

Homoeopathy in the management of infectious diseases: Different facets of its use and implications for the future

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Abstract

Background: Infectious diseases are a major challenge to humanity and public health at large. **Objective:** The aim of this study is to conduct a systematic narrative review of the clinical research evidence for homeopathy in the management of infectious diseases. **Methods:** A comprehensive search of major biomedical databases: Cochrane Database of Systematic Reviews, Pubmed, Core-Hom, AYUSH Research Portal) and other individual journal sites were conducted. Relevant research published between 1999 and 2019 was categorised by study type, clinical condition and causative pathogen. **Results:** The literature search of two decades (1999–2019) gathered 86 articles: Meta-analysis ($n = 1$), systematic reviews ($n = 4$), randomised controlled trials ($n = 30$), comparative cohort/observational studies ($n = 16$), cohort/observational studies (single arm) ($n = 25$), case series ($n = 7$) and case reports ($n = 3$). The review demonstrated the beneficial evidence of homeopathy in infectious diseases is large. Both controlled and uncontrolled studies reported positive results, early recovery, reduction of hospital stay, less use of antibiotics and satisfaction of patients. Prophylactic studies on dengue, chikungunya, Japanese encephalitis/acute encephalitis syndrome and leptospirosis have shown the potential role of homeopathy in preventing the disease outbreaks. Homoeopathy as an add-on treatment for these conditions has shown added benefits in reducing mortality, morbidity and sequelae. Homoeopathy has a possible and viable role as standalone and as an integrative medicine for different infectious diseases. **Conclusion:** Homoeopathy offers beneficial role in combating infections. Due to the heterogeneity of approaches, more studies in different research settings are warranted to add to the existing evidence and validating it for enhancing the self-healing power of the body against infections.

Keywords: Adjuvant or add-on, Bacterial, Complex homoeopathy, Homoeopathy, Individualized homeopathy, Infectious diseases, Isopathy, Nosode, Standalone, Viral

INTRODUCTION

Zoonotic diseases are very common around the world. It is estimated that 6 out of every 10 known infectious diseases can spread from animals, and 3 out of every 4 new or emerging infectious diseases in people come from animals.^[1] The world has witnessed several outbreaks of infectious diseases such as Cholera, Plague, Spanish flu, Swine flu.^[2] Globalization, international travel and intercontinental commerce have all increased the potential for microbial spread, resulting in pandemics beyond their respective regions of origin such as Severe Acute Respiratory Syndrome, Middle East Respiratory Syndrome coronavirus, Zika, Ebola and now recently the outbreak of COVID-19 from Wuhan, China, in December 2019.^[3]

These diseases pose a major threat to public-health across the world. Although some infectious diseases, such as small pox

and poliomyelitis, have been eradicated from nature or almost wiped out, many diseases still persist with little hope of getting them under control. In addition, new infectious diseases are emerging and old ones that were thought to be under control are regaining lost ground.^[4] Apart from affecting the health of individuals directly, infectious diseases also impact the societies, economies and political systems.

Anti-virals, vaccines, and antibiotics are the standard treatments offered by conventional system for infectious diseases. However, their control is particularly challenging

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as the pathogens, the host, the context and the health systems (all of which interact with each other) change simultaneously. Further, during sudden outbreaks, emergence of new or resistant strains, for which there is little immune protection in the hosts, enables the disease to spread very rapidly. A growing number of infections— such as pneumonia, tuberculosis (TB), gonorrhoea and salmonellosis – are becoming harder to treat as the antibiotics used to treat them have become less effective. Antibiotic resistance leads to longer hospital stays, higher medical costs and increased mortality.^[5]

Keeping in mind the above issues, experts from the World Health Organisation^[6] in their statement for containment of Ebola virus disease recommended, *'In the particular circumstances of this outbreak, and provided certain conditions are met, the panel reached consensus that it is ethical to offer unproven interventions with as yet unknown efficacy and adverse effects, as potential treatment or prevention'*.

Homoeopathy, a holistic system of medicine, has been in use for infectious diseases dating back to the time of its inventor Hahnemann, who recommended *Belladonna* for scarlet fever.^[7] The curative effect of individualised homeopathic medicines is empirical but inexplicable by the conventional principles of science. Homoeopathy may be viewed as 'personalised nanomedicine'.^[8] They produce modulation of immune function at multiple levels, such as modulation of expression of genes, stimulation of macrophage and polymorph nuclear cells, changes in expression of surface receptors, induction of cytokines and modulate the central and local innate immune response leading to adaptive changes in the host's complex networks.^[9-11]

Homoeopathy is used for infectious diseases in different ways. While individualised treatment is the gold standard, it is impractical to use on a widespread basis during epidemics. Combination remedies can be effective, but they must be selected based on the symptoms of a given epidemic in a specific location. Treatment with genus epidemicus can also be successful, if based on data from many practitioners. Finally, isopathy shows promise and might be more readily accepted by mainstream medicine due to its similarity to vaccination.^[12] Further homoeopathy is also safe and effective when used as an add-on to standard care. Being used across the globe, and in Indian sub-continent,^[13] as a treatment for infectious conditions, it is valuable to review the evidence for Homoeopathy in infectious diseases

METHODS

Search strategy

A comprehensive search for the articles published during the period 1999–2019 in different journals on Homoeopathy and infectious diseases (Clinical) was carried out. Databases search was done in two phases: Phase I included: Cochrane Database of Systematic Reviews, PubMed (US National Library of Medicine). In phase two, additional search was performed through 'Google Scholar', 'CORE-Hom database', 'AYUSH Research Portal' and other individual journal sites.

The key search terms used were: '(Homeopathy) AND infections', '(homeopathy) AND infections) AND clinical trials', '(Homeopathy) AND infections) AND clinical research', '(homeopathy) AND infectious diseases) AND cohort studies', '(Homeopathy AND infectious diseases) AND case series), '(homeopathy) AND infectious diseases) AND case report'. Emphasis was given on papers with the English language only. However, a few papers with other language but abstract in English were included. Veterinary research and laboratory-based basic research were not included.

Filtering

All the literature, irrespective of the study design, hypothesis generating studies (case reports, case series, observational/cohort studies) and hypothesis testing ones (randomised controlled trials [RCTs], meta-analysis) were considered in this paper.

Classification

Potential research articles were noted for retrieval and given a preliminary 'study type' categorisation. The basic categories included systematic reviews, meta-analysis, randomised controlled trials (RCT), comparative cohort studies (CC), cohort (observational) with single arm studies, case series, case reports. Further the studies were categorised according to causative infectious agents such as viral, bacterial, mite and parasite. All evidences were included, if the effect on the clinical condition related to infectious disease, it was noted with a clearly defined outcome.

Data analysis

Data were extracted systematically using a specifically designed form in excel spreadsheet. Data extracted included author, clinical condition, causative factor, study design, number of participants, type of intervention in homoeopathy (individualised or complex or isopathy/nosode) and any comparator or control arm, adjuvant/standalone homoeopathy, outcome measures and results.

RESULTS

The literature search of two decades' (1999–2019) publications gathered 86 articles: Meta-analysis ($n = 1$), systematic review ($n = 4$), RCTs ($n = 30$), CC/observational studies ($n = 16$), cohort/observational studies (single arm) ($n = 25$), case series ($n = 7$) and case reports ($n = 3$).

As per the causative infectious agent, the break up is as follows: Viral ($n = 52$), bacterial ($n = 12$), viral/bacterial ($n = 18$), mites ($n = 1$), fungal ($n = 1$) and parasitic ($n = 1$). 3,058,730 patients/healthy population participated in these studies.

The search identified the following clinical conditions: Upper respiratory tract infections (URTI) ($n = 26$), influenza like illness (ILI) ($n = 7$), Dengue ($n = 6$), Sinusitis ($n = 6$), Acute diarrhoea ($n = 5$), acute otitis ($n = 5$), human immunodeficiency virus (HIV) ($n = 4$), TB ($n = 4$), urinary tract infection (UTI) ($n = 3$), Acute Encephalitis syndrome (AES)/Japanese Encephalitis (JE) ($n = 3$), Chikungunya ($n = 2$),

Tonsillitis ($n = 3$), dysentery ($n = 1$), Furunculosis ($n = 1$), gastroenteritis ($n = 1$), Hepatitis C ($n = 1$), High Risk Human Papillomavirus ($n = 1$), Leptospirosis ($n = 1$), Acute tracheobronchitis ($n = 1$), Molluscum contagiosum ($n = 1$), periodontitis ($n = 1$), Scabies ($n = 1$), sepsis ($n = 1$) and vulvovaginitis ($n = 1$).

Homeopathic medicines in the above clinical conditions were used either as standalone or as add-on to standard or usual care. There were 61 studies wherein homoeopathy was prescribed as standalone, and 19 where it was administered as adjuvant to standard care or usual care. 03 were systematic reviews and 03 other were comparative cohort studies. Homoeopathy was administered as combination remedies or complex homeopathy (homeopathic formulations) in 25 studies, individualised homeopathy (IH) in 52 studies and as nosode (isopathy) in 6 studies.

Summary of studies

Acute diarrhoea

Acute diarrhoea is a common problem for children under 5 years of age and a potential cause for death.^[14] Five studies were identified: One meta-analysis^[15] and three RCT, by Jacobs *et al.* ($n = 2$)^[16,17] and Patel *et al.*,^[18] respectively, and one cohort study by Nayak *et al.*^[19] Meta-analysis showed a reduced duration of diarrhoea in the homeopathy group compared to placebo group. The meta-analysis shows a consistent effect-size difference of approximately 0.66 days. Similarly, the studies done in Indian set up at tribal area and urban set up also gave similar results.^[18] However, using complex homoeopathy for acute childhood diarrhoea by Jacobs *et al.*^[17] showed no significant difference in the likelihood of resolution of diarrheal symptoms between the treatment and placebo groups.

Acute otitis

Acute otitis, a common paediatric problem with inappropriate antibiotic prescribing, contributes to the burden of antibiotic resistance. Homeopathic medicines offer pragmatic treatment alternatives to conventional drugs for symptom relief in children with uncomplicated AOM or URIs.^[20] Five RCTs were identified, Jacob *et al.*^[21] used IH and concluded significant decrease in symptoms at 24 and 64 h after treatment in favor of homeopathy through diary scores, Taylor and Jacobs^[22,23] used homeopathic ear drops (Containing *Pulsatilla*, *Chamomilla*, *Sulphur*, *Calcarea carbonica*, *Belladonna*, and *Lycopodium*) externally as adjuvant to standard care with successful outcomes. Pedrero-Escalas *et al.*^[24] used complex homeopathy (*Agraphis nutans* 5CH, *Thuja occidentalis* 5CH, *Kalium muriaticum* 9CH and *Arsenicum iodatum* (9CH) along with aerosol therapy with no significant results. Sinha *et al.*^[25] in their RCT used IH in LM potency against conventional treatment (CT). Both the groups were prescribed symptomatic treatment. 97.5% in the conventional group required antibiotics and none in the Homeopathy group.

Respiratory tract infections

The majority of URTI is caused by rhinoviruses and antibiotics

may provide only modest absolute benefits.^[26] 23 studies were identified: 04 systematic reviews, 8 RCTs, 10 CC, 3 single cohort studies, and one case series.

Bellavite *et al.*^[27] in their systematic review concluded that homeopathic formulations in upper respiratory tract and otorhinolaryngological infections are likely effective and the individualised approach in non-severe otitis is possibly effective. Homeopathic treatments may help when use of antibiotics is not indicated. Hawke *et al.*^[28] in their systematic review on homeopathic medicinal products concluded no evidence to support the efficacy of homeopathic medicinal products for ARTIs in children. In the light of antimicrobial resistance (AMR), Fixsen^[29] in his review suggests homeopathy offers alternative strategies for minor infections and possible prevention of recurring URTIs.

05 RCTs used complex homeopathy (homeopathic formulations) with positive findings in all the studies. Jacobs and Taylor^[30] using homeopathic cold syrup showed significant improvement in sneezing, cough in intervention arm to placebo recipients. van Haselen *et al.*^[31] in their homeopathic add-on therapy (Influcid; IFC-group) for 7 days in a pediatric subpopulation with URTI reflected usage of less symptomatic medication, and significantly earlier resolving of symptoms in the add-on treatment group and was safe to use. Lyrio *et al.*^[32] tested biotherapies ARI (Acute Respiratory Infection) and InfluoBio on children showing positive effects of both the biotherapies than placebo, and minimised the frequency of symptomatic episodes of flu. Jong *et al.*^[33] investigated CalSuli-4-02 tablets on prevention of recurrent acute URTIs in children, in comparison to another complex homeopathic product with reduction in the median number of acute URTIs over 3 months. Antibiotic use was decreased with overall satisfaction and higher tolerability with CalSuli-4-02. Zanasi *et al.*^[34,35] in their studies compared homeopathic syrup against placebo for treating cough due to URTI in adults and inferred that the homeopathic syrup was able to effectively reduce cough severity and sputum viscosity representing a valid remedy for acute cough due to URTIs. Conde Diez *et al.*^[36] studied the effect of complex homeopathy as an add-on to CT for prevention URTI in COPD patients and suggested beneficial impact at reducing number of URTIs' and duration in COPD patients and also reducing the number of COPD exacerbations.

Three studies by Steinsbekk *et al.*^[37-39] showed different results with IH. The self treatment^[37] with one of the three self-selected, ultramolecular homeopathic medicines for the prevention of URTIs in children showed no effect over placebo. An exploratory study (RCT) of the contextual effect of homeopathic care (HC) versus self-prescribed homeopathic medicine (SPH) in the prevention of URTI in children also showed no significant differences in clinical effects between SPH and HC showed trend in favour of HC. Whereas an open, pragmatic, randomised parallel-group trial with waiting-list group as control^[39] showed a clinically relevant effect of IH care in the prevention of URTI in children.

Eleven CC studies were identified. Out of these, one CC was a retrospective data^[40] comparing homeopathic medicine (specific extract of duck liver and heart) and not treated group. These results suggest that homeopathic medicine may have a positive effect in preventing Respiratory tract infections (RTIs). The reduction in the mean number of RTI episodes during the period of observation versus the year before inclusion in the study was significantly greater in the homeopathic-treated group than in untreated patients. Out of the 09 prospective CC studies, 04 studies used complex homeopathy such as homeopathic syrup,^[35] Engystol,^[41] viburcol,^[42] Gripp-Heel^[43] and *Euphorbium compositum*.^[44] These studies have shown positive outcomes in their identified objectives in terms of establishing non-inferiority, reduction of symptoms.

Three CC studies were very pragmatic, and compared IH to Conventional Treatment (CT). Grimaldi-Bensouda *et al.*^[45] in their study involved general physicians (GPs) who practiced CT alone versus GPs who practiced both conventional and homeopathy. Patients who chose to consult GPs certified in homeopathy used less antibiotics and antipyretic/anti-inflammatory drugs for URTI. Haidvogel *et al.*^[46] in his study showed the in primary care, homeopathic treatment for acute respiratory and ear complaints was not inferior to CT. While Riley *et al.*^[47] in his study also concluded that in primary care, homeopathic treatment for acute respiratory and ear complaints was not inferior to CT. A pharmaco-economic study by Trichard *et al.*^[48] concluded homeopathy as cost-effective alternative to antibiotics in the treatment of recurrent infantile rhinopharyngitis.

Three single cohort studies were identified. Nayak *et al.*^[49] in their study on acute rhinitis in children when prescribed pre-defined medicines based on individualisation, had significant reduction in the acute rhinitis symptom score with no significant adverse events. Michalsen *et al.*^[50] assessed safety of complex homeopathic drug (Contramutan N Saft). The physicians detected 60 adverse events from 46 patients (4.4%). Adverse drug reactions occurred in 14 patients (1.3%). Six patients showed proving symptoms (0.57%) and only one homeopathic aggravation (0.1%) appeared. All observed events recovered quickly and were of mild-to-moderate intensity. Another study on acute respiratory tract infections also showed improvement in symptoms.^[51] Ramchandani^[52] reported a series of 30 cases managed homoeopathically.

Influenza like illnesses

During the past century, world has faced four pandemic outbreaks of influenza which is enough to say the kind of threat the condition poses to the mankind.^[2] The review on ILI identified 07 studies; 01 systematic reviews, 02 RCT, 01CC, and 03 single cohort studies. A systematic review by Mathie *et al.*^[53] on Oscilloccinum® (a patented homeopathic medicine that is made from a 1% solution of wild duck heart and liver extract, which is then serially diluted 200 times with water and alcohol) concluded that paucity

of good evidence, robust conclusions cannot be drawn in the prevention or treatment of influenza and ILI. One RCT published by Chakraborty *et al.*^[54] investigated the effect of IH in the treatment of ILI in centesimal (CH) and 50 millesimal (LM) potencies against placebo through a multicenter, prospective, randomised, triple arm placebo controlled trial. There was a significant difference in temperature, headache, myalgia, Malaise, sore throat, fatigue, nasal complaints, cough and chill improved in both the treatment groups (CH and LM groups) compared to placebo within 3 days of treatment. Siqueira *et al.*^[55] investigated homoeopathic complex, *Influbio*® and placebo on patients suffering from influenza and acute respiratory tract infections in children through a pragmatic clinical trial. These results suggested that the use of homeopathic medicines minimised the number of flu and symptomatic episodes of acute respiratory infection in children, thus signalling the potential of homeopathic medicine (complex) as a prophylactic.

During the swine flu (SF) pandemic in 2009, three single cohort studies and 01 CC, two studies were undertaken. Mathie *et al.*^[56] in their data collection study of 1126 Indian patients during pandemic reported 89 different combinations of SF symptoms. The most common (15%) being temperature >38 degrees C + cough + runny nose. Forty-four different remedies (or combinations of remedies) were used and the most frequently prescribed being *Arsenicum album* (23.5%). Frei analysed the data of the prescription based on polarity analysis^[57] on 52 patients with ILI followed over 4 weeks resulted in 62% cure by the first remedy within 2 days of treatment. 21 different remedies cured influenza. *Cocculus*, *Natrium muriaticum*, *Phosphorus*, *Bryonia*, *Nux vomica*, and *Arsenicum album* were used in half of all the patients. Another study by Vincent^[58] wherein patients were treated for ILI by their GPs inferred patient satisfaction with treatment by the 4th day of treatment.

CC study by Danno *et al.*^[59] investigated effectiveness of homoeopathy in two groups of patients through 242 pharmacists, who prescribed over the counter medicines. The two groups of patients (those recommended allopathic medicine only, and those recommended homeopathic medicine with or without allopathic medicine) had comparable clinical outcomes. Patients who were recommended homeopathic medicine by pharmacists were younger, and had more severe symptoms than those recommended allopathic medicine. This study also highlighted the important role played by the pharmacists in the effective management of ILI and ENT disorders.

Acute encephalitis syndrome/Japanese encephalitis

AES/(JE) is a major health burden in India with 30% mortality and morbidity. Gadugu *et al.*^[60] in their prophylactic study at Andhra Pradesh administered *Belladonna* 200 on 1, 2, 3 days one dose each, *Calcarea Carbonica* 200 on 10th day and *Tuberculinum* 10 M on the 25th day, in a phased manner on

time series, to all children in the age group of 0–15 years in the month of August every year for three consecutive years. The intervention resulted in drastic drop of the mortality and morbidity rates. 01 RCT by Oberai *et al.*^[61] and 01 CC by Manchanda *et al.*^[62] conducted in a tertiary care hospital of Uttar Pradesh, investigated effect of homoeopathic medicine as an add-on to standard care in children suffering from AES compared to standard care. Modified Glasgow coma scale assessed the severity and Glasgow outcome scale assessed the primary outcomes in terms of death, neurovegetative state, moderate disability and severe disability and recovery. Morbidity was assessed using the Liverpool Outcome Score for assessing children at follow-up. These studies showed reduction of mortality rates from 15% to 30%, with 84% having less morbidity and sequelae.

Chikungunya

During the year 2007, India witnessed an epidemic of chikungunya. Nair *et al.*^[63] during the epidemic, conducted a double blind RCT was conducted, wherein following the method of Hahnemann, *Bryonia alba* 30 CH, was prescribed as genus epidemicus to prevent Chikungunya. Investigators first repertorised the symptoms of 205 patients with fever and arthralgia, characteristic of Chikungunya. A group of homeopathic experts then came to a consensus for *Bryonia* as the genus epidemicus after confirming symptoms in the *Materia Medica*. Family groups of approximately 200 individuals, known as ‘clusters’, were then randomized to take either *Bryonia* 30CH or placebo during the time of the active epidemic. Out of nearly 20,000 healthy individuals in each group, 12.8% of those receiving *Bryonia* developed the illness compared with 15.8% of those taking the placebo ($P = 0.03$). This translates into a relative risk reduction of nearly 20% in contracting chikungunya. A treatment study on chikungunya and post-chikungunya chronic arthritis (PCCA) by Wadhvani^[64] showed complete recovery in 84.5% CF cases, in a mean time of 6.8 days. 90% cases of PCCA recovered completely in a mean time of 32.5 days.

Dengue

Dengue, a mosquito-borne viral infection has no specific treatment or vaccine available for it. Review identified 01 RCT, 02 CC, 01 cohort study (single arm) and 01 case series.

Nayak *et al.*^[65] conducted a comparative study in thrombocytopenia due to dengue at a tertiary care Hospital in Delhi, India. 138 patients received a homeopathic medicine along with usual care (H + UC) and 145 patients received usual care (UC) alone. There was a statistically significant rise in platelet count on day 1 of follow-up in the H + UC group, compared with UC alone. This trend persisted until day 5. These results suggest a positive role of adjuvant homeopathy in thrombocytopenia due to dengue.

Hassan^[66] recently reported the results of a trial of a homeopathic combination remedy for dengue fever in Pakistan. The homeopathic combination appeared to be a more potent treatment against dengue fever. Jacobs *et al.*^[67] in their study

used homoeopathic combination of six remedies comparing with placebo in patients with symptoms of dengue fever in Honduras. They found no differences in the resolution of pain and fever or the use of analgesics between the two groups. Nunes *et al.*^[68] from Brazil conducted a time series study with homoeopathic combination and compared the incidence in different years. The incidence of the disease in the first 3 months of 2008 fell 93% by comparison to the corresponding period in 2007, whereas in the rest of the State of Rio de Janeiro there was an increase of 128%.

Mahesh *et al.*^[69] and Rath *et al.*^[70] in their case series of dengue ($n = 14$), showed the potential of homoeopathic medicines in managing the disease.

Hepatitis

Shah^[71] developed the hepatitis C virus (HCV) nosode and conducted an open-label observational study in 24 HCV-positive individuals using 30C and 50C potencies of the nosode. From week 12 to week 24, the mean viral load decreased. Most participants in this study showed improvement in appetite and weight gain.

Human immunodeficiency virus

Four studies were identified, 01 RCT, and 03 single cohort studies. Rastogi *et al.*^[72] in their first of its kind novel study, enrolled 100 patients and aimed to evaluate the immuno-modulator role of homeopathic remedies in (HIV) infection (Asymptomatic HIV infection, and Persistent Generalised Lymphadenopathy (PGL) by comparing the effect of with placebo. In PGL, analysis of change in the pre- and post-trial counts of CD4(+ve) cells between groups was statistically significant ($P = 0.04$). The study suggested a possible role of homeopathic treatment in HIV infection.

Mishra *et al.*^[73] in their large cohort of 870 HIV patients, evaluated the role of homoeopathic medicines in delaying the progression of infection. 61% patients maintained asymptomatic status for a period varying from 3 to 10 years. The intercurrent ailments such as oral candidiasis, oral ulcers, loss of appetite, generalized pruritic dermatitis etc., also responded favorably.

Muraleedharan *et al.*^[74] using individualised homoeopathic medicines, studied the changes in CD4 and viral load volumes in 72 patients, completing the follow up period of 6 months. There was significant change in viral load. Other parameters like Body Mass Index, Quality of life also improved.

Shah^[75] developed a new HIV nosode and evaluated its effect on 27 HIV positive individuals using 30 C and 50 C potencies as an autosode. 07 patients showed a sustained reduction in the viral load from 12 to 24 weeks. Similarly, 09 participants (33.33%) showed an increase in the CD4+ count by 20% altogether in 12th and 24th week along with gain in weight.

Tuberculosis

TB is one of the top 10 causes of death and the leading cause from

a single infectious agent and Multidrug-resistant TB (MDR-TB) remains a public health crisis and a health security threat.^[76] Four studies were identified: 01 RCT on MDR-TB, 01 case series on tubercular lymphadenitis, 02 case reports on TB with other diseases such as Pott's spine. Chand *et al.*,^[77] in their double-blind RCT, investigated 120 diagnosed MDR-TB patients (both culture positive and negative) with Standard Regimen + individualised homeopathic medicine (SR + H) or Standard Regimen + identical placebo (SR + P). Radiological findings of chest showed significant improvement in homoeopathy added group. Further there was also weight gain, increase in haemoglobin and reduction in ESR with add-on homeopathy.

Chand *et al.*^[78] successfully treated cases of Pott's spine with paravertebral abscess, not responding to anti tubercular treatment (ATT), Recurrent sub-acute intestinal obstruction, Pulmonary TB with adjuvant homeopathy, with improvement in general well-being. Goyal^[79] reported two cases of pulmonary TB treated with homeopathy.

Tubercular lymphadenitis (TBLN) was also successfully treated by Chand *et al.*^[80] using homeopathic medicine along with ATT on 25 patients and developed a homeopathic regime consisting of a patient specific constitutional medicine, one disease specific biotherapy (*Tuberculinum*) and *Silicea* 6X as supportive medicine sending a message for use of homoeopathy as a complement to ATT and large effectiveness studies.

Leptospirosis

Leptospirosis is caused by a gram-negative bacterium, cause serious infections such as meningitis, hepatitis, and pneumonitis. Bracho *et al.*^[81] in Cuba during an epidemic of leptospirosis from 2007 to 2008, developed a nosode (NosoLep) from four strains of inactivated *Leptospira*. Ninety-seven percent of the entire population over 1 year of age was treated with the nosode. Over a 5-week period, more than 2 million people received two oral doses of the 200C potency of this preparation. This was followed nearly a year later with two 10M doses of the same nosode. Disease surveillance statistics revealed an 84% decreased incidence of the disease in these provinces in 2008 compared with previous years, despite the occurrence of three large hurricanes.

Others

Other conditions for which positive role of homeopathy was found were gastroenteritis,^[82] furunculosis,^[83] acute tracheobronchitis,^[84] recurrent UTI in women,^[85] chronic sinusitis,^[86-91] UTI due to neurogenic bladder dysfunction,^[92] high risk human papilloma virus,^[93] dysentery,^[94] tonsillitis,^[95-97] molluscum contagiosum,^[98] scabies,^[99] periodontitis,^[100] sepsis,^[101] vulvovaginitis.^[102]

DISCUSSION

The overview of the published literature in the field of question shows that there are several positive studies tending to support a clinically demonstrable activity of homeopathic medicines in the management of infectious diseases. The review included

all types of reports from systematic reviews/meta-analysis to case reports in the hierarchy of evidence. The broad scope of the review has enabled the inclusion of case reports, being used in practice and currently have no supporting empirical evidence, paving the way for more targeted research into clinical effectiveness.

The conclusions from reviews papers demonstrated a large heterogeneity of the published clinical trials. The number of randomized studies in various fields is small, and proofs of efficacy/effectiveness considering single drugs or single clinical approaches. This is in concurrence with results of Mathie *et al.*^[103] A systematic review of RCTs of non-individualized homeopathic treatment (NIHT) preclude a decisive conclusion about the comparative effectiveness of NIHT.^[53] Nevertheless, complex homoeopathy remains compatible for research even when modern approach draws scepticism for not following homeopathic principles of prescribing. Papers published in peer-reviewed journals though increasing, are characterised by low standards of methodology.^[104,105]

The highest number of studies were from URTIs. Homeopathic medicines compared to CT have shown reduction in antibiotics, are cost effective and reduce recurrences and duration of illness.^[15,25,45,48] The medicines are compatible to all age groups, and are well tolerated.^[29]

AMR threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi.^[5] The clinical trials examined in this article showed variations in size, location, cohort types, type of intervention and outcome measures, which make comparisons and generalisations problematic. Combined evidence suggests that homeopathic treatment can exert biological effects with fewer adverse events and broader therapeutic opportunities than conventional medicine in the treatment of URTIs.^[29]

Homoeopathy as a holistic system medicine which takes care of person as a whole, and prescribed based on symptom totality can be used before the disease diagnosis. Because of its minimum dose and simple medicines, extends its scope in integrative medicine.^[11] Studies show strength of this system in managing multimorbidity too.^[106,107] Add-on or adjunctive treatment is another option wherein homoeopathy has viable and potential role to play in integrative patient care. The rationale^[108] for adjunctive treatment is usually one of the following: (a) another or other treatment have been only partially effective on core symptoms. (b) Another or other treatments have been effective on core target symptoms, but for some other concurrent symptoms, a further medicine is believed to be required. (c) A particular combination might be beneficial *de novo* in some indications. (d) The combination could improve tolerability because two compounds may be employed below their individual dose thresholds for side effects.

Homeopathy as an adjunctive treatment can reduce mortality and morbidity, duration of hospital stay (AES, dengue), and

can increase compliance to CT in diseases (TB),^[77] and thus provide long-term benefit.^[61,65,79,101]

The limitation of this study is the lack of a detailed quality analysis of each included study because our object was essentially descriptive and not to draw quantitative conclusions, or clinical recommendations. Heterogeneity of different levels of studies further prevents drawing strong conclusions.

Implications for the future

Homeopathy appears to have a number of potential advantages in infectious diseases:

- It has high acceptability, as high proportion of patients suffering from infectious diseases, spontaneously seek homeopathic treatment
- It is relatively safe and cost-effective. The low cost of the medicines may, however, be offset by longer or more frequent consultations and costs may vary between countries and systems of reimbursement
- Homeopathic medicines can be manufactured easily in large scale and easy distribution make it a viable option during epidemics/pandemics
- It is safe and effective when used as an adjuvant or add-on to conventional treatment. There is a possible role of integration of homeopathy with the standard care for the treatment of all types of infectious diseases including those with high mortality and morbidity. It may lead to reduction in hospital stay, cost of care, loss of work-days, increased compliance to conventional treatment, thus may reduce health-care burden on hospitals, government policies
- Homeopathic treatment may help when use of antibiotics is not indicated and anti-virals/antibiotics are not yet tested for new emerging diseases
- Due to the heterogeneity of approaches, and of drugs used, more studies will be required to add to the existing evidence in different clinical conditions.

CONCLUSIONS

The review demonstrated the beneficial evidence of homeopathy in different infectious diseases is large. Due to the heterogeneity of approaches, more research to build evidence in different research settings are warranted.

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Conflicts of interest

None declared.

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संक्रामक रोगों के प्रबंधन में होम्योपैथी – भविष्य में इसका उपयोग और जटिलताओं के विभिन्न पहलू: एक सुव्यवस्थित विवरणात्मक समीक्षा

पृष्ठभूमि: संक्रामक रोग समग्र रूप से मानवता और जन-स्वास्थ्य के लिए एक प्रमुख चुनौती है।

उद्देश्य: संक्रामक रोगों के प्रबंधन में होम्योपैथी के लिए नैदानिक अनुसंधान साक्ष्यों की एक सुव्यवस्थित विवरणात्मक समीक्षा करना।

विधि: मुख्य जैव-चिकित्सीय डाटाबेसों; सुव्यवस्थित समीक्षाओं का कॉक्रेन डाटाबेस, पबमेड, कोर-हॉम, आयुष रिसर्च पोर्टल और अन्य व्यक्तिगत जर्नल साइटों की एक व्यापक खोज की गयी। 1999-2019 के बीच प्रकाशित सम्बन्धित शोध को अध्ययन के प्रकार, नैदानिक स्थिति और रोगजनित जीवाणु द्वारा वर्गीकृत किया गया।

परिणाम: दो दशकों (1999 से 2019 तक) के साहित्य की खोज में 86 लेखों को एकत्रित किया गया: मेटा-ऐनालाइसिस (एन=1), सुव्यवस्थित समीक्षा (एन=4), यादृच्छिक नियंत्रित परीक्षण (आरसीटी)(एन=30), तुलनात्मक समूह/अवलोकन संबंधी अध्ययन (सीसी)(एन=16), समूह/अवलोकन संबंधी अध्ययन (एकल भुजा)(एन=25), प्रकरण श्रृंखला (एन=7) और प्रकरण प्रतिवेदन (एन=3)। समीक्षा में प्रदर्शित किया गया कि विजातीय पद्धति के बाद भी, संक्रामक रोगों में होम्योपैथी का लाभकारी साक्ष्य वृहद है। दोनों, नियंत्रित और अनियंत्रित अध्ययनों ने सकारात्मक परिणाम, शीघ्र स्वास्थ्य लाभ, अस्पताल में अल्प प्रवास, एन्टीबायोटिक का कम प्रयोग और रोगियों की संतुष्टि आदि की सूचना दी। डेंगू, चिकिनगुनिया, जापानी एंसेफेलाइटिस/गंभीर एंसेफेलाइटिस सिन्ड्रोम और लेप्टोस्पाइरोसिस ने रोग के प्रकोप को रोकने में होम्योपैथी की महत्वपूर्ण भूमिका को दर्शाया है। इन स्थितियों के लिए, अतिरिक्त उपचार के रूप में होम्योपैथी ने मृत्युदर, रूग्णता और क्रम को कम करने में अतिरिक्त लाभों को दर्शाया है। होम्योपैथी की स्वयं को सिद्ध करने और विभिन्न संक्रामक रोगों के लिए एक सहायक पद्धति के रूप में एक संभावित एवं व्यावहारिक भूमिका है।

निष्कर्ष: होम्योपैथी संक्रमणों के विरुद्ध लड़ने में लाभदायक भूमिका का निर्वाह करता है। पद्धतियों के विजातीयता होने के कारण, विभिन्न अनुसंधान के वातावरण में अधिक अध्ययनों को वर्तमान साक्ष्य के साथ जोड़े जाने का अधिकार प्राप्त है और संक्रमणों के विरुद्ध शरीर की स्व-आरोग्य क्षमता में वृद्धि करने के लिए इसे सत्यापित करता है।

L'homéopathie dans la gestion des maladies infectieuses - différentes facettes de son utilisation et implications pour l'avenir: une revue narrative systématique

Contexte: Les maladies infectieuses représentent un défi majeur pour l'humanité et la santé publique en général. **Objectif:** De mener une revue narrative systématique des preuves de recherche clinique pour l'homéopathie dans la gestion des maladies infectieuses. **Méthodes:** Une recherche complète des principales bases de données biomédicales: Base de données Cochrane des revues systématiques, Pubmed, Core-Hom, Research Portal d'AYUSH) et d'autres sites de revues individuelles a été effectuée. Les recherches pertinentes publiées entre 1999 et 2019 ont été classées par type d'étude, état clinique et pathogène responsable. **Résultats:** La recherche documentaire de deux décennies (1999 à 2019) a rassemblé 86 articles: méta-analyse (n=1), revues systématiques (n=4), essais contrôlés randomisés (ECR) (n=30), études comparatives cohortes/observationnelles (CC) (n=16), études de cohorte/observation (bras unique) (n=25), séries de cas (n=7) et rapports de cas (n=3). La revue a démontré qu'en dépit d'une approche hétérogène, les preuves bénéfiques de l'homéopathie dans les maladies infectieuses sont importantes. Les deux études contrôlées et non contrôlées ont rapporté des résultats positifs, une récupération rapide, une réduction du séjour à l'hôpital, une diminution de l'utilisation d'antibiotiques et la satisfaction des patients. Des études prophylactiques sur la Dengue, le Chikungunya, l'encéphalite Japonaise/ le syndrome d'encéphalite aiguë et la leptospirose ont montré le rôle potentiel de l'homéopathie dans la prévention des épidémies. L'homéopathie en tant que traitement complémentaire pour ces conditions a montré des avantages supplémentaires dans la réduction de la mortalité, de la morbidité et des séquelles. L'homéopathie a un rôle possible et viable comme autonome et comme complément pour différentes maladies infectieuses. **Conclusions:** L'homéopathie offre un rôle bénéfique dans la lutte contre les infections. En raison de l'hétérogénéité des approches, plus des études dans différents contextes de recherche sont justifiées pour compléter les preuves existantes et les valider pour améliorer le pouvoir d'auto-guérison du corps contre les infections.

Homeopatía en el manejo de enfermedades infecciosas - diferentes facetas de su uso e implicaciones para el futuro: Una revisión narrativa sistemática

Antecedentes: Las enfermedades infecciosas constituyen un gran desafío para la humanidad y la salud pública en general. **Objetivo:** Realizar una revisión narrativa sistemática de las evidencias clínicas de investigación sobre la homeopatía en el manejo de enfermedades infecciosas. **Métodos:** Se realizó una búsqueda exhaustiva de las principales bases de datos biomédicas: Base de datos Cochrane de revisiones sistemáticas, PubMed, Core-Hom, AYUSH Research Portal y otros sitios de revistas individuales. La investigación relevante publicada entre 1999-2019 se clasificó por tipo de estudio, condición clínica y patógeno causal. **Resultados:** La búsqueda de dos décadas en la literatura (1999 a 2019) reunió 86 artículos: meta-análisis (n=1), revisiones sistemáticas (n=4), Ensayos controlados aleatorios (TCR)(n=30), estudios comparativos de cohortes/observacionales (CC) (n=16), estudios de cohortes/observacionales (un solo brazo) (n=25), series de casos (n=7) e informes de casos (n=3). La revisión demostró que, a pesar del enfoque heterogéneo, la evidencia beneficiosa de la homeopatía en las enfermedades infecciosas es grande. Tanto los estudios controlados como los no controlados dieron resultados positivos, recuperación temprana, reducción de la estancia hospitalaria, menor uso de antibióticos y satisfacción de los pacientes. Los estudios profilácticos sobre el dengue, el chikungunya, el síndrome de encefalitis/encefalitis aguda japonés y la Leptospirosis han demostrado el papel potencial de la homeopatía en la prevención de los brotes de la enfermedad. La homeopatía como tratamiento complementario para estas afecciones ha mostrado beneficios adicionales en la reducción de la mortalidad, la morbilidad y las secuelas. La homeopatía tiene un papel posible y viable como independiente y como complemento para diferentes enfermedades infecciosas. **Conclusiones:** La homeopatía desempeña un papel beneficioso en la lucha contra las infecciones. Debido a la heterogeneidad de los enfoques, se justifica que más estudios en diferentes entornos de investigación se añadan a la evidencia existente y la validen para mejorar el poder de auto-curación del cuerpo contra las infecciones.

Homöopathie bei der Behandlung von Infektionskrankheiten - verschiedene Facetten ihrer Anwendung und Auswirkungen auf die Zukunft: eine systematische Narrative Review

Hintergrund: Infektionskrankheiten stellen eine große Herausforderung für die Menschheit und die öffentliche Gesundheit insgesamt dar. **Ziel:** Durchführung einer systematischen narrativen Überprüfung der klinischen Forschungsergebnisse für Homöopathie bei der Behandlung von Infektionskrankheiten. **Methoden:** Eine umfassende Suche nach wichtigen biomedizinischen **Datenbanken:** Cochrane Database of Systematic Reviews, Pubmed, Core- Hom, AYUSH **Research Portal**) und anderen **einzelnen Zeitschriftenseiten wurde durchgeführt. Relevante Forschung zwischen 1999-2019 veröffentlicht wurde nach Studientyp, klinischen Zustand, und ursächlichen Erreger kategorisiert. Ergebnisse:** Die Literaturrecherche von zwei Jahrzehnten (1999 bis 2019) sammelte 86 Artikel: Metaanalyse (n=1), systematische Überprüfungen (n=4), randomisierte kontrollierte Studien (RCT)(n=30), vergleichende Kohorten-Beobachtungsstudien (CC) (n=16), Kohorte/Beobachtung Studien (einarmig) (n=25), Fallreihen (n=7) und Fallberichte (n=3). Die Überprüfung hat gezeigt, dass trotz heterogener Ansätze die positiven Beweise für Homöopathie bei Infektionskrankheiten groß sind. Sowohl kontrollierte als auch unkontrollierte Studien berichteten über positive Ergebnisse, Verringerung des Krankenhausaufenthalts, weniger Einsatz von Antibiotika und Zufriedenheit der Patienten. Prophylaktische Studien über Dengue, Chikungunya, Japanische Enzephalitis/Akute Enzephalitis-Syndrom und Leptospirose haben die potenzielle Rolle der Homöopathie bei Prävention von Seuchenausbrüchen. Homöopathie als Add-on-Behandlung für diese Bedingungen hat zusätzliche Vorteile bei der Verringerung der Sterblichkeit, Morbidität und Folgegezeigt. Die Homöopathie hat eine mögliche und praktikable Rolle als eigenständige und als Ergänzung für verschiedene Infektionskrankheiten. **Schlussfolgerungen:** Die Homöopathie spielt eine positive Rolle bei der Bekämpfung von Infektionen. Aufgrund der Heterogenität von Ansätzen, mehr Studien in verschiedenen Forschungsumgebungen sind gerechtfertigt, um den vorhandenen Beweisen und deren Validierung zur Verbesserung der Selbstheilungskraft des Körpers gegen Infektionen.

顺势疗法在传染病的管理-其使用的不同方面和对未来的影响：系统的叙述综述。

背景: 传染病是对人类和整个公共卫生的一个重大挑战。

客观: 对顺势疗法在传染病治疗中的临床研究证据进行系统的叙述性综述。

方法: 主要生物医学数据库的全面搜索: 系统的回顾 Cochrane 数据库, Pubmed, 核心 Hom, (AYUSH研究门户) 和其他个别期刊网站进行。1999-2019年期间发表的相关研究按研究类型进行分类, 临床情况和引起病原生物。结果: 二十年的文献搜索(1999年至2019年)收集86篇文章: 荟萃分析(n=1), 系统综述(n=4), 随机对照试验(RCT)(n=30), 比较队列/观察研究(CC)(n=16), 队列/观察研究(单臂)(n=25), 案例系列(n=7)和案例报告(n=3)。审查表明, 尽管异源方法, 顺势疗法在传染病中的有益证据是大的。对照和不受控制的研究都报告了积极的结果, 早期恢复, 减少住院时间, 减少抗生素的使用和患者的满意度。关于登革热、基孔肯雅热、日本脑炎/急性脑炎综合征和钩端螺旋体病的预防性研究

表明顺势疗法在预防疾病爆发方面具有潜在作用。顺势疗法作为这些条件的附加治疗已显示在降低死亡率、发病率和后遗症的附加好处。顺势疗法有可能和可行的作用作为独立和作为不同传染病的辅助。

结论: 顺势疗法在打击感染方面提供了有益的作用。由于方法的异质性, 在不同的研究设置更多的研究有必要添加到现有的证据, 并验证它为增强身体对感染的自愈能力。