European Psychiatry 28 (2013) 110–116

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Original article

Characteristics associated with use of homeopathic drugs for psychiatric symptoms in the general population

A. Grolleau [a,b], B. Bégaud [a,b], H. Verdoux [a,b,c,*]

[a] Université Victor-Segalen–Bordeaux-2, 33076 Bordeaux, France
[b] Inserm, U 657, 33076 Bordeaux, France
[c] Centre hospitalier Charles-Perrens, 121, rue de la Béchade, 33076 Bordeaux, France

ARTICLE INFO

Article history:
Received 12 October 2010
Received in revised form 25 October 2011
Accepted 28 October 2011
Available online 6 December 2011

Keywords:
Complementary and alternative medicine
Homeopathy
General population
Psychiatric symptoms
Anxiety

ABSTRACT

Objective: To explore which patient characteristics are associated in naturalistic conditions with the lifetime use of homeopathic treatment for psychiatric symptoms.
Method: Lifetime use of psychotropic treatment was explored in a sample of 36,785 persons, participating in the Mental Health Survey in the General Population. Characteristics associated with use of homeopathic treatments, associated or not with conventional psychotropic drugs, were explored using multivariate analyses.
Results: Use of homeopathic treatment for psychiatric symptoms was reported by 1.3% of persons. Younger age, female gender and high educational level were associated with use of homeopathy. Half of homeopathy users presented at least one Mini International Neuropsychiatric Interview (MINI) diagnosis, most frequently anxiety disorders. Their diagnostic profile was similar to that of persons reporting use of anxiolytics or hypnotics. Compared to persons with no lifetime use of psychotropic drugs, persons using homeopathy were more likely to present with a diagnosis of mood disorder or anxiety disorder. Compared to those using conventional psychotropic drugs, they presented less frequently with psychiatric disorders, with the exception of anxiety disorders.
Conclusion: Homeopathic treatment for psychiatric symptoms appears to be used mainly to reduce anxiety symptoms in the general population.

1. Introduction

The complementary and alternative medicines (CAMs) are now widely used in developed countries [2,6,17,21] and their use has grown since the 1990s [6,21]. The definition of CAMs covers an impressive variety of therapies. A Swiss study conducted in a representative sample from the canton of Zurich indicated that a large proportion of persons (22.6%) used CAMs involving a physical treatment and a more limited proportion of persons (7.2%) used CAMs in the form of oral medication, among whom most used homeopathy (5.3%) [21]. The annual prevalence of homeopathy use in the general population was estimated at 1.9% in Great Britain [23], 3.4% in the United States [6] and 4.3% in South Australia [17]. To our knowledge no published study has assessed the prevalence of homeopathy use in the French general population. A study carried out in workers of a French city found that 2.1% of participants reported use of homeopathy in the past week [13]. In France homeopathy can be obtained without a medical prescription and is partly reimbursed by the social security insurance when prescribed by a medical practitioner. Consultations with homeopathic physicians may be reimbursed at the same rate than consultations with general practitioners but in real practice, are often more expensive. The extra costs are reimbursed by some private insurances.

Studies examining persons using CAMs in representative samples from the general population showed that the main associated characteristic was to present with chronic health conditions, particularly mental health problems [6,7,11,12,18,25]. An American national telephone survey found that respondents reporting use of CAMs were significantly more likely to fulfill diagnostic criteria for at least one mental disorder than those who did not use this treatment (respectively, 21.3% *vs.* 12.8%) [25]. Studies on homeopathic general practitioners showed that their patients presented mainly with neurological and psychiatric diagnoses [24,26].

Few studies have evaluated the use of homeopathy for psychiatric symptoms in general population samples. A US study carried out in older adults from the general population found that

* Corresponding author. Tel.: +33 556 56 17 32; fax: +33 556 56 35 46.
E-mail address: helene.verdoux@u-bordeaux2.fr (H. Verdoux).

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doi:10.1016/j.eurpsy.2011.10.005

the prevalence of homeopathy use was not different in persons with self-reported anxiety or depression (1.0%) compared to persons who did not report these problems (0.6%) [11]. In an Australian postal survey, homeopathic practitioners indicated that their patients treated for depression received homeopathy mainly in association with another treatment such as conventional psychotropic treatment, psychotherapy and counseling [18].

The efficacy or the effectiveness of the CAMs for psychiatric symptoms is difficult to demonstrate [28]. In fact, few published studies have addressed these issues. Two randomized double-bind controlled trials comparing homeopathy versus placebo for anxiety symptoms did not show any difference between the placebo and homeopathy groups [4,5]. The difficulty to demonstrate the evidence basis for the use of psychotropic complementary medicine was pointed out by a review of the literature on the effectiveness of 20 complementary medicines (homeopathy not mentioned) [28]. According to another literature review on homeopathy for depression, several uncontrolled studies and observational studies indicated positive results, but the lack of control group prevented assessment of whether these results were solely due to the homeopathy [20].

To our knowledge, no prior study has assessed whether the demographic and clinical profiles of users of homeopathy differ from those of users of conventional psychotropic drugs. This issue has clinical and public health implications. It is of interest to better characterize which types of psychiatric disorders are presented by users of homeopathic drugs in order to assess the congruence between the need for care and the treatment. The benefit/risk ratio of being treated by homeopathic drugs alone, *i.e.* by drugs with a lack (or modest) efficacy but without adverse effects, is indeed different in persons with severe psychiatric disorders compared to persons with mild psychiatric disorders. Better knowledge of the characteristics of persons using homeopathic drugs instead of conventional psychotropic drugs for comparable psychiatric conditions may also be helpful to appraise the impact of public health decisions such as removal of homeopathic drugs from the list of drugs reimbursed by the social security.

The objective of the present study was to explore in a representative sample of the French general population the demographic and clinical profile of persons reporting a lifetime use of homeopathic treatment for psychiatric symptoms.

2. Method

2.1. Sample and evaluation

The present study was carried out using data collected in the French cross-sectional survey "Santé Mentale en Population Générale" (SMPG, Mental Health in the General Population survey). This study was approved by the Ethics Committee and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. The method has previously been described [3,9,16]. Around 900 participants were recruited in public places (streets, supermarkets, postal agencies, etc.) in 47 centres between 1999 and 2003. The participants fulfilled the following criteria: (i) informed consent to participate in the survey; (ii) aged 18 and over; (iii) non-institutionalized and non-homeless. Persons were selected by quota sampling stratified by age, gender, occupational and educational levels with the general population of the centre as the sampling frame. Data on the population structure of each centre were obtained from the 1999 French national census. Since the recruitment was based upon a quota sampling method, the next person fulfilling the inclusion criteria of the quota was selected when a person refused to participate in the survey. Hence, no information was available on persons who refused to participate.

Information was collected by 1700 nursing students using face-to-face interviews. In the current study, we used the data collected in metropolitan French centers on the following variables: (i) demographic characteristics; (ii) psychiatric diagnosis according to the criteria of the International Classification of Diseases version 10 (ICD-10) [30] assessed using the Mini International Neuropsychiatric Interview (MINI) [15] (Table 2 for the duration criteria of each diagnosis); (iii) lifetime treatment by psychotherapy explored by the question "Did you ever have psychotherapy?" and (iv) lifetime use of psychotropic drugs explored by an open question "Have you ever taken drugs for your nerves or head?"

Among the 37,063 individuals interviewed in metropolitan France, the answer to the question exploring use of psychotropic drugs was documented for 36,785 persons (99.2%). If the answer to that question was positive, the person was asked to specify the brand names of these drugs. The conventional psychotropic drugs were subsequently classified into the five following therapeutic classes according to the WHO Anatomical Therapeutic Chemical (ATC) classification system [29]: anxiolytics, hypnotics, antidepressants, mood stabilizers, antipsychotics and homeopathic drugs. Hence, treatments for neurological symptoms were not considered in the present study. However, considering how homeopathic drug are prescribed and used, the brand name gives little information on the underlying medical condition. Hence we have postulated in the present study that all homeopathic drugs reported to be used for "nerves or head" were actually used for psychiatric symptoms and not for neurological symptoms, as this question traduced in French makes mostly reference to psychological or psychiatric symptoms.

We had not enough information in the database to explore use of other CAMs such as for example phytotherapy. A category called "traditional remedies" was identified in the database, with 141 persons (0.4%) reporting use of such a treatment. However, no detailed information was available regarding which specific treatments were considered in this category, hence we chose not to consider these treatments in the present study.

To explore the characteristics associated with use of homeopathic drugs, four exclusive categories of reported lifetime psychotropic treatment were defined: the first category "homeopathic drug alone" was defined as including use of at least one homeopathic drug without use of conventional psychotropic drugs (anxiolytics, hypnotics, antidepressants, mood stabilizers and antipsychotics). The second category included persons who reported no lifetime use of psychotropic treatment. The third included lifetime use of conventional psychotropic drugs alone (*i.e.* without lifetime use of homeopathy). The fourth category included lifetime use of conventional psychotropic drugs and lifetime use of homeopathic drugs; since no information was collected on the date and the duration of drug use, these two types of drugs may have been used concurrently or at different times.

2.2. Statistical analyses

Analyses were performed using STATA 9.0 [22]. A national database was constituted by pooling the data collected in all sites [3]. The sample data were weighted to compensate for the disparities between the sample and the entire metropolitan French general population. Post-stratification weights were calculated and applied to the data in order to correct for imbalances regarding age, gender, occupational and educational levels between the total sample surveyed and the French metropolitan general population characteristics according to the 1999 national census. By pooling data collected in all sites, the hypothesis of a homogeneous geographical distribution was made and thus, the weights did not take into account the place of residence. All analyses were weighted by using the STATA "IWEIGHTS" procedure. Results of

descriptive analyses were expressed in absolute numbers and weighted percentages.

Logistic regressions yielding Odds Ratios (OR) and 95% two-sided Confidence Intervals (95% CI) were used to explore the associations between demographic factors and psychiatric diagnoses (independent variables) and type of psychotropic treatment (dependent variable). We first used univariate analyses to explore the demographics and clinical characteristics associated with use of homeopathic drug alone compared to the three other categories. We tested the hypotheses that there would be linear trends in the associations between age, educational level, monthly family income, and the type of psychotropic drug use, *i.e.* the older the person, or the higher the educational level or the monthly family income, the higher (or lower) the probability of having used a homeopathic drug only. To test these hypotheses, ORs for linear trend were calculated, giving the effect size of the increased probability of having used a homeopathic treatment only for moving from one category to the next. To determine which demographic and clinical characteristics were independently associated with the type of psychotropic drug used, we then entered into a multivariate model the variables found to be significantly associated in univariate analyses. Age, gender and marital status were *a priori* forced into the model.

3. Results

3.1. Characteristics of the sample

Persons with a documented answer to the question "Have you ever taken drugs for your nerves or head?" had a mean age of 47.1 years (SD: 18.5, range 18–100), 52.2% were female (n = 19,852), more than half were married (n = 19,943, 56.1%). Three persons out of four had finished secondary education and more (n = 28,038, 74.6%). Two persons out of three (n = 22,554, 62.1%) reported monthly family income higher than 1300 Euros.

3.2. Lifetime use of psychotropic treatment

The lifetime use of at least a psychotropic drug was reported by 36.3% of respondents (n = 13,133). The psychotropic drugs most frequently used were anxiolytics (n = 7041, 19.4%), antidepressants (n = 4200, 11.6%) and hypnotics (n = 3246, 9.2%). The same proportion of persons reported a lifetime use of homeopathic drugs (n = 512, 1.3%) or antipsychotic drugs (n = 474, 1.3%). Use of homeopathic drugs only was reported by 358 persons (0.9%). Few persons reported a lifetime use of mood stabilizers (n = 161, 0.4%).

3.3. Demographics characteristics associated with use of homeopathy: univariate analyses

Table 1 shows the findings of univariate analyses exploring the demographic characteristics associated with the type of psychotropic treatment reported. Compared to persons not using psychotropic drugs, persons using homeopathic treatment alone for psychiatric symptoms were more frequently of female gender, were younger and had a higher educational level. Similar findings were found when persons using homeopathic treatment alone were compared to persons using conventional psychotropic drugs alone. These two groups also differed by a higher monthly family

Table 1
Demographic factors associated with use of homeopathic drugs alone for psychiatric symptoms compared to no use of psychotropic treatment or use of other psychotropic treatments (univariate analyses).

	Homeopathic drugs alone (n = 358, 0.9 %)[b]		No psychotropic drugs (n = 24,870, 67.0 %)[b]		Conventional psychotropic drugs[a] alone (n = 11,403, 31.7 %)[b]		Homeopathic drugs and conventional psychotropic drugs[a] (n = 154, 0.4%)[b]	
	n	(weighted %)	n	(weighted %)	n	(weighted %)	n	(weighted %)
Female	250	(68.9)	12,167	(46.8)	7320	(62.9)	115	(72.7)
Male	108	(31.1)	12,703	(53.2)	4083	(37.1)	39	(27.3)
OR (95 % CI), P[c]			0.4 (0.3–0.5)	$P<0.0001$	0.8 (0.6–1.0)	$P=0.04$	1.2 (0.8–1.9)	$P=0.43$
Age (years)								
18–29	166	(38.7)	6951	(23.7)	1912	(13.8)	56	(31.5)
30–44	99	(29.2)	7158	(28.6)	3136	(26.8)	59	(39.9)
45–64	68	(19.4)	6849	(27.7)	4009	(34.9)	24	(17.1)
65 and over	25	(12.7)	3912	(20.0)	2346	(24.5)	15	(11.5)
OR for linear trend[d] (95% CI), P			0.7 (0.6–0.8)	$P<0.0001$	0.5 (0.4–0.6)	$P<0.0001$	1.0 (0.8–1.2)	$P=0.83$
Marital status[e]								
Married	195	(56.3)	13,699	(57.4)	5963	(53.3)	86	(59.0)
Single, separated, widowed	161	(43.7)	10,947	(42.6)	5366	(46.7)	68	(41.0)
OR (95 % CI), P[c]			1.0 (0.8–1.3)	$P=0.73$	0.9 (0.7–1.1)	$P=0.35$	1.1 (0.7–1.7)	$P=0.60$
Education level[f]								
≤ Primary level	40	(11.6)	5516	(23.6)	3173	(29.7)	18	(11.5)
Secondary level	185	(59.0)	12,212	(52.7)	5448	(50.5)	86	(61.9)
University level	133	(29.4)	7142	(23.7)	2782	(19.8)	50	(26.6)
OR for linear trend[d] (95% CI), P			1.5 (1.2–1.7)	$P<0.0001$	1.8 (1.5–2.1)	$P<0.0001$	1.1 (0.8–1.5)	$P=0.66$
Monthly family income[e]								
< 1300 Euros	114	(33.6)	8562	(35.7)	4582	(42.7)	51	(34.0)
1300 to 2500 Euros	158	(47.5)	10,096	(41.9)	4325	(38.6)	67	(45.8)
> 2500 Euros	74	(18.9)	5569	(22.4)	2233	(18.7)	32	(20.2)
OR for linear trend[d] (95% CI), P			1.0 (0.8–1.1)	$P=0.74$	1.2 (1.0–1.4)	$P=0.03$	1.0 (0.7–1.3)	$P=0.89$

[a] Conventional psychotropic drugs: anxiolytics, hypnotics, antidepressants, mood stabilizers and antipsychotics.
[b] The sample data were weighted to compensate for the disparities between the sample and the entire metropolitan French general population.
[c] Odds Ratios (two-sided 95% Confidence Interval) giving the probability associated with each characteristic of using homeopathy alone compared to each of the other treatment categories.
[d] Gives the effect size of the increased probability of having used a treatment other than the reference category (homeopathic drug only) for moving from one tertile or quartile to the next.
[e] For these characteristics, numbers lower than total number of subjects are due to missing data.
[f] Educational level categorized into ≤ primary level: ≤ 5 years of education; secondary level: ≤ 12 years of education; university level: > 12 years.

Table 2
MINI diagnoses according to type of psychotropic treatment: frequencies of persons presenting with the diagnosis among persons reporting lifetime use of each type of drug.

	Type of treatment[a]						
	Homeopathy (n = 512; 1.3%)[b]	Anxiolytics (n = 7041; 19.4%)[b]	Hypnotics (n = 3246; 9.2%)[b]	Antidepressants (n = 4200; 11.6%)[b]	Mood stabilizers (n = 161; 0.4%)[b]	Antipsychotics (n = 474; 1.3%)[b]	No treatment (n = 23,652; 63.7%)[b]
MINI diagnoses[c]	(weighted %)						
Mood disorder	**21.3**	**26.5**	**22.2**	**36.7**	**45.1**	**46.4**	**7.2**
Major depressive disorder	19.8	21.0	17.7	28.7	33.9	33.1	6.0
Dysthymia	1.6	5.4	5.0	8.7	5.8	8.1	1.0
Manic episode	2.1	3.6	3.0	4.5	17.4	16.2	0.7
Anxiety disorder	**38.4**	**38.2**	**32.2**	**44.0**	**47.0**	**48.9**	**14.0**
Agoraphobia	4.1	4.6	3.1	5.8	8.8	9.8	1.1
Panic disorder	7.7	10.5	7.5	12.8	15.1	19.0	1.6
Panic disorder with agoraphobia	0.4	1.4	0.7	1.8	2.2	2.8	0.2
Social phobias	10.8	7.4	6.2	7.7	15.6	10.5	2.9
Generalized anxiety disorder	20.5	20.7	18.4	24.1	18.9	20.5	8.7
Post-traumatic stress disorder	0.6	1.1	1.6	1.3	4.0	2.9	0.5
Alcohol problem	**3.1**	**5.5**	**5.8**	**5.4**	**8.5**	**9.7**	**3.7**
Substance use disorders	**3.0**	**3.2**	**3.1**	**3.2**	**6.2**	**8.5**	**2.2**
Psychotic disorders	**2.7**	**4.5**	**4.3**	**5.9**	**19.1**	**29.8**	**1.5**
At least one of these diagnoses	**49.5**	**51.3**	**44.9**	**59.2**	**62.4**	**72.2**	**22.4**

[a] Categories of treatment were not exclusive, i.e. a person could have used several types of treatment.
[b] The sample data were weighted to compensate for the disparities between the sample and the entire metropolitan French general population.
[c] Duration criteria for the MINI diagnoses: Major depressive disorder: past 2 weeks; Recurrent major depressive disorder: lifetime; Dysthymia: past 2 years; Manic episode: lifetime; Agoraphobia, Panic disorder; Social phobias, Post-traumatic stress disorder: current; Generalized anxiety disorder: past 6 months; Alcohol and other substances use disorders: past 12 months; Psychotic disorders: lifetime. Significant results are indicated in bold text.

income in persons using homeopathic treatment. Persons using homeopathic treatment alone did not differ from those using homeopathic treatment and conventional psychotropic drugs.

3.4. Clinical characteristics associated with use of homeopathy: univariate analyses

The percentage of persons reporting use of psychotherapy was higher in persons with homeopathic drug use alone (12.8%) compared to persons with no psychotropic drug use (3.9%), and lower compared to persons with conventional psychotropic use alone (21.6%) and persons with use of homeopathic drugs and conventional psychotropic drugs (18.2%).

Table 2 shows MINI diagnoses identified in persons according to reported psychotropic treatment used. Comorbidities were not taken into account, *i.e.* frequencies of psychotropic drug use were reported for each diagnosis, regardless of other associated diagnoses. Half of the persons who reported having used at least one homeopathic drug presented at least one MINI diagnosis. This proportion was twice that found in persons who did not report use of psychotropic treatment, and comparable to that observed in persons reporting use of anxiolytics or hypnotics. Persons using homeopathy also had a similar MINI diagnostic profile to those reporting use of anxiolytics: more than one-third presented with at least one MINI diagnosis of anxiety disorder, the most frequent being generalized anxiety disorder, which was diagnosed in one out of five persons. They also had a similar frequency of MINI diagnosis of major depressive disorder.

Table 3 shows the associations between the type of psychotropic treatment reported and the broad categories of MINI diagnoses. Compared to persons not using psychotropic drugs, persons using homeopathic treatment alone for psychiatric symptoms more frequently presented with at least one MINI diagnosis, with a diagnosis of mood disorder or anxiety disorder. Compared to persons using conventional psychotropic drugs alone or with homeopathic treatment, persons using homeopathy were less likely to present any MINI diagnosis except anxiety disorders.

3.5. Characteristics associated with use of homeopathy: multivariate analyses

All demographic and clinical variables were entered into a multivariate model in order to identify variables independently associated with use of homeopathy. Compared to no lifetime use of psychotropic drugs, characteristics independently associated with use of homeopathic treatment alone were being a female (OR = 2.5, 95% CI 1.7–3.3), being younger (OR for linear trend = 0.8, 95% CI 0.7–0.9), having a higher educational level (OR for linear trend = 1.3, 95% CI 1.0–1.6), having a diagnosis of mood disorder (OR = 1.9, 95% CI 1.3–2.6) or a diagnosis of anxiety disorder (OR = 2.6, 95% CI 2.0–3.4), and not having a diagnosis of alcohol disorder (OR = 0.4, 95% CI 0.2–0.9).

Compared to use of conventional psychotropic drugs alone, characteristics independently associated with use of homeopathic treatment alone were being a female (OR = 1.3, 95% CI 1.0–1.7), being younger (OR for linear trend = 0.5, 95% CI 0.4–0.7), and not having a MINI diagnosis of mood disorder (OR = 0.7, 95% CI 0.5–0.9), alcohol disorder (OR = 0.3, 95% CI 0.1–0.6), or psychotic disorder (OR = 0.4, 95% CI 0.2–0.8). The association with education level and monthly family income were no longer significant in multivariate analyses.

Lastly, characteristics independently associated with use of homeopathic treatment alone versus conventional psychotropic drugs and homeopathic drugs were only not having a diagnosis of mood disorders (OR = 0.6, 95% CI 0.3–1.0) or a diagnosis of alcohol disorder (OR = 0.3, 95% CI 0.1–0.9).

Since age was predicting use of homeopathy we further explored using stratified multivariate analyses whether the associations with other characteristics differed in younger versus older persons. Age was categorized according to the median in the sample into less or equal to 45 years versus more than 45 years. In younger persons, few changes were observed compared to the analyses performed in the whole sample. Educational level was no longer associated with use of homeopathic treatment alone compared to no lifetime use of psychotropic drugs. Conversely, having a higher educational level became significantly associated with use of homeopathic treatment alone (OR for linear trend = 1.3,

Table 3
MINI diagnoses associated with use of homeopathic drugs alone for psychiatric symptoms compared to no use of psychotropic treatment or use of other psychotropic treatments (univariate analyses).

	Homeopathic drugs alone (n = 358, 0.9 %)[b]		No psychotropic drugs (n = 24,870, 67.0 %)[b]		Conventional psychotropic drugs[a] alone (n = 11,403, 31.7 %)[b]		Homeopathic drugs and conventional psychotropic drugs[a] (n = 154, 0.4%)[b]	
	n	(weighted %)	n	(weighted %)	n	(weighted %)	n	(weighted %)
Mood disorder	66	(17.8)	2000	(7.8)	2922	(25.4)	43	(29.5)
OR (95 % CI), P[c,d]			**2.5 (1.8–3.4)**	**P < 0.0001**	**0.6 (0.4–0.9)**	**P = 0.004**	**0.5 (0.3–0.9)**	**P = 0.016**
Anxiety disorder	134	(36.7)	3833	(14.8)	4107	(35.3)	65	(42.5)
OR (95 % CI), P[c,d]			**2.9 (2.2–3.7)**	**P < 0.0001**	0.9 (0.7–1.1)	P = 0.368	0.8 (0.5–1.2)	P = 0.239
Alcohol problem	8	(1.9)	977	(3.8)	642	(5.3)	9	(6.0)
OR (95 % CI), P[c,d]			0.5 (0.2–1.1)	P = 0.106	**0.2 (0.1–0.6)**	**P = 0.001**	**0.2 (0.1–0.6)**	**P = 0.004**
Substance use disorders	11	(2.6)	632	(2.2)	400	(3.0)	6	(4.0)
OR (95 % CI), P[c,d]			1.1 (0.6–2.1)	P = 0.751	**0.4 (0.2–0.9)**	**P = 0.016**	0.5 (0.2–1.6)	P = 0.260
Psychotic disorders	7	(1.7)	426	(1.6)	559	(4.8)	9	(5.3)
OR (95 % CI), P[c,d]			1.1 (0.5–2.3)	P = 0.873	**0.3 (0.1–0.7)**	**P = 0.004**	**0.3 (0.1–0.9)**	**P = 0.033**
At least one of these diagnoses	169	(45.8)	6071	(23.6)	5627	(48.8)	91	(58.7)
OR (95 % CI), P[c,d]			**2.5 (1.9–3.2)**	**P < 0.0001**	**0.7 (0.6–0.9)**	**P = 0.020**	**0.6 (0.4–0.9)**	**P = 0.011**

[a] Conventional psychotropic drugs: anxiolytics, hypnotics, antidepressants, mood stabilizers and antipsychotics.
[b] The sample data were weighted to compensate for the disparities between the sample and the entire metropolitan French general population.
[c] Odds Ratios (95% Confidence Interval) giving the probability associated with each characteristic of using homeopathy alone compared to each of the other treatment categories. Significant results are indicated in bold text.
[d] Analyses adjusted on sex, age, marital status, education level and monthly family income.

95% CI 1.1–1.7) compared to use of conventional psychotropic drugs alone. The strengths and direction of the other associations were unchanged (data not shown). In persons older than 45 years, several associations were no longer significant. Diagnosis of alcohol disorder was no longer associated with use of homeopathic treatment alone compared to no lifetime use of psychotropic drugs. No significant associations were found regarding the comparison of use of homeopathic treatment alone to use of conventional psychotropic drugs alone or with homeopathic treatment.

4. Discussion

4.1. Significant outcomes

Few persons (1.3%) reported a lifetime use of homeopathic drugs for psychiatric symptoms. Younger age, female gender and high educational level were associated with use of homeopathy. Half of the persons using these drugs presented at least one MINI diagnosis. More than one-third presented with at least one MINI diagnosis of anxiety disorder, the most frequent being generalized anxiety disorder. Their diagnostic profile was similar to those of persons reporting use of anxiolytics. Compared to persons with no lifetime use of psychotropic drugs, persons using homeopathic drugs were more likely to present with a diagnosis of mood disorder or anxiety disorder. Compared to those using conventional psychotropic drugs, they presented less frequently with most psychiatric disorders, with the exception of anxiety disorders. The associations with demographic and clinical characteristics were stronger in younger persons.

4.2. Methodological limitations

The fact that the participants were recruited in public places may have favoured the exclusion of persons with severe psychiatric disorders. Such a bias may have contributed to underestimate the prevalence of psychotropic drugs use. However, in a previous study conducted in the same population [10], we showed that the prevalence of psychotropic drugs use was similar to that those found in other studies carried out in France [8,14]. Furthermore, this bias is unlikely to have modified the pattern of association between diagnoses and type of psychotropic drug use. As information on psychotropic medication was restricted to self-reported lifetime use, a memory bias might be present, particularly for treatments used several years ago. Furthermore, some persons may not have reported use of homeopathic drugs when answering the question "Have you ever taken drugs for your nerves or head?" since they did not consider or were not informed by the prescriber that the treatment was for this purpose. Such a bias may have contributed to a misclassification of these persons in the other treatment groups, which may have contributed to reducing rather than to increasing the differences between the groups. Since no information was available on the specific condition underlying use of homeopathic drugs, people who answered "Yes" to the question "Have you ever taken drugs for your nerves or head" might have done so for neurologic symptoms or headache. This bias may also have contributed to attenuate the strengths of the associations between use of homeopathic drugs and psychiatric diagnoses. Lastly, no information was available regarding duration or whether the treatment was concomitant or not with the occurrence of psychiatric symptoms. Hence, we had no direct information regarding which psychiatric disorder was actually present when a given psychotropic treatment was used and vice versa. However, as this limitation was the same for all psychotropic drugs, it is unlikely that it may have modified the direction of the associations.

4.3. Interpretation of findings

As no prior study explored the prevalence and characteristics associated with the use of homeopathy for psychiatric symptoms in the general population, we can compare our findings only with those obtained by studies exploring CAM use in general. The prevalence of lifetime use of homeopathy for psychiatric symptoms of 1.3% is consistent with the findings of the single study carried out in French workers (2.1%) [13]. It is lower than the 5.3% prevalence of homeopathy use in the Zurich study, which included use irrespective of the motive for treatment reported [21]. According to these estimates, it may be assumed that among homeopathy users, about one out of five persons uses it to treat psychiatric symptoms. However, comparisons with data from

other countries should be made with caution as the French context (conditions for the delivering of drugs, high level of psychotropic drug use) is particular [27].

Consistent with other findings [6,17,19,21], we found that users of homeopathy for psychiatric symptoms were more likely to be female compared to persons who did not use psychotropic drugs or used only conventional psychotropic drugs. This may be due to the fact that gender influences health and help-seeking behaviour. For example, the South Australian Health Omnibus Survey (SAHOS) indicated that women were more likely than men to visit CAMs practitioners, including homeopaths [17]. However, the US telephone household survey on the 12-month use of CAMs to treat anxiety attacks and severe depression found no association between gender and use of CAMs [12]. Findings on age are more divergent. Consistent with our findings, the SAHOS study found an association between being younger and use of CAMs [17]. Some studies found no association [12,19], while others found that middle-aged people reported higher rates of use than those either older or younger [6,7]. The association with younger age may be explained by the fact that the present study focused on treatment for psychiatric symptoms, as the most prevalent psychiatric disorders have an onset during early adulthood. However, a memory bias (more important in older people using a lot of drugs than in the younger one) may explain the inverse relationship found with age in the present study. In accordance with our findings regarding education, having a higher educational level was associated with a higher probability of CAM use in some studies [6,17,19] although some other studies found no association [12,21]. In a previous study conducted in persons from the same sample presenting with recurrent major depressive disorder, we reported that persons with a high educational level were less likely to use a psychotropic treatment [9]. Persons with high educational level may be more informed about the side effects of conventional psychotropic drugs and hence more likely to search for alternative treatments as suggested by Mac Lennan and collaborators [17].

We found that persons using homeopathy for psychiatric symptoms were significantly more likely to fulfil the diagnostic criteria for at least one mental disorder. These results are consistent with those of a US household telephone survey showing that persons reporting use of CAMs for "emotional, mental health, alcohol or drug abuse problem" in the past 12 months were 1.7 times more likely to present with at least one mental disorder among generalized anxiety disorder, major depression, dysthymia, panic disorder or severe mental disorders assessed using a structured diagnostic interview [25]. In the present survey, homeopathy users were 2.5 times more likely to present with mood disorder and nearly three times more likely to present with anxiety disorder compared to persons not using psychotropic drugs. Remarkably, users of homeopathy had a MINI diagnosis profile similar to that of users of anxiolytics or hypnotics. Furthermore, the prevalence of anxiety disorders was comparable among persons using homeopathy alone, conventional drugs alone, or a combination of both treatments. These findings suggest that homeopathy may be mainly used to treat anxiety symptoms. In the same perspective, a US study showed that the use of CAMs was higher among older persons with self-reported anxiety or depression relative to those without these conditions (34.9% *vs.* 26.5%) [11]. The presence of anxiety disorder was identified as the most frequent mental health disorder encountered in the practice of alternative medicine practitioners [18,24]. The Swiss study found a strong association between the subscale autonomic lability of the Freiburg Personality Inventory (FPI) and the use of CAMs, suggesting that users of CAMs were more likely to be vulnerable to nervousness and depressiveness [21].

The demographic profile of persons who used homeopathy and at least one conventional psychotropic drug was similar to that of those who used a conventional psychotropic drug alone. These two groups also reported a similar frequency of treatment by psychotherapy while such a treatment was less frequent in persons using homeopathic drugs alone. Several studies have suggested that the use of homeopathy is often used as an adjunct rather than as a substitute to conventional psychotropic drugs or other prescribed treatments such as psychotherapy [12,18,25]. In a German cross-sectional study on the psychiatric labelling, beliefs, help-seeking and treatment recommendations about persons with diagnostic of schizophrenia or depression, one out of three persons from the general population recommended natural remedies for both diagnoses and the same proportion recommended psychotropic drugs for depression [1]. Eisenberg and collaborators [7] found that users of CAMs of whatever type were more likely to see a medical doctor rather than a provider of CAMs for conditions such as anxiety, headaches or chronic pain. However, many persons did not mention the use of CAMs to their medical doctor, suggesting that, in general practice, many patients used both treatments. It has been suggested that using homeopathy as an adjunct to conventional treatments may help patients to accept and to improve their anxiety symptoms in general practice [28].

In conclusion, homeopathic treatment for psychiatric symptoms appears to be used mainly to reduce anxiety symptoms in the general population. Further studies are necessary to assess the pathways to homeopathic treatment for psychiatric symptoms in the general population, particularly in persons suffering from anxiety disorders.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Acknowledgments

This survey was carried out by the WHO collaborative Center for Research and Formation in Mental Health (Lille, France). The first phase was funded by the French Ministry of Foreign Affairs, the French Ministry of Health, WHO, the Health Systems Research for Reproductive Health and Health Care Reforms in the Eastern and Southern African Region and Synthelabo and SmithKline & Beecham. The second phase was funded by the French Ministry of Health. The complete list of Centre Coordinators is available upon request.

References

[1] Angermeyer MC, Holzinger A, Matschinger H. Mental health literacy and attitude towards people with mental illness: a trend analysis based on population surveys in the eastern part of Germany. Eur Psychiatry 2009;24(4):225–32.
[2] Assion HJ, Zarouchas I, Multamaki S, Zolotova J, Schroder SG. Patients' use of alternative methods parallel to psychiatric therapy: does the migrational background matter? Acta Psychiatr Scand 2007;116(3):220–5.
[3] Bellamy V, Roelandt J, Caria A. Troubles mentaux et représentations de la santé mentale : premiers résultats de l'enquête Santé Mentale en Population Générale. Études et résultats, Direction de la Recherche, des études, de l'évaluation et des statistiques 2004;347:1–12.
[4] Bonne O, Shemer Y, Gorali Y, Katz M, Shalev AY. A randomized, double-blind, placebo-controlled study of classical homeopathy in generalized anxiety disorder. J Clin Psychiatry 2003;64(3):282–7.
[5] Cialdella P, Boissel JP, Belon P. Homeopathic specialties as substitutes for benzodiazepines: double-blind vs. placebo study. Therapie 2001;56(4):397–402.
[6] Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M, et al. Trends in alternative medicine use in the United States, 1990–1997: results of a follow-up national survey. JAMA 1998;280(18):1569–75.
[7] Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR, Delbanco TL. Unconventional medicine in the United States. Prevalence, costs, and patterns of use. N Engl J Med 1993;328(4):246–52.
[8] Gasquet I, Negre-Pages L, Fourrier A, Nachbaur G, El-Hasnaoui A, Kovess V, et al. Psychotropic drug use and mental psychiatric disorders in France; results

of the general population ESEMeD/MHEDEA 2000 epidemiological study. Encephale 2005;31(2):195–206.
[9] Grolleau A, Cougnard A, Begaud B, Verdoux H. Congruence between diagnosis of recurrent major depressive disorder and psychotropic treatment in the general population. Acta Psychiatr Scand 2008;117(1):20–7.
[10] Grolleau A, Cougnard A, Begaud B, Verdoux H. Psychotropic drug use and correspondence with psychiatric diagnoses in the mental health in the general population survey. Encephale 2008;34(4):352–9.
[11] Grzywacz JG, Suerken CK, Quandt SA, Bell RA, Lang W, Arcury TA. Older adults' use of complementary and alternative medicine for mental health: findings from the 2002 National Health Interview Survey. J Altern Complement Med 2006;12(5):467–73.
[12] Kessler RC, Soukup J, Davis RB, Foster DF, Wilkey SA, Van Rompay MM, et al. The use of complementary and alternative therapies to treat anxiety and depression in the United States. Am J Psychiatry 2001;158(2):289–94.
[13] Lapeyre-Mestre M, Chastan E, Louis A, Montastruc JL. Drug consumption in workers in France: a comparative study at a 10-year interval (1996 versus 1986). J Clin Epidemiol 1999;52(5):471–8.
[14] Lecadet J, Vidal P, Baris B, Vallier N, Fender P, Allemand H, et al. Médicaments psychotropes : consommation et pratiques de prescription en France métropolitaine. II. Données régionales, 2000. Rev Med Assurance Maladie 2003; 34:233–48.
[15] Lecrubier Y, Sheehan D, Weiller E, Amorin P, Bonora I, Sheehan K, et al. The Mini International Neuropsychiatric Interview (MINI). A short diagnostic structured interview: reliability and validity according to the CIDI. Eur Psychiatry 1997;12:224–31.
[16] Leray E, Camara A, Drapier D, Riou F, Bougeant N, Pelissolo A, et al. Prevalence, characteristics and comorbidities of anxiety disorders in France: Results from the "Mental Health in General Population" Survey (MHGP). Eur Psychiatry 2011;26:339–45.
[17] MacLennan AH, Wilson DH, Taylor AW. The escalating cost and prevalence of alternative medicine. Prev Med 2002;35(2):166–73.
[18] Makich L, Hussain R, Humphries JH. Management of depression by homeopathic practitioners in Sydney, Australia. Complement Ther Med 2007;15(3):199–206.
[19] Nilsson M, Trehn G, Asplund K. Use of complementary and alternative medicine remedies in Sweden. A population-based longitudinal study within the northern Sweden MONICA Project. Multinational Monitoring of Trends and Determinants of Cardiovascular Disease. J Intern Med 2001;250(3):225–33.
[20] Pilkington K, Kirkwood G, Rampes H, Fisher P, Richardson J. Homeopathy for depression: a systematic review of the research evidence. Homeopathy 2005;94(3):153–63.
[21] Rossler W, Lauber C, Angst J, Haker H, Gamma A, Eich D, et al. The use of complementary and alternative medicine in the general population: results from a longitudinal community study. Psychol Med 2007;37(1):73–84.
[22] StataCorp. Stata Statistical Software: Release 9. College Station, TX; 2005.
[23] Thomas K, Coleman P. Use of complementary or alternative medicine in a general population in Great Britain. Results from the National Omnibus survey. J Public Health (Oxf) 2004;26(2):152–7.
[24] Trichard M, Lamure E, Chaufferin G. Study of the practice of homeopathic general practitioners in France. Homeopathy 2003;92(3):135–9.
[25] Unutzer J, Klap R, Sturm R, Young AS, Marmon T, Shatkin J, et al. Mental disorders and the use of alternative medicine: results from a national survey. Am J Psychiatry 2000;157(11):1851–7.
[26] Van Wassenhoven M, Ives G. An observational study of patients receiving homeopathic treatment. Homeopathy 2004;93(1):3–11.
[27] Verdoux H, Bégaud B. Rapport sur le bon usage des médicaments psychotropes. Paris: Office Parlementaire d'Évaluation des Politiques de Santé; 2006
[28] Werneke U, Turner T, Priebe S. Complementary medicines in psychiatry: review of effectiveness and safety. Br J Psychiatry 2006;188:109–21.
[29] World Health Organisation Collaborating Centre for Drug Statistics Methodology. About the ATC/DDD system. Oslo: Norwegian Institute of Public Health; 2007
[30] World Health Organisation. The ICD-10 Classification of Mental and Behavioural Disorders: diagnostic criteria for research. Geneva: World Health Organisation; 1993.