treat painful conditions.

The most studied chronic pain condition in the modern homeopathic research literature is fibromyalgia, a condition

characterized by multiple tender points on exam, fatigue, sleep difficulties, and cognitive complaints. A recent meta-analysis examined controlled clinical trials ($n \approx 5$ studies; total $N \approx 183$ subjects) of homeopathy to treat fibromyalgia and found significant improvements in tender point count, pain intensity, and fatigue compared with placebo.³² No improvement was seen in scores on the McGill pain scale or depression (only two trials for each).

Teixeira and colleagues in Brazil studied the effect of ascending potencies of homeopathically prepared estrogen on endometriosis-associated pelvic pain in 50 women with deeply infiltrating lesions on imaging and who had been refractory to conventional therapy for at least a year.³³ Women received potentized 17- β -estradiol or placebo, three drops twice daily for 24 weeks. In the homeopathy group, a12CH potency was given during the first 8 weeks, then 18CH was given for the next 8 weeks, and finally 24 CH was given for the last 8 weeks. Potentized estrogen was significantly more effective than placebo for reducing endometriosis-associated

pelvic pain ($p < 0.001$) as well as depression measured by the Beck Depression Inventory ($p < 0.001$).

Homeopathy has also shown promise for the treatment of pediatric migraine headaches with reduced frequency and severity of headaches and less time off from school.³⁴ An analysis of the EPI3 cohort also demonstrated that homeopathy decreased the use of non-steroidal anti-inflammatory drugs (NSAIDs) and other analgesics, including narcotics, in patients with chronic musculoskeletal disorders.³⁵ Both individualized homeopathy and combination products have shown benefit in reducing chronic low back pain.^{36,37}

Homeopathy and Mental Health

Data from the 2015 National Survey on Drug Use and Health reveal that the prevalence of any mental illness among U.S. adults is 17.9% (excludes developmental and substance use disorders).³⁸ The lifetime prevalence of any mood disorder in the United States is 20.8% and any anxiety disorder is 28.8%. Poorly treated mental health disorders result in large costs to society in terms of lost productivity, worsening of physical health issues, and increased utilization of the health care system.

Observational data from the EPI3 cohort study in France examined outcomes for 710 patients with anxiety or depression and presenting to homeopathic GPs, conventional GPs, or GPs with a mixed practice.³⁹ Compared with the other two groups, patients presenting to homeopathic GPs were less likely to have a Hospital Anxiety and Depression Scale (HADS)

score > 12 , a history of suicide attempts, primary insomnia, and were more likely to have fewer co-morbidities and visits to their GP. After adjusting for baseline differences using multi-variable modeling, patients seeing homeopathic GPs for treatment of an anxiety or depressive disorder were more likely to have clinical improvement at 1 year (OR: 1.70, 95% CI: 1.00–2.87) and were less likely to be using a psychotropic drug (Odds ratio [OR]: 0.29, 95% confidence interval [CI]: 0.19–0.44) compared with patients seeing a conventional GP. This clinical improvement despite reduction in the use of psychotropic

drugs is notable given the number of side effects and adverse effects associated with these medications.

This same group also analyzed patients presenting for the evaluation of sleep complaints ($n \approx 346$) and found a similar rate of symptom improvement in all three groups. However, those using homeopathy were less likely to be using psychotropic drugs at 1 year (OR: 0.25, 95% CI: 0.14–0.42) compared with those seeing a conventional GP.⁴⁰

Women in the peri-menopause period are at increased risk of developing depression.⁴¹ A recent study from Mexico compared individualized homeopathy to fluoxetine to placebo in 133 peri- and post-menopausal women with moderate-to-severe depression and who were not currently taking psychiatric medications or engaged in psychotherapy.⁴² After 6 weeks of treatment, individuals in both the homeopathy and fluoxetine groups had a significant decrease in depression compared with the placebo group (homeopathy group, number needed to treat [NNT] ≈ 2 , fluoxetine group NNT ≈ 3). However, only individuals in the homeopathy group had an improvement in their menopause symptoms compared with the placebo group ($p \approx 0.002$).

Homeopathy and Cancer

Approximately 40% of men and women in the United States will be diagnosed with cancer at some point during their lifetime.⁴³ The most common types are breast cancer, lung and bronchus cancer, prostate cancer, colon and rectal cancer, bladder cancer, melanoma, non-Hodgkin's lymphoma, and thyroid cancer. In 2016, an estimated 1.7 million new cases of cancer will be diagnosed and 596,000 people will die in the United States. Total costs of cancer care in the United States were \$125 billion in 2010 and are projected to be \$156 billion by 2020. Recent data suggest that homeopathy may play a role in improving quality of life and symptom management in patients with cancer and possibly improve survival.

Most cases of breast cancer in post-menopausal women are hormone receptor positive and these women are typically prescribed an aromatase inhibitor as part of their adjuvant treatment. However, these medications often cause joint pain, which

is a frequent cause for discontinuation of therapy. Karp and colleagues studied the effect of *Ruta graveolens* 5CH and *Rhus toxicodendron* 9CH on joint pain and stiffness in women treated with aromatase inhibitors for breast cancer.⁴⁴ In this observational cohort study conducted at two different centers, women at one center received both homeopathic medicines twice daily, beginning 7 days prior to aromatase inhibitor initiation ($n = 20$), and women at the second center received aromatase inhibitors only ($n = 20$). After 3 months, women in the homeopathy group had significantly fewer sites of joint pain ($p = 0.03$), reduced frequency ($p = 0.0004$), and intensity ($p = 0.0004$) of pain, and lower consumption of analgesics ($p = 0.0076$) compared with the control group.

A pragmatic RCT by Frass and colleagues assessed the effects of individualized homeopathic treatment on global health status and subjective well-being in 373 patients with a variety of different stage 3 and stage 4 tumors.⁴⁵ They found significant improvements in both parameters after 4 months of follow-up

(mean difference between groups ± 7.7 , $p = 0.005$ and 14.7 ,

$p < 0.001$, respectively). They also noted significant improvements in the group receiving individualized homeopathy compared with the control group in a variety of other domains, including physical, cognitive, and emotional functioning, as well as fatigue, pain, insomnia, and appetite.

Intriguingly, in a retrospective study involving a separate cohort of patients receiving individualized homeopathy as an adjunctive treatment to their cancer care, this group found significantly improved survival compared with control patients with similar diagnoses and who did not receive homeopathic treatment.⁴⁶ Although the authors tried to account for bias in their analysis, more prospective data are needed to confirm these findings.

Homeopathy and Health Care Costs

Of major concern to many governments is the increasing cost of health care and providing care that is equitable and cost-effective. Among its peer nations, the United States performs worst in this regard.⁴⁷ Could expansion of homeopathy within the United States help to stem the rising tide of health care costs? A 2014 review examined economic evaluations of homeopathy and found that of 14 published studies, 8 found health improvements and reduced costs with homeopathy, 4 studies found health improvements at least as good as controls for comparable costs, and 2 studies found health improvement equal to conventional care at higher costs.⁴⁸ Since that time, several additional studies have been published.

The EPI3 study from France analyzed costs for 6,379 patients seeing 804 physicians for a variety of different complaints.⁴⁹ Compared with those seeing a conventional GP, those seeing a homeopathic GP incurred significantly higher costs for the consult, significantly lower costs for prescriptions, and overall a significantly lower cost for medical care.

A retrospective analysis of claims from a private German health insurer compared costs before and after it started covering visits to homeopathic physicians and showed an initial increase in costs in those patients using homeopathy compared with those who were not using it.⁵⁰ Whether these costs represented new use of homeopathic treatment, a shift away from prior out-of-pocket expenses, or some combination of both is unclear. Costs incurred by those using homeopathy gradually decreased over time, eventually approaching costs in those not using it by 1.5 years after initiation of coverage. There were no data on costs after 1.5 years and no data on outcomes. Though costs were increased across multiple categories, the major drivers were calculated lost productivity, outpatient care costs, and treatment of depression.

It is unclear why the results from France and Germany are so different, but a steady-state versus initiation of new system may partially explain the differences. Longitudinal studies that include outcomes will be important to clarify issues around costs.

Safety of Homeopathy

With the recent FDA hearing and alerts about specific products, there has been increased scrutiny regarding the

safety of homeopathic products in the United States. The most comprehensive analysis of safety to date was recently published, examining 41 RCTs including over 6,000 patients.⁵¹ In a meta-analysis, the authors found that homeopathy had no more side effects than placebos (OR: 1.03, 95% CI: 0.89–1.20). A smaller sub-analysis (five studies) also showed no difference compared with usual care. Nonetheless, many trials of homeopathy fail to report on adverse effects and even fewer mention aggravations or proving symptoms.

Regulation of Homeopathy in the United States

Homeopathic medicines are regulated by the U.S. FDA according to the 1938 Food, Drug, and Cosmetic Act and more recent compliance guidelines. These regulations differ both from those governing supplements and those governing conventional pharmaceutical drugs, placing homeopathic medicines in a unique category unto themselves.⁵² With the exception of certain potencies and nosodes, many homeopathic medicines are available for purchase OTC. Licensing and certification to practice homeopathy vary based on state and the provider's qualifications.⁵³ Providers recommending homeopathy differ widely in their backgrounds from those with medical training of varying degrees (e.g., medical doctors, osteopathic doctors, naturopathic

doctors, chiropractors, nurses, acupuncturists) to those without a medical background. The proportion of patients in the United States receiving homeopathic care from non-medical practitioners is unknown, as is how this affects perceived effectiveness. Although the total number of homeopathic providers in the United States is unknown, the total number based on available organizational data is likely less than 1,000.

Summary and Future Directions

This review summarizes a number of research that have recently appeared in peer-reviewed publications and focus on homeopathy as a treatment for certain health issues; these findings may have far-reaching implications for public health and the expense of medical treatment. There is a modest but substantial body of research regarding URTIs and fibromyalgia. There is some evidence of a potential health benefit in other contexts, but there is still a long way to go. More specifically, there needs to be a proliferation of independent replications of previously published positive studies that use validated metrics. Many published studies in homeopathy do not reflect typical treatment procedures used in clinical practice, hence investigators trying to explore new areas of study should especially strive to adhere to model validity in homeopathy research.^{pages 54–57} Also, investigations should have sufficient power to take into consideration the possibility of amplified placebo effects in homeopathy.⁸ The last step in minimizing the possibility of bias in reporting is to adhere more strictly to the RED- HOT reporting rules.⁵⁸ This also includes more accurate reporting of side effects and worsenings. Naturally, sufficient financing for research in this area is a precondition for all of these suggestions. This is a problem on a global scale and an American one in particular.

In American public health, what part does homeopathy play? In terms of patients and health care workers, it is currently a tiny portion of the industry, and its total influence is insignificant. There may be a huge public health advantage in terms of symptom relief and quality of life improvement if it were included as a routine component of health care services in the US for URTIs and fibromyalgia alone. Homeopathy for the treatment of fibromyalgia or other chronic health issues requires an examination by experienced homeopathic doctors, while there are over-the-counter combination medications that address URTI symptoms that the public may obtain. Despite evidence suggesting this strategy may be more successful, the US is severely underserved by providers who use it. Data also show that homeopathy may reduce the usage of drugs with recognized side effects. Longer consultation times may offset some of the possible savings in drug costs, lost productivity, and bad medication effects, although it is unclear how this would play out. Due to the intricate nature of American health care finance, it would be difficult to quantify these expenditures. However, more investigation into these questions is needed.

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