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Real-life effect of classical homeopathy in the treatment of allergies: A multicenter prospective observational study

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Real-Life Effect der klassischen Homöopathie in der Allergiebehandlung: eine multizentrische, prospektive Anwendungsbeobachtung

Zusammenfassung. *Ziel:* Die Prävalenz allergischer Erkrankungen in den westlichen Industrieländern hat in den letzten drei Jahrzehnten stetig zugenommen. Die Akzeptanz der Bevölkerung bezüglich komplementärer Heilmethoden ist hoch. Das Ziel dieser Untersuchung war es daher, den Real Life Effect der klassischen homöopathischen Behandlung sowie die Möglichkeit einer Reduktion der konventionellen Medikamente zu dokumentieren.

Methoden: In einer prospektiven multizentrischen Beobachtungsstudie, durchgeführt von homöopathisch ausgebildeten Allgemeinmedizinern an 9 Prüfzentren in Österreich, wurden Daten und Symptomausprägungen von allergischen Patienten mit den Diagnosen allergische Konjunktivitis, allergische Rhinitis, Asthma bronchiale und Neurodermitis vor und nach homöopathischer Behandlung mit Hilfe von Fragebögen erhoben (Zustandseinstufungen anhand von visuellen Analogskalen).

Ergebnisse: Von den 44 ursprünglich aufgenommenen Patienten erfüllten 40 die Studienbedingungen. Sämtliche Beschwerden besserten sich deutlich, zumeist sogar sehr markant ($p < 0{,}001$). Von 21 Patienten, welche zu Studienbeginn unter konventioneller Medikation standen, war es bei 13 (62 %) möglich, zumindest ein Medikament abzusetzen, der Rest (38 %) gab eine Reduktion bei zumindest einer Arzneimitteldosierung an. Nebenwirkungen der Behandlung wurden nicht festgestellt.

Zusammenfassung: Die Beschwerdesymptomatik der Patienten wurde unter der homöopathischen Behandlung wesentlich verbessert, verbunden mit einer deutlichen Reduktion der Einnahme konventioneller Medikamente. Der gemessene Real-Life Effect weist auf die Möglichkeit einer therapeutischen Bereicherung und finanziellen Entlastung des Gesundheitssystems hin, ohne allerdings Aussagen über die Wirksamkeit der homöopathischen Behandlung per se zuzulassen.

Summary. *Objective:* The prevalence of allergic disorders in western industrialized countries has steadily increased during the last three decades. Public acceptance of complementary treatment methods is high. The aim of this study was to assess the real-life efficacy of classical homeopathic treatment and the potential to reduce conventional medication dosage.

Methods: A prospective multicenter observational study was conducted by general practitioners specializing in homeopathy in nine Austrian test centers. Personal data and symptoms of allergic patients diagnosed with allergic conjunctivitis, allergic rhinitis, bronchial asthma and neurodermatitis before and after homeopathic treatment were assessed by means of questionnaires (classification of patients' condition by using visual analogue scales/VAS).

Results: 40 out of 44 patients originally recruited for the trial were found to meet the eligibility criteria. All clinical symptoms were shown to improve substantially, in most cases quite markedly ($p < 0.001$). 21 patients undergoing conventional medication therapy at baseline (62%) were able to discontinue at least one medication, while the remaining patients (38%) reported a dose reduction in at least one medication. No side effects were reported during treatment.

Conclusion: The symptoms of patients undergoing homeopathic treatment were shown to improve substantially and conventional medication dosage could be substantially reduced. While the real-life effect assessed indicates that there is a potential for enhancing therapeutic measures and reducing healthcare cost, it does not allow to draw conclusions as to the efficacy of homeopathic treatment per se.

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Key words: Allergy, homeopathy, individualized treatment, effects, multicenter observational study.

Introduction

The prevalence of allergic disorders such as allergic rhinitis, allergic conjunctivitis, bronchial asthma and neurodermatitis has increased in nearly all western industrialized countries during the past three decades [1, 2]. Long-term or prolonged use of conventional medication such as corticosteroids, antihistaminic agents, chromones, or leukotriene antagonists impair compliance due to the occurrence of side effects. Hyposensitization measures should be considered with care in view of the efforts, risks and expenses involved. Avoiding exposure to allergens is only possible to a certain extent [3, 4].

For the above reasons, affected patients are increasingly turning to complementary treatment methods. International surveys with data collection from 52 studies conducted in 9 different countries (United States, Germany, England, Sweden, Slovenia, Italy, Canada, Australia and New Zealand) reveal that natural remedies and complementary medicine [5, 6] have gained significant popularity over the last three decades. Homeopathy is a widely practiced method based on the principle of likeness, which has been controversially debated in recent years. This type of medicine applies highly diluted and potentiated substances, and a major challenge is to find the specific constituent that exactly matches the patient's individual symptoms [7]. The procedure decisively depends on the patient's ability to closely observe his own symptoms of disease; this is why the medication often needs to be changed in the beginning in order to achieve the desirable effect. Homeopathy is additionally challenged by clinical trials and their external validity.

Because of the use of highly diluted substances, homeopathic treatments are often criticized for being ineffective and incompatible with the currently valid rules of nature. Irrespective of these arguments, two large meta-analyses on homeopathy performed by Linde et al. [8] and Kleijnen et al. [9] have concluded that the efficacy of treatment cannot be based on a placebo effect alone. They did, however, criticize the difference in quality between the various trials included in the analysis. These critical suggestions for improvement of assessment policies led to the Berne ADS Double-Blind Study [10]. This study clearly demonstrated the efficacy of homeopathic medicine in the treatment of children with ADS. Another meta-analysis performed by Shang et al. [11], which failed to produce evidence of the efficacy of homeopathic treatment beyond a placebo effect, was refuted by Lüdtke et al. [12] on the grounds that it contained methodological errors. In a multicenter observational trial involving 4000 patients, which was conducted by Becker-Witt et al. [13] to investigate the efficacy and the success of classical homeopathic remedies in daily practice, the mean severity of symptoms assessed by doctors and patients using a numerical rating scale significantly decreased in combination with a 50% reduction of conventional medication. The follow-up period was two years (1997–99). The most common diagnoses tempting patients to seek help from a homeopathist were allergic diseases and chronic headache. In another observational study conducted by Spence et al. [14] at the Homeopathic Hospital in Bristol over a period of 6 years and involving 6544 patients diagnosed with different chronic diseases, 70% of the subjects experienced improvements in their health condition.

In view of the prevalence of allergic diseases, a high public acceptance of homeopathic therapy and the controversy of current debates, this observational study seeks to investigate the effects of classical homeopathic therapy on the symptoms of allergic diseases (allergic rhinitis, allergic conjunctivitis, bronchial asthma, neurodermatitis) and its potential to reduce conventional medication, especially in the case of chronic disease requiring long-term pharmacological treatment.

Materials and methods

The present prospective, multicenter study is to be classified as an observational study involving a cohort and following a descriptive and exploratory goal. The study was approved by the Ethical Committee of the hospital of the Barmherzige Brueder, Linz, Austria. A total of nine centers in different parts of Austria participated in the study. 7 of these centers were general practitioners and 2 were outpatient departments of gynecology and obstetrics.

Data material from all allergy patients who fulfilled the below inclusion criteria was obtained by means of two questionnaires, of which one was completed prior to homeopathic treatment (12 questions) and the other at the end of the observation period (8 questions). The patients quantified the severity of main and accompanying allergic symptoms by means of 100-mm-long visual analogue scales (VAS) (0 cm = no symptoms, 10 cm = maximum severity).

The key symptoms were defined as: shortness of breath, coughing, bronchial mucus, bronchitis, runny nose, rhinitis with mucous and purulent discharge, stuffy nose, itchy nose, sinusitis, sneezing attacks, itchy, watery and red eyes, itchy and reddened skin. The accompanying symptoms comprised reduced physical performance, sadness/feeling depressed, irritability and sleep disorders due to shortness of breath, coughing, stuffy nose, increased mucous discharge, or other symptoms.

Additional examination parameters were the dosage change of conventional medication, the change in the number of allergens as a result of classical homeopathic allergy treatment, the desire to continue treatment, and overall patient satisfaction. Safety parameters included the correct performance of treatment (compliance), adverse effects and the occurrence of new allergic symptoms during the observation period.

Confirmation about the allergic nature of the present symptoms was obtained through a variety of assessment methods including RAST classes, skin prick testing and medical specialist checkups. In the case of patients with a long history of recurring seasonal allergy-like symptoms, assessment could be based on previous medical findings. Any increase or reduction of allergens prior to or during the study was assessed on the basis of individual patient reports.

Patients included in the trial had a minimum age of 9 and were diagnosed with neurodermatitis, allergic rhinitis, allergic conjunctivitis and bronchial asthma. Patients were included in the study only if they met the following criteria: they had to present with current symptoms requiring treatment; these symptoms did not resolve without treatment within the next two weeks; and they were for the first time undergoing classical homeopathic

therapy for the treatment of their allergy-related symptoms. Additional inclusion criteria were the patients' ability to observe their own symptoms, their readiness to complete the two questionnaires, and oral as well as written consent (with parental consent for minors) to allow processing of their data for scientific purposes. Patients took about 15 minutes to complete each questionnaire; the head of the respective medical center or authorized personnel provided assistance if needed. Patients were recruited upon admission to the practice or outpatient clinic.

A pseudonymization procedure was adopted to disguise the identity of patients (patient identification numbers were issued). During the first exam [E1], the treating physician assessed the minimum duration it would take for the current allergic symptoms to resolve without treatment. Then, before starting treatment, the patient was asked to complete the first questionnaire.

All subjects were asked to be present at the practice for completing the second questionnaire within their period of allergic reaction, no earlier than two weeks and no later than 16 weeks after commencement (the second exam [E2] took place at the end of the follow-up period). Intermediate consultations and individual therapy modifications resulted from the course of treatment. The follow-up/treatment period of 2 to 16 weeks was based on a minimum duration of treatment necessary for allowing assessment and a maximum tolerable duration in case of treatment failure. Participation in the trial terminated after the patients had completed the second questionnaire. The prescribed homeopathic medication was documented, checks were performed to assure that the patients had taken their medication correctly, and the patients were asked about the occurrence of side effects during allergy treatment.

Statistical analysis

All available data were included in the statistical analysis. With respect to each key and accompanying symptom, only those patients were included in the parameter-specific analysis who exhibited the relevant symptom during the admission interview, which means they were in need of treatment (if a certain symptom which did not exist at the time of the initial exam was identified during the final exam, the case was classified as an adverse event).

For the statistical analysis both a per-protocol and an intention to treat approach were used. It was defined that the per-protocol analysis takes precedence in the evaluation of efficacy. Pre-post-treatment comparisons of the key and accompanying symptoms were performed by the Wilcoxon test (type I error = 5% two-tailed). For pre-post-treatment differences two-sided 95% confidence intervals (95% CI) were calculated. No adjustment for the type-I-error was made; therefore *p*-values are only descriptive. However, *p*-values <0.002 would retain significance after facultative Bonferroni corrections too. For all calculations PASW Statistics 18 (SPSS Inc., IBM Company Headquarters, 233 S. Wacker Drive, Chicago, Illinois 6060) was used.

Results

44 patients were enrolled in the trial conducted in the nine Austrian test centers between 27 August 2009 and 2 June 2010. Roughly 60% of the patients were treated in three of the test centers.

Four previously included patients were found to be ineligible for the trial and had to be excluded from per-protocol analysis (drop-out rate = 9%). Three patients were classified as false inclusions. Two of them were below the required minimum age of 9 years and one female patient with persistent hair dye allergy (contact eczema on the head) responded very well to treatment, but had none of the inclusion diagnoses. Another patient discontinued treatment after 6 weeks due to lack of time.

The outcome of intention-to-treat analysis ($n = 44$) and per-protocol analysis ($n = 40$) did not differ substantially; with the exception of the safety aspects, the presentation of final results was based on per-protocol analysis.

Demographic and patient history data

27 of 40 patients (67.5%) were women. The patients were 9 to 62 years of age (33 ± 14 years). 57.5% were between 19 and 40 years, 25% between 41 and 62 years and 17.5% between 9 and 18 years of age.

The most common symptoms of disease were allergic rhinitis (90%) and allergic conjunctivitis (60%). Roughly half (47.5%) of the patients were suffering from bronchial asthma, 9 (22.5%) had neurodermatitis. Only 6 patients (15%) showed a single manifestation of the allergic disease.

The disease persisted for more than 10 years in more than half of the patients (52.5%), between two and five years in 9 patients (22.5%), between 6 and 10 years in 5 patients (12.5%) and less than one year in 5 patients (12.5%).

5 women (12.5%) were concurrently pregnant. 60% of all patients had accompanying illnesses; these were predominantly allergic exanthema (excl. neurodermatitis) and psychological disorders (anxiety disorder, dysphoric disorder), 17.5% and 15%, respectively.

Table 1. Dosage change of conventional medication during homeopathic treatment (multiple entries possible)

Medication	*n*	Discontinued	Reduced	Unchanged	Elevated
Antihistamines	12	5 (41.7%)	5 (41.7%)	1 (8.3%)	1 (8.3%)
Inhaled corticosteroids	9	3 (33.3%)	1 (11.1%)	4 (44.4%)	1 (11.1%)
Bronchodilators	9	4 (44.4%)	3 (33.3%)	2 (22.2%)	0 (0.0%)
Antibiotics	4	3 (75.0%)	0 (0.0%)	1 (25.0%)	0 (0.0%)
Local corticosteroids	3	2 (66.7%)	0 (0.0%)	1 (33.3%)	0 (0.0%)
Leukotriene antagonists	2	0 (0.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)
Non-cortisone ointments/creams	2	2 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Homeopathic medication

Twenty-four patients (60%) received a mineral-based medication. In addition, medicinal products of vegetable (17.5%) and animal origin (15%) as well as nosodes (potentiated pathogens, 7.5%) were administered. A large majority of patients (82.5%) maintained their treatment without changing the key product initially chosen.

The most commonly prescribed constitutional remedies were chloratum compounds (12), in particular natrium chloratum (10), followed by phosphorus (6) and sepia (6).

Dosage regimens were reported for 29 patients; in the majority of cases daily doses of potency LM6 (13) and high potencies such as C200 (8) were prescribed.

27.5% of patients received an accompanying medication in addition to their individually selected constitutional remedy; this was either the allergen triggering the strongest symptoms (e.g. potentiated dust mite or pollen mixture = isopathic variant) or a potentiated histamine.

Conventional medication

Thirty-four patients (85%) had been on conventional medication (partly consisting of several types) before commencing homeopathic treatment. They mostly received antihistaminic agents (65%), inhaled corticosteroids (45%) and bronchodilators (32%). 17.5% of patients received local corticosteroids, 12.5% received non-cortisone ointment or cream, and 17.5% were given antibiotics. 8 patients (20%) had undergone hyposensitization therapy.

Twenty-one patients (53%) were concomitantly taking standard dosages of conventional medication (partly several types) at baseline; these were predominantly antihistaminic agents (30%), corticosteroids (22.5%) and brochodilators (22.5%). To a lesser extent also antibiotics (10%), local corticosteroids (7.5%), leukotriene antagonists (5%) and non-cortisone ointment or cream (5%) were administered. Three patients (7.5%) concurrently underwent hyposensitization therapy, 6 patients (15%) used a different type of complementary treatment during homeopathic therapy.

Dose adjustment of conventional medication

13 patients (61.9%) were able to discontinue at least one component of their medication. 8 patients (38%) had a dose reduction and 2 patients (9.5%) experienced a dose increase of at least one of the medication components they were using during homeopathic therapy.

Table 1 illustrates the time course and dose response of individual medicinal products; especially antihistaminic agents (83.4%) and bronchodilators (77.7%) could be substantially reduced or discontinued.

Change in the number of allergens

12 (35%) out of 34 patients who had previously undergone conventional treatment were unable to say whether a change in allergens had taken place. 8 patients (23.5%) reported an increase in the number of allergens, one patient (2.9%) a reduction.

Homeopathic treatment did not result in an increase in the number of allergens during follow-up; 5 patients (12.5%) even reported a reduction.

Overall satisfaction

Thirty-nine patients (97.5%) wanted to continue their therapy; only one patient could not make up his mind at the end of the trial. Overall patient satisfaction was extremely high on VAS, median value of VAS = 8.9 cm (Fig. 1).

Safety aspects

None of the 44 patients reported adverse effects resulting from treatment. New allergic symptoms were reported in 7 (15.9%) out of 44 patients (Table 2).

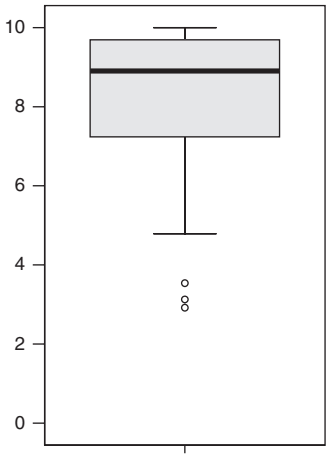

Fig. 1. Overall satisfaction with homeopathic treatment (Boxplot: 10 = maximum satisfaction)

Table 2. Newly occurred allergic symptoms (percentage related to new symptoms in previously unaffected persons, multiple entries possible)

New allergic symptoms	*n*	%
New key symptoms		
Bronchitis	1 out of 28	3.6
Purulent rhinitis	1 out of 33	3.0
Itchy nose	1 out of 12	8.3
Sneezing attacks	1 out of 4	25.0
Itchy, reddened skin	1 out of 20	5.0
New accompanying symptoms		
Sleepiness/fatigue	1 out of 12	8.3
Reduced physical performance	1 out of 10	10.0
Sadness/depression	1 out of 23	4.4
Irritability	1 out of 15	6.7
Sleep disorders due to shortness of breath	2 out of 35	5.7
Sleep disorders due to itchiness	1 out of 29	3.5
Sleep disorders due to stuffy nose	1 out of 20	5.0
Sleep disorders due to other causes	1 out of 30	3.3

Table 3. Key symptoms and accompanying symptoms (median values, 25th/75th percentile in brackets) *$p<0.05$ **$p<0.01$

Parameters	VAS at E1	VAS at E2	*p* value E1 *vs.* E2	*n*
Key Symptoms				
Runny nose	6.57 (5.00/8.41)	1.46 (0.00/3.83)	<0.001**	32
Rhinitis with swollen mucous membranes	6.15 (2.40/7.08)	0.00 (0.00/0.83)	<0.001**	23
Shortness of breath	5.73 (4.64/6.25)	0.31 (0.00/2.34)	<0.001**	17
Coughing	3.65 (1.04/5.63)	0.21 (0.00/1.15)	<0.001**	21
Bronchial mucus	3.65 (0.89/6.88)	0.42 (0.00/2.97)	<0.001**	21
Itchy eyes	7.08 (5.52/9.12)	1.15 (0.31/4.43)	<0.001**	29
Stuffy nose	6.25 (4.38/8.02)	0.83 (0.00/3.57)	<0.001**	34
Itchy nose	6.25 (3.54/8.28)	0.73 (0.00/2.87)	<0.001**	29
Sneezing attacks	6.25 (2.92/8.65)	1.46 (0.00/4.01)	<0.001**	36
Watery eyes	5.83 (1.56/7.29)	0.94 (0.00/3.13)	<0.001**	19
Red eye	4.90 (2.19/8.96)	0.21 (0.00/1.88)	<0.001**	23
Sinusitis	4.74 (1.38/8.59)	0.00 (0.00/0.31)	<0.001**	12
Itchy and reddened skin	5.58 (2.45/8.33)	0.52 (0.00/3.21)	<0.001**	20
Bronchitis	3.02 (0.31/8.36)	0.00 (0.00/0.78)	0.001**	14
Purulent rhinitis	5.21 (0.68/7.24)	0.00 (0.00/0.11)	0.004**	9
Accompanying Symptoms				
Reduced physical performance	5.00 (2.60/7.29)	1.25 (0.00/3.02)	<0.001**	31
Irritability	4.90 (2.71/7.29)	1.04 (0.16/2.71)	<0.001**	25
Sleepiness/fatigue	4.69 (2.40/7.35)	0.00 (0.00/3.70)	<0.001**	29
Sleep disorders due to stuffy nose	3.39 (1.07/5.73)	0.00 (0.00/0.91)	<0.001**	20
Sleep disorders due to itchiness	3.39 (0.65/6.25)	0.00 (0.00/0.84)	<0.001**	12
Sadness/depression	3.18 (1.07/7.60)	0.00 (0.00/1.15)	<0.001**	18
Sleep disorders due to coughing spasms	2.81 (0.52/7.09)	0.00 (0.00/1.46)	0.004**	9
Sleep disorders resulting from other causes	7.71 (2.92/9.69)	0.73 (0.00/4.79)	0.005**	11
Sleep disorders due to increased mucous discharge	3.65 (1.51/7.40)	0.00 (0.00/1.88)	0.013*	13
Sleep disorders due to shortness of breath	3.80 (2.08/6.90)	0.00 (0.00/0.11)	0.031*	6

*$p<0.05$; ** $p<0.01$.

Key and accompanying symptoms

Table 3 illustrates the severity of symptoms as reported by the patients VAS during the exams E1 and E2. The strongest symptoms (VAS median >5) reported during E1 were complaints involving the eyes and the nose, shortness of breath, sleep disorders, and compromised physical performance.

All parameters had substantially improved by the time patients presented for E2. For all key and accompanying symptoms the median value of VAS was below 1.5. The following symptoms showed a median value of VAS = 0: purulent rhinitis, sinusitis, bronchitis, sleepiness/fatigue, sadness, and sleeping disorders (due to shortness of breath, increased mucous discharge, stuffy nose, coughing, or itchiness).

The most striking improvements (Δ-VAS), with a median value higher than 4, were achieved with the following symptoms: red eyes, runny nose, itchy eyes, stuffy nose, itchy nose, sinusitis, and shortness of breath (Fig. 2).

A comparison of baseline *vs.* after-treatment resulted in *p* values of <0.05 in all key and accompanying symptoms and *p* values of <0.001 in 87% of key symptoms and 60% of accompanying symptoms, respectively.

Discussion

Half of the patients included in this observational trial had been experiencing symptoms for more than ten years. Surprisingly high with 50% was the portion of patients who were not undergoing conventional medication therapy at the moment of starting the trial. These patients said the reason for discontinuing their previous medication had been side effects and that their expectations were not fulfilled. This result is in tune with other international studies in which patients' reasons for undergoing complementary treatment were examined.

In the large majority of patients conventional medication could be either substantially reduced or discontinued, which is a positive outcome in both economic and clinical terms (decrease in side effect potential). None of the patients reported an increase in the number of allergens during follow-up, while roughly a quarter of them said they

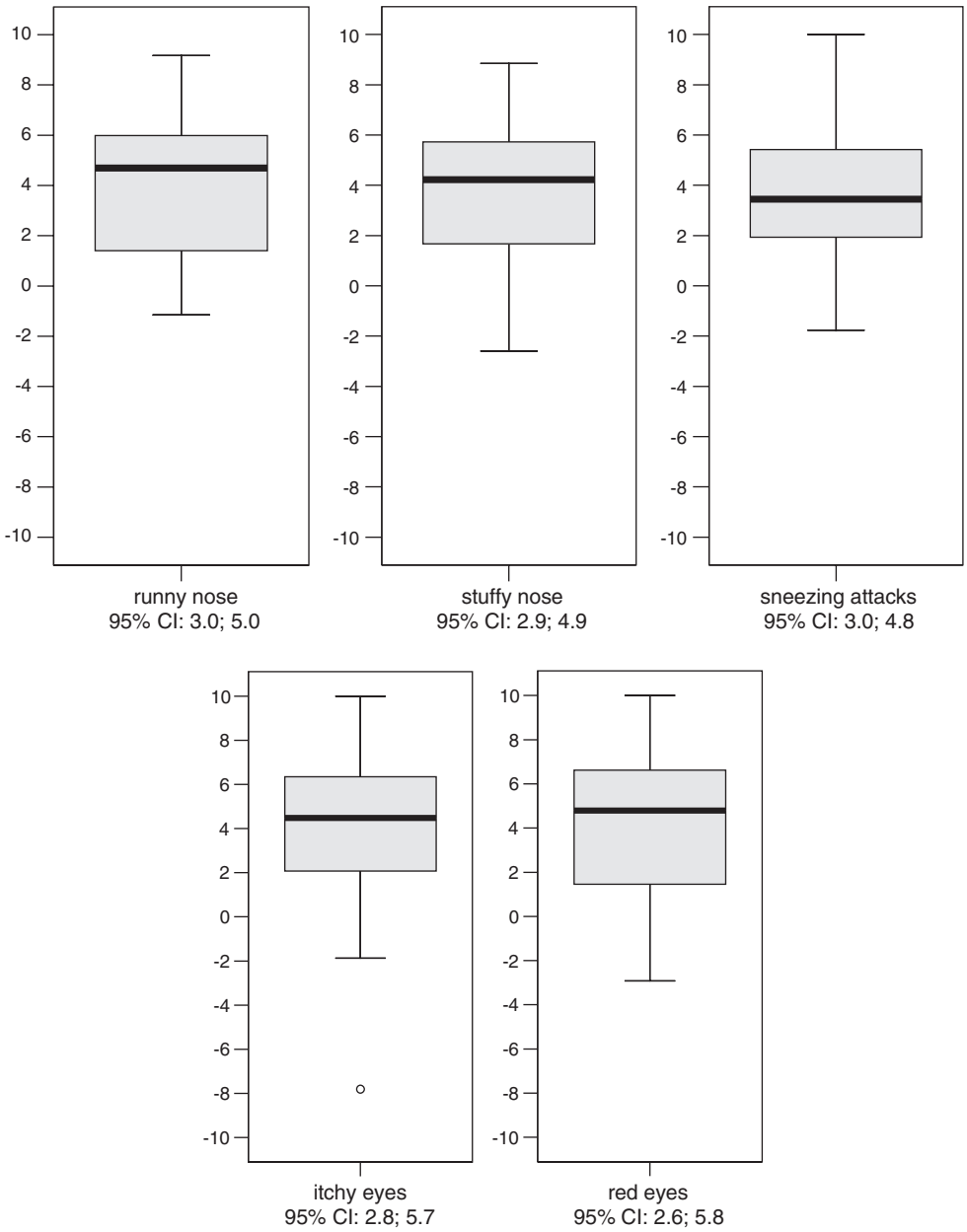

Fig. 2. Key symptoms: runny nose, stuffy nose, sneezing attacks, itchy and red eyes: improvement of VAS score during follow-up (Boxplots: >0 = improvement)

had noted additional allergens during their previous conventional therapy. None of the patients reported a dangerous incident resulting from homeopathic treatment.

Most differences between the type and severity of symptoms prior to homeopathic treatment and at the end of the follow-up period were quite distinctive with *p* values of <0.001, and leave no doubt that the improvement of the patients' health condition can be generalized. Long-term treatment of patients with chronic disease poses a major challenge for private practitioners; the extent of a real-life effect resulting from treatment, as typically measured in observational studies, is therefore of overriding importance to them. An effective treatment involving lower costs may also be economically beneficial for the healthcare system.

An important precondition for the feasibility of this study was that the heads of the medical centers had devoted many years to the study of homeopathy; this qualification is unfortunately rarely found in the medical profession. The safety of complementary treatment vitally depends on the orthodox medical practitioner's own knowledge of and experience with diagnostic and therapeutic measures.

It was difficult to assess the change in the number of allergens between the previous therapy and the trial period. With respect to the change in the number of allergens, the results obtained from a maximum follow-up period of 16 weeks cannot be directly compared to the patients' own reports of the previous course of disease throughout many years. The fact that the symptoms of disease clearly decreased towards the end of the follow-up period in all par-

ticipants is challenged by the complex debates about the alleged causes of such a clinically relevant benefit. In the real-life approach chosen for this study design, tools that maximize consistency and objectivity such as controls, randomization, or double-blinding were not available. As a result, there may be various factors underlying the documented improvement of symptoms. Among other things, treatment and attentive care (placebo effects) may have played a vital role in stimulating the patients' natural self-healing abilities. Specifically, it may be the result of patients dealing extensively with their disease and the underlying causes during the admission exam and follow-up exams. Other influencing factors may be the natural progression of disease, the fluctuation of symptoms (regression towards the mean), and patients responding in a certain way to do doctors a favor. The present study therefore fails to provide answers to the question as to which percentage of the success of therapy can eventually be ascribed to homeopathic interventions.

The outcome of the study is thus limited to clear indications that the entire set of measures taken, when combined with certain processes related or not related to these measures, will lead to a substantial improvement of allergic symptoms. In order to assess to what extent homeopathic remedies contribute to this success, further investigations with adequate designs will be needed.

Conclusion

The symptoms of patients undergoing homeopathic treatment were shown to improve substantially and conventional medication dosage could be substantially reduced. While the real-life effect that was assessed indicates that there is a potential for enhancing therapeutic measures and reducing healthcare cost, it does not allow to draw conclusions as to the efficacy of homeopathic treatment per se. Studies with an experimental design are required to elucidate the causes of identified real-life effects.

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Conflicts of interest

There are no conflicts of interest as this work has been accomplished without any external funding.

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