

## ORIGINAL PAPER

# Cost–benefit evaluation of homeopathic *versus* conventional therapy in respiratory diseases

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**Methods:** A retrospective observational study was conducted on 105 out of 233 patients suffering from chronic respiratory disease attending the Homeopathic Clinic of the Campo di Marte Hospital in Lucca (Tuscany, Italy) between October 1998 and May 2003. We assessed the cost of conventional medicinal products using Anatomic Therapeutic Chemical (ATC) classification, specific for the pathology in question, and the general costs in the year preceding the first appointment at the Homeopathic Clinic vs. the first and second year subsequent to homeopathic treatment. The costs of conventional drugs for a group of patients affected by asthma (8 patients) and recurrent respiratory infections (16 patients) with long term use of conventional medicine treated by homeopathy were compared with the expenses of conventional drugs of a matched group of 16 and 32 patients, respectively.

**Results:** Costs of pharmacological therapy specific for respiratory diseases were reduced by 46.3% ( $n = 105$ ) in the first year ( $P < 0.01$ ); and by 47.5% ( $n = 72$ ) in the second year ( $P < 0.01$ ) of homeopathic treatment. Reduction in general drug costs during homeopathic therapy was 42.4% in the first year ( $P < 0.01$ ); and –49.8 in the second year (N.S.). Costs for patients affected by chronic asthma showed a reduction in expenses of 71.1% for specific medicines relative to the group in homeopathic treatment vs. an increase of 12.3% in the group treated only with conventional drugs after the first year of follow-up and, respectively, a reduction of –54.4% for homeopathic treatment vs. +45.2% after the second year. For patients with recurrent respiratory infections we found a reduction of 35.8% in the homeopathic group in the first year, compared to an increase 8.6% of costs for specific drugs in the control group; in the second year the respective figures were –43.6% versus +7.8% in the control group.

**Conclusions:** Homeopathic treatment for respiratory diseases (asthma, allergic complaints, Acute Recurrent Respiratory Infections) was associated with a significant reduction in the use and costs of conventional drugs. Costs for homeopathic therapy are significantly lower than those for conventional pharmacological therapy. *Homeopathy* (2009) 98, 2–10.

**Keywords:** respiratory disease; asthma; recurrent respiratory infections; allergy; drug consumption; cost effectiveness; public sector; Italy; homeopathy

## Introduction

In recent years<sup>1</sup> there has been increased public interest in unconventional medicine, especially homeopathy. At the same time, however, all countries have experienced the need to reduce public spending and cut back on expenses for refundable treatment.

The report published by the Italian Drug Agency on conventional pharmaceutical expenses noted that in the period

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between January and September 2004 conventional pharmaceutical spending supported by the Italian National Health System (NHS) increased by 9.7% and that gross pharmaceutical spending increased by 10.2% compared to the same period of the previous year. The variable that had the greatest effect on the spending increase was a rise in consumption (number of prescriptions +7.3%; number of packs +6.0%; distributed daily doses +9.8%) and, to a lesser extent, consumption of higher priced drugs within the same category (+2.4%).

The report also noted an increase in drug consumption for the treatment of pathologies affecting the respiratory apparatus (expenses +15.8%; amount prescribed +22.1%) which in part reflects the NHS reintroduction of antihistamines in the spring of 2004.

Therefore, while public interest in unconventional medicine has increased due to supposed effectiveness and lower risks,<sup>2</sup> politicians have contemporaneously requested further studies on economic evaluation, as well as effectiveness, of unconventional therapies, on the basis of their assumed lower costs. From March to June 1996 the University of Erlangen conducted an epidemiological study<sup>3</sup> aimed at determining the socio-economic position of homeopathy in five European countries (Austria, Germany, Great Britain, Belgium and France). A randomized group of university directors, politicians, pharmaceutical industry representatives, publishers of scientific journals, general medicine as well as homeopathic doctors were interviewed. Overall, 40% of those interviewed were in favour of complete reimbursement of homeopathic therapy, 30% in favour of partial reimbursement. 50% of health directors and 42% of politicians supported public reimbursement of homeopathy and 55% of those interviewed considered homeopathy to be capable of reducing public health expenditure.

In medical literature there has been an increase in evaluation studies concerning the effectiveness and cost benefits of unconventional medicine,<sup>4-10</sup> many of these studies did not yield unequivocal conclusions. There are a number of ongoing European projects for health expense reimbursement that have integrated unconventional medicines, and there is an increasing need to verify the efficiency of these practices. The effectiveness of homeopathy is frequently underestimated in randomized and clinical trials,<sup>11,12</sup> especially compared to observational and quasi-experimental studies where overall evaluation criteria (cost-utility) are considered, such as quality of life, improvement of secondary symptoms, adverse effects and patient satisfaction<sup>5,10,13</sup>; criteria which are better adapted to treatment methods concerned with the condition of the patient as a whole.

### Aims of the study

The aims of this retrospective observational study are to evaluate whether use of homeopathic therapy modified the patients' use of conventional drugs and to quantify the variations in consumption-expense borne by the NHS and expenses supported by the patients themselves. The study involved a group of patients affected by respiratory diseases

receiving treatment at the Homeopathic Clinic in Lucca, Tuscany, Italy.

The specific objectives of the study are as follows:

- To describe the characteristics of the homeopathy population, identifying the complaints and pathologies treated;
- to describe and quantify the variations in consumption and expenses of conventional drugs during the course of homeopathic treatment compared to the before homeopathic treatment;
- to compare variations in consumption with those of a control group paired by age, sex, treating doctor, intensity of conventional treatment (as an indicator of the seriousness of the pathology), and geographical area of residence.

The study concerns the data relative to variation in the consumption of conventional drugs by patients registered at the Homeopathic Clinic at the Campo di Marte Hospital in Lucca between September 1998 and May 2003 and the expenses borne by the NHS.

### Setting

In Italy there are few examples of integration of unconventional medicine in the public sector. The Homeopathic Clinic of Lucca Local Health Authority 2 has been active at the Campo di Marte Hospital since 1998 and is the Reference Centre for Homeopathy in the Tuscan Region. A total of 1514 patients registered in the period between September 1998 and 31 December 2005. 27.7% suffered from respiratory diseases, particularly allergy. Data were recorded concerning age, sex, residence, occupation, type of pathology for which homeopathic treatment was requested, use of conventional therapy, previous use of homeopathic treatment, if applicable. WinC.H.I.P. (Computerized Homeopathic Investigation Program)<sup>14</sup> was used for data collection (anamnesis, use of drugs, etc.).

Approximately 44% patients returned for follow-up, with 17.3% of patients seen again after an interval of 2 months, 9.0% after 6 months and 7.0% of patients followed up after a year; the percentage of patients seen after 18 months was 2.2% and after 2 years 3.1%, whereas only 0.9% and 0.3% had a follow-up after 60 and 72 months, respectively. After 7 years 0.06% of patients were seen again after their initial visit.

A total of 42% of patients seen for pathologies affecting the respiratory apparatus returned for follow-up, of these 31.8% of patients were seen again after 2 months, 21.5% after 6 months, 19.8% were followed up after 1 year, 5.1% after 18 months, 12% after 2 years. The remaining 5.6% were treated after 36 months and 2.2% after 60 months. The effects of the therapy for respiratory diseases were evaluated in patients seen for follow-up, using the Glasgow Homeopathic Hospital Outcome Scale (GHHOS).<sup>15</sup> More recently we have adopted a visual analogue scale of symptoms (VAS).<sup>16</sup>

The cost of the visits are refunded in part by the public health system, patients payments are fixed and independent of income. The length of the appointment does not affect the cost, and is fixed at an average time of 30 min. The homeopathic prescription strategy consists in administering

a single remedy. Homeopathic treatment begins with fifty-millesimal dilutions (Q)<sup>17</sup> then if possible with a subsequent phase prescribing a single dose according to Hahnemann's centesimal scale (CH). All prescriptions given by one doctor with homeopathic experience, data collection and evaluation is carried out by a team of researchers including pharmacists and the homeopathic doctor, with the collaboration of the Institute of Statistics of the National Research Council, Milan.

## Methods

Patients affected by respiratory diseases and seen regularly between October 1998 and May 2003 were recruited for the study. Inclusion criteria were:

- At least two appointments at the Homeopathic Clinic, Local Health Authority 2, Lucca during the period of observation for the study;
- the appointments occurred with a minimum time interval of 2 months;
- they were residents or domiciled for healthcare purposes in the area of the Local Health Authority 2, Lucca.

These patients were identified by specific individual codes generated by the Pharmaceutical Operating Unit of Local Health Authority 2 in Lucca, and used for this particular study. On the basis of these codes, conventional drug consumption was monitored using the Pharmaceutical Prescription Archive of the Local Health Authority 2, recorded by the ARGO-CINECA Center of Casalecchio del Reno (Bologna), for at least one year preceding the start of homeopathic therapy for at least a year, and for at least 1 year after starting homeopathic treatment and up to 2 years when possible.

Evaluation was based on the effective drug costs for the health authority on the basis of the Prescribed Daily Dose (PDD). The monitored expense was that sustained by the

NHS (class A medication: generic and specialized drugs granted by the NHS). Both the specific therapeutic category, referred to the 4th level groups of the Anatomic Therapeutic Chemical (ATC) classification,<sup>18</sup> and general pharmacological consumption were monitored for 1 year before and at least one year after starting treatment.

The data were combined with a survey evaluating compliance to homeopathic therapy. This involved a questionnaire aimed at evaluating the consumption of conventional drugs and purchase trends for non-prescribed medicines, adverse effects, satisfaction and motivations for choosing the service.<sup>19</sup>

The patients recruited for the study were classified as chronic or occasional consumers; they were considered chronic if they had consumed at least 3 packs of specific drug classes (chemical/therapeutic subgroup) for the treatment of the pathology in question in the year preceding the start of homeopathic therapy. Patients were classified as suffering from episodic, light persistent, or moderate persistent asthma<sup>20</sup>; there were few cases of persistent serious asthma.

## Control group

In order to check that trends in pharmacological consumption were not due to a normal evolution of the pathology towards improvement or to spontaneous recovery, we performed a case control study (Figure 1). Homeopathic patients affected by chronic asthma and recurrent acute respiratory pathologies, using at least 3 packs of specific chronic chemical/therapeutic subgroup drug during 1 year, were compared with a non-homeopathic control group. The control group was formed on the basis of the identification codes for family doctors, GPs or pediatricians working for the public health system, who had referred patients recruited for the study. For each doctor all patients similar to the chronic patients recruited, were identified on the basis of the same

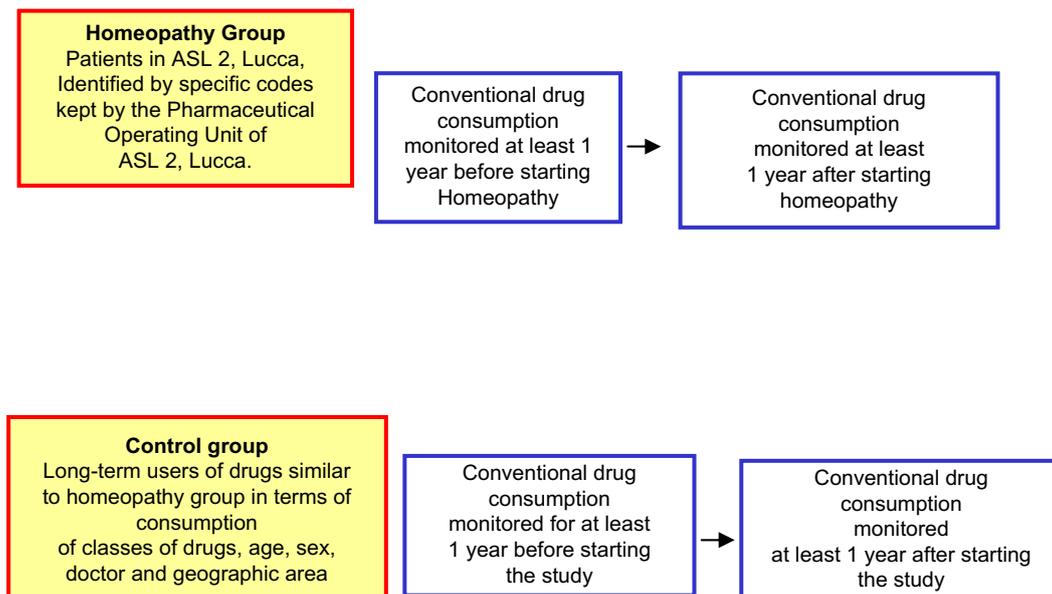


Figure 1 Case control design.

**Table 1** Baseline comparison between group of patients affected by asthma and recurrent respiratory infections treated by homeopathy and control group

	Male	Female	Average age	Mean number of packs of conventional drugs consumed in previous year
<i>Recurring episodes of respiratory infections</i>				
Homeopathy (n = 16)	50%	50%	6.88 (4–12)	7.31
Conventional therapy (n = 32)	50%	50%	7.06 (4–12)	7.90
<i>Asthma</i>				
Homeopathy (n = 8)	50%	50%	23.75 (6–48)	6.25
Conventional therapy (n = 16)	50%	50%	24.69 (5–55)	6.37

classes of drugs, age, sex, doctor and geographic area of (Table 1).

The control group was chosen randomly and formed of patients who had consumed a similar number of packs during the year before registration, but not using homeopathic treatment. Two control patients were compared to each patient recruited in the study according to a model already tested by ARGO–CINECA.

**Quality of homeopathic prescription**

Quality control of the homeopathic prescribing was done by peer review: the clinical data were sent to the *Associazione Lycopodium – Homeopathia Europea* of Florence, which expressed a positive technical judgment. Informed consent was obtained from all patients.

**Results**

**Patients**

105 (60 females: 57.14%; 45 males: 42.86%) of 233 patients regularly seen from October 1998 to May 2003 were recruited for the study. They were selected because resident or domiciled for healthcare purposes in the area of the Local Health Authority 2 in Lucca and were identified by specific individual codes. 67% of recruits had not previously used homeopathic therapy. At the time of their first appointment 87% of patients recruited were undergoing

conventional therapy. The majority of cases concerned allergic pathologies (asthma and allergic rhinoconjunctivitis) and pathologies of a recurrent chronic nature (Table 2). Of these 105 patients, 26% were treated for at least 2 years, 18% for at least 6 months, 19% completed follow-up a year after the first visit, 10% and 11% of patients continued follow-up until 18 months and 24 months, respectively; only 3% of patients registered were treated for ≥3 years.

As evaluated by the GHHOS and later VAS, no patients reported worsening of symptoms, 3 patients had no improvement, 9 patients reported a slight improvement (20–30%), 23 patients reported a consistent improvement (40–50%), 52 patients reported an almost complete regression of the symptom (improvement of 60–80%), and 18 patients reported resolution of the symptom.

The homeopathic medicines prescribed (Figure 2) were for the most part the so-called “polycrest”, prescribed on the basis of an overall evaluation of the patient’s conditions (e.g. *Natrum muriaticum*, *Natrum sulphuricum*, *Ignatia amara*, *Arsenicum album*, *Calcarea carbonica*, *Phosphorus*, *Mercurius solubilis*).

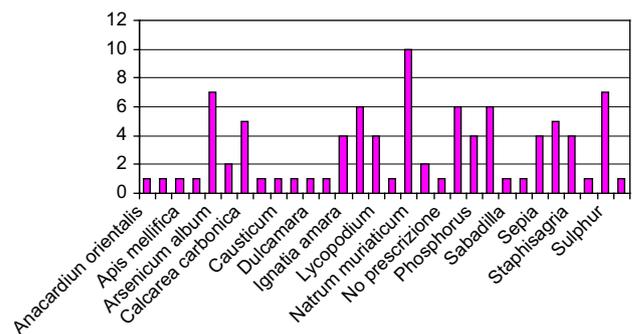
**Costs**

Expense variations were determined taking into account the different diagnoses, and the complete set of respiratory pathologies with regard both to the general consumption of drugs granted by the NHS, and the specific drug categories for each pathology in (Table 3).

In the case of bronchial and allergic asthma, expense variation for the specific chemical/therapeutic subgroup in the first year of homeopathic treatment was –72.96% ( $P < 0.01$ ,  $n = 28$ ) and in the second year was –68.20%

**Table 2** Patients with respiratory complaints seen regularly between October 1998 and May 2003 and patients recruited for the study

	Total patients	Eligible patients	Non-resident patients	Patients recruited
Allergic asthma	30	18	4	14
Bronchial asthma	30	17	3	14
Allergic rhinoconjunctivitis	55	24	4	20
Recurrent Otitis	20	10	3	7
Chronic bronchitis	7	5	1	4
Acute Recurrent Respiratory Infections	59	33	5	28
Recurrent Tonsillitis	19	10	0	10
Sinusitis	8	8	3	5
Nasal polyposis	4	3	1	2
Fever	1	1	0	1
Total	233	129	24	105



**Figure 2** Most frequently used remedies in treatment.

**Table 3** List of specific therapeutic categories according to 4th level groups of ATC classification for each respiratory condition

<i>Specific therapeutic categories for asthma</i>	
H02A → Systemic corticosteroids, plain	R01A → Decongestants and other nasal preparations for topical use
R03A → Drugs for obstructive airway syndromes – adrenergic inhalants	R03B → Other drugs for obstructive airway syndromes – glucocorticoids – anticholinergics – antiallergic agents
R03D → Other drugs for obstructive airway syndromes for systemic use – xanthinic derivatives – xanthinic and adrenergic derivatives – leukotriene receptor antagonists	R06A → Antihistamines for systemic use (costs monitored until November 2002)
<i>Specific therapeutic categories for allergic conditions</i>	
H02A → Systemic corticosteroids, plain	R01A → Decongestants and other nasal preparations for topical use
R03A → Drugs for obstructive airway syndromes – adrenergic inhalants	R03B → Other drugs for obstructive airway syndromes – glucocorticoids – anticholinergics – antiallergic agents
R03D → Other drugs for obstructive airway syndromes for systemic use – xanthinic derivatives – xanthinic and adrenergic derivatives – leukotriene receptor antagonists	R06A → Antihistamines for systemic use (costs monitored until November 2002)
S01G → Ophthalmologicals – decongestants and ophthalmic antiallergics	
<i>Specific therapeutic categories for acute recurrent infections</i>	
H02A → Systemic corticosteroids, plain	J01A → Antibacterials for systemic use – Tetracyclines
J01C → Antibacterials for systemic use – beta-lactam antibacterials, penicillins	J01D → Antibacterials for systemic use – other beta-lactam antibacterials
J01F → Antibacterials for systemic use – macrolides, lincosamides and streptogramins	J01G → Antibacterials for systemic use – Aminoglycosides
R03A → Drugs for obstructive airway syndromes – adrenergic inhalants	R03B → Other drugs for obstructive airway syndromes – glucocorticoids – anticholinergics – antiallergic agents
R06A → Antihistamines for systemic use (expenses monitored until November 2002)	R01A → Decongestants and other nasal preparations for topical use
J01M → Antibacterials for systemic use – quinolone antibacterials	JO5A → Antivirals for systemic use – direct acting antivirals

( $P < 0.01$ ,  $n = 20$ ). General costs were  $-54.62\%$  in the first year ( $P < 0.01$ ,  $n = 28$ ) and  $-66.50\%$  in the second year ( $n = 20$  patients).

For allergic pathologies (allergic asthma and allergic rhinoconjunctivitis) there was a reduction in cost for the chemical/therapeutic subgroup of  $-62.90\%$  in the first year ( $P < 0.01$ ,  $n = 34$ ) and  $-62.48\%$  in the second year ( $n = 24$ ). The general cost variation in the two groups was respectively  $-45.56\%$  and  $-59.60\%$ .

For recurrent acute infections (bronchitis, fever of undetermined etiology, otitis, tonsillitis, sinusitis, turbinate hypertrophy and nasal polyps) there was a reduction in cost for the specific chemical/therapeutic subgroup of  $-34.20\%$  in the first year ( $n = 57$ ), and  $-33.54\%$  in the second year ( $n = 38$ ). The general cost variation was  $-33.03\%$  in the first year and  $-34.61\%$  in the second year.

We also included patients with bronchitis of infective etiology and patients with fever of undetermined etiology in the group of recurrent acute respiratory infections. Considering the complete set of respiratory diseases, cost variation for the specific chemical/therapeutic subgroup recorded a decrease in the first and second year, of  $-46.29\%$  ( $P < 0.01$ ,  $n = 105$ ) and  $-47.45\%$  ( $n = 72$ ), respectively; the reduction was of  $-42.43\%$ , and  $-49.83\%$ , respectively for the general cost (Table 4).

Some cases were difficult to evaluate by applying the cost analysis scheme. For example, a child who started treatment at the age of 10 months for respiratory problems and subsequently developed asthmatic episodes for which he was treated first conventionally and then with homeopathy obtaining good results but after a longer time than that considered normal. Children, especially newborn sometimes

present aberrant data: for example in cases in which parents chose homeopathic therapy at the very beginning of the symptoms, in the period immediately following the use of conventional drugs, or in cases in which, thanks to the good state of health of the young patients (due to protective effect of breast-feeding, scarce contact with the community, etc.) in their first months of life preceding registration, homeopathic treatment did not produce variations in health-care costs.

For the non-homeopathic control group the cost trend was monitored by the same methods. For each patient of the control group the cost was calculated starting from the patient's date of registration for the homeopathic patient for whom she/he was the control. A telephone survey was conducted among these patients to check that they had not used homeopathic therapy.

From the cost data obtained for patients affected by bronchial and allergic asthma, a considerable reduction in cost was seen in the homeopathy compared to the control group: in the homeopathy group the cost for the specific chemical/therapeutic subgroup was reduced by  $-71.07\%$  in the first year, and  $-54.44\%$  in the second year, while an increase in cost of  $+10.99\%$  and of  $+31.14\%$  was observed in the latter. Patients treated with homeopathy reduced their overall pharmacological costs by  $-63.57\%$  in the first year, and  $-49.87\%$  in the second year, while the control group increased its monitorable general pharmacological costs by  $+3.84\%$  and  $+15.61\%$  in the first and second years, respectively.

Among the children below the age of 10 receiving homeopathic treatment for recurrent acute infections (rhinoconjunctivitis, fever of undetermined nature), tonsillitis,

**Table 4** Summary of variations in expenses (Friedman test)

	Mean cost for 1 year preceding homeopathic treatment	Mean cost for 1st year after homeopathic treatment (significance vs. baseline)	Mean cost for 2nd year after homeopathic treatment (significance vs. baseline)
<i>Costs of specific conventional therapy</i>			
Total respiratory conditions	€ 57.7	€ 31.0 <i>P</i> < 0.01	€ 30.3 <i>P</i> < 0.01
Asthma	€ 64.4	€ 17.4 <i>P</i> < 0.01	€ 20.5 <i>P</i> < 0.01
Allergic conditions	€ 49.8	€ 18.5 <i>P</i> < 0.01	€ 18.7 ns
Acute recurrent infections	€ 65.9	€ 43.3 ns	€ 43.8 ns
<i>Costs of general conventional therapy</i>			
Total respiratory conditions	€ 94.5	€ 54.4 <i>P</i> < 0.01	€ 47.4 ns
Asthma	€ 148.2	€ 67.2 <i>P</i> < 0.01	€ 49.6 <i>P</i> < 0.05
Allergic conditions	€ 135.5	€ 73.8 <i>P</i> < 0.05	€ 54.8 ns
Acute recurrent infections	€ 72.4	€ 48.5 ns	€ 47.4 ns

otitis, forms of influenza and parainfluenza, bronchitis, sinusitis, those who could be defined “chronic” were selected, i.e., those who consumed at least 3 packs a year of chemical/therapeutic subgroup drugs (16 patients). They were compared with an analogous control group (32 patients) in terms of consumption of chemical/therapeutic subgroup packs, age, sex, registration with the same GP, same geographical area of provenance (Table 5). Children with asthma (8 patients) with chronic consumption of conventional medicine and treated by homeopathic therapy were compared with a control group of 16 patients (Table 6). The reduction in cost was substantial. Use of homeopathy in children for recurrent acute respiratory infections was associated with a reduction in conventional pharmacological expenses of 50%.

For patients belonging to the control groups we also calculated the costs during the period of registration; those for homeopathic remedies were calculated on the basis of the prescriptions issued by the homeopathic clinic, the price considered was the average of the companies producing homeopathic remedies.

Data on the costs for single conventional drugs were compared both in the homeopathy treated patients and in the control group. The total costs for homeopathic therapy and conventional therapy for the group of recruited patients were also compared. The data show that both for the group of patients affected by asthma and for those affected by recurrent acute infections in childhood, the cost of conventional therapy in the control group is higher than the sum of the cost of conventional therapy and homeopathic therapy in the homeopathic patients (Table 6).

## Discussion

This preliminary data show a significant reduction in health expenditure for patients affected by respiratory diseases treated with homeopathic therapy. The most significant reduction was for allergic conditions and asthma in the first year of homeopathic treatment both for specific and general drugs classes. These results could indicate the positive impact of homeopathic therapy on health and on the psychophysical equilibrium of a person in general, and are encouraging in the context of pathologies with a multi-factorial etiology. The reduction in conventional pharmacological costs was maintained after two years of

homeopathic treatment. The data also show that the total cost of homeopathic plus conventional therapy is less conventional therapy only.

Most patients greatly reduced their use of conventional drugs, this supports the hypothesis that for certain types of pathologies of great social importance, an integrated approach is preferable.<sup>21</sup> This is the case for asthma, for example, for which there is an increase in incidence and severity of the illness despite pharmacological innovations in the international guidelines for diagnosis and therapy and implementation of specific educational.

In clinical practice homeopathy can be used in respiratory diseases with a chronic progression marked by recurring acute attacks both for preventive treatment (to reduce the intensity and frequency of attacks) and for treatment of acute attacks.

As far as infective or inflammatory pathologies (e.g. acute rhinopharyngitis) are concerned, a published study<sup>22</sup> has underlined an imbalance between acute prescriptions and preventive prescriptions, favouring the latter in the homeopathically treated patients which had fewer acute episodes and complications from the illness than the group treated with antibiotic therapy.

In our study we included a heterogeneous group of illnesses involving respiratory apparatus (allergic pathologies, recurring infections, medium and moderate asthma, etc.). Our aim was to evaluate both the overall trend of healthcare costs and the respiratory diseases which appear to be more sensitive to a reduction of conventional pharmacological costs when combined with homeopathic therapy.

This preliminary assessment was based solely on the objective results of reduction in health costs, in order to identify groups of pathologies which could best be investigated by comparative clinical studies. These would also include an evaluation of the effectiveness which we considered only marginally (on the basis of the subjective evaluation using the GHHOS).

The analysis of drug consumption borne by the NHS was determined with the aid of the pharmaceutical prescription archives of the Local Health Authority. The reliability of the costs sustained by the NHS revealed by the patient’s identifying code as an effective parameter for cost monitoring was confirmed by the data of a survey conducted<sup>18</sup> (*n* = 134), from which it emerged that in 95% of cases the medicine refundable by the NHS was reimbursed solely through the prescription of the family doctor.

**Table 5** Characteristics of patients affected by recurrent respiratory infections treated by homeopathy ( $n = 16$ ) compared with the control group ( $n = 32$ )

Homeopathy					Control				
Patient	Patol.	Sex	Year of birth	Drug consumption (packages/year)	Patient	Patol.	Sex	Year of birth	Drug consumption (packages/year)
N. 1	Ac.Rec. Res.In	M	1991	5	N. 1	Ac.Rec. Res.In	M	1991	12
N. 2	Rec.Ot	F	1994	13	N. 2	Ac.Rec. Res.In	M	1991	4
N. 3	Rec.RC	M	1994	6	N. 3	Ac.Rec. Res.In	M	1992	6
N. 4	Rec.Ton	M	1995	6	N. 4	Ac.Rec. Res.In	M	1994	10
N. 5	Ac.Rec. Res.In	M	1995	10	N. 5	Rec.Ot	F	1994	23
N. 6	Sin.	M	1995	18	N. 6	Rec.RC	M	1994	11
N. 7	Rec.Ot	F	1996	11	N. 7	Rec.RC	M	1995	6
N. 8	Ac.Rec. Res.In	F	1996	4	N. 8	Rec.RC	M	1995	6
N. 9	Ac.Rec. Res.In	F	1996	4	N. 9	Sin.	M	1995	16
N. 10	Ac.Rec. Res.In	F	1997	2	N. 10	Sin.	M	1995	14
N. 11	Ac.Rec. Res.In	F	1997	2	N. 11	Rec.RC	M	1995	7
N. 12	Ac.Rec. Res.In	F	1998	5	N. 12	Ac.Rec. Res.In	F	1995	5
N. 13	Rec.Ton	M	1998	7	N. 13	Ac.Rec. Res.In	M	1996	9
N. 14	Ac.Rec. Res.In	M	1998	8	N. 14	Rec.Ot	F	1996	14
N. 15	Rec.Ot	F	1999	5	N. 15	Rec.Ot	F	1996	16
N. 16	Ac.Rec. Res.In	M	1999	11	N. 16	Rec.Ot	F	1996	11
					N. 17	Ac.Rec. Res.In	F	1996	5
					N. 18	Ac.Rec. Res.In	F	1996	6
					N. 19	Rec.RC	M	1997	5
					N. 20	Ac.Rec. Res.In	F	1997	3
					N. 21	Ac.Rec. Res.In	F	1997	3
					N. 22	Ac.Rec. Res.In	F	1997	3
					N. 23	Ac.Rec. Res.In	F	1997	3
					N. 24	Ac.Rec. Res.In	F	1998	5
					N. 25	Ac.Rec. Res.In	F	1998	6
					N. 26	Rec.Ot	F	1998	5
					N. 27	Rec.Ot	F	1998	6
					N. 28	Rec.Ton	M	1998	8
					N. 29	Ac.Rec. Res.In	F	1998	3
					N. 30	Ac.Rec. Res.In	M	1998	7
					N. 31	Ac.Rec. Res.In	M	1998	7
					N.32	Ac.Rec. Res.In	M	1999	8

Ac.Rec.Res.In, Acute Recurrent Respiratory Infections; Rec.Ot, Recurrent Otitis; Rec.RC, Recurrent Rhinoconjunctivitis; Rec.Ton, Recurrent Tonsillitis; Sin, Sinusitis.

However, the cost data relative to class C medication and over the counter medicine are unsuited to this methodology but may be substantial, the responses to the questionnaire showed that the drugs purchased by approximately 62% of patients (83/134) are not refundable.

Comparison with the control group allows the influence of concomitant external factors on the data to be excluded, for example reduction in the price of drugs, regression to the mean etc. In cost monitoring we only considered the pharmacological aspect and its reduction; we could not calculate the cost of the medical visits as part of the total costs sustained by patients, since we did not have information

regarding the number of specialist visits, which were not homeopathic. The existence of clinics offering unconventional medical services in the public sector contributes to the reduction of costs sustained for the homeopathic visit, which, in the absence of specific data for the private sector, we believe in Tuscany to be around € 90.<sup>23</sup> At our homeopathic clinic the patients pay € 18.59 for appointments, as for all other specialist clinic appointments. The average cost of homeopathic remedies for recruited patients was calculated, considering that the mode of homeopathic prescription in our clinic is relatively standardized, and was on average € 35.76 per patient per year.

**Table 6** Characteristics of the group of patients with asthma treated by homeopathy ( $n=8$ ) compared with the control group ( $n=16$ )

Homeopathy				Control			
Patient	Sex	Year of birth	Drug consumption (packages/year)	Patient	Sex	Year of birth	Drug consumption (packages/year)
N. 1	F	1955	4	N. 1	F	1948	3
N. 2	F	1963	3	N. 2	F	1948	4
N. 3	F	1968	12	N. 3	F	1962	2
N. 4	M	1972	4	N. 4	F	1964	3
N. 5	M	1991	3	N. 5	F	1967	4
N. 6	M	1994	14	N. 6	M	1971	1
N. 7	M	1994	4	N. 7	M	1972	17
N. 8	F	1997	6	N. 8	F	1972	7
				N. 9	M	1989	3
				N. 10	M	1992	4
				N. 11	M	1993	13
				N. 12	M	1993	15
				N. 13	M	1994	5
				N. 14	M	1994	6
				N. 15	F	1996	8
				N. 16	F	1998	7

Drugs prescribed for side effects arising during conventional therapy affect overall drug purchase costs; our survey found that almost 50% of those who completed the questionnaire reported side effects from conventional drugs which were only resolved when treatment was stopped (in 59% of cases) or required additional pharmacological therapy (29%), this presumably led to an increase in general drug costs. This might explain the reduction for this cost parameter in patients treated with homeopathy in this study.

Case records which include all homeopathic patients treated at this clinic since 1998, show that adverse effects were observed only in 2.68% (12 adverse reactions out of 447 follow-ups in 181 patients).<sup>24</sup>

## Conclusion

In conclusion, homeopathic treatment therefore appears to be a valid therapy at least from the point of view of drug safety and costs. It is interesting also to evaluate the expectations of patients who seek homeopathic treatment: 44% were looking for a further possibility to treat their complaints by combining homeopathy treatment with conventional medicine, and 12% of cases reported that their motive was that their condition had not resolved with the pharmacological treatment they were receiving.

We hope that the interest of the scientific community for unconventional medicine will allow us to investigate the potential offered by such therapies and render this potential accessible.

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