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# DIFFERENCES IN HEALTHCARE UTILIZATION BETWEEN USERS AND NON-USERS OF HOMEOPATHIC PRODUCTS IN SPAIN: RESULTS FROM THREE WAVES OF THE NATIONAL HEALTH SURVEY (2011-2017)

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## Abstract

**Objective:** To compare the differences in the use of healthcare services: visits to the doctor and hospitalisation, performance of routine tests, and preventive influenza vaccination, between users and non-users of homeopathic products.

**Methods:** We used the microdata for adults over 15 years old from three waves of the Spanish National Health Survey, corresponding to the years 2011, 2014 and 2017. We proposed a comparative design of a quasi-experimental type, considering as the treatment group the respondents who said that they had used homeopathic products in the past two weeks; and another group, for control, comprising respondents who said that they had not used this type of product, but only conventional medicines, with observable characteristics similar to those of the treatment group. We used a model for rare events logistics regression (relogit) to obtain the probability of using homeopathy. From the propensity score and a vector of control variables, we used techniques of genetic matching to match individuals from the treatment group with similar individuals belonging to the control group.

**Results:** There are no statistically significant differences between users and non-users of homeopathy in visits to the general practitioner ( $p$ -value 0.248), to the specialist ( $p$ -value 0.912), in hospitalisations ( $p$ -value 0.209) or in the use of emergency services ( $p$ -value 0.085). Nor were there any statistically significant differences in the performance of routine tests, except for the faecal occult blood test, which is more prevalent in users of homeopathic products. 20.9% of users of homeopathy had done this test compared with 16.4% of non-users ( $p$ -value 0.047). But there are significant differences in vaccination against influenza. 12.6% of homeopathy users said that they had been vaccinated in the last influenza campaign, against 20.2% of non-users ( $p$ -value  $<0.001$ ).

**Conclusions:** Users of homeopathy did not save resources for the Spanish Healthcare System. Most homeopathic products are used as a complement to treatment with conventional medicine. However, despite this complementarity, our work finds some warning signs, such as the use of these products in oncological patients and the rejection of vaccination, which should worry the healthcare authorities.

## Introduction

Homeopathy is a therapeutic approach to health problems which does not have the necessary scientific evidence to support either its validity or its usefulness <sup>[1, 2]</sup>. Nevertheless, although it is in regression in some countries <sup>[3, 4]</sup>, homeopathy remains popular not only among the general population, but also among healthcare professionals <sup>[5-7]</sup>. Its real social impact is small, but it must be known and analysed.

Although its therapeutic efficacy has not been scientifically proved, homeopathy is a option which is sought in many countries. According to data from the European Social Survey of 2014 <sup>[8]</sup>, 5.6% of Europeans said that they had used homeopathy during the past 12 months, a proportion which varies between 13.4% of French and 11.6% of Germans, (who use it the most), 2.8% of Spanish, and 1.5% and 1.1% of British and Nordics, respectively.

In Europe, the regulation of the commercialization of homeopathic products, of the diagnostic exercise and of prescription depends on each Member State. In some countries the practice of homeopathy is included, with some considerations, in the coverage of the national healthcare system; in others the healthcare authorities have doubts about its effectiveness. Since 2017, the National Health Service (NHS) in England has recommended that its doctors stop prescribing homeopathy, the reason being the lack of evidence to support its use <sup>[9]</sup>. According to the House of Commons Science and Technology Committee (HCSTC) in England, homeopathy should not be funded by the NHS, and the Medicines and Healthcare products Regulatory Agency should withdraw recognition of homeopathic products as medicines. The differences in regulation and in the recommendations to healthcare professionals could explain the different proportions of users of homeopathy in each Member State <sup>[4]</sup>.

In Spain, there is no specific regulation of the practice of homeopathy. But the regulation of homeopathic products has been attempted, although in a very confused way, with transitory laws which never become permanent. Homeopathy is practised mainly in private consultations which are advertised as such, or together with other therapies, called “alternative”, under the common denomination of “natural medicine”. The Spanish College of Medicine [*Organización Médica Colegial* (OMC)], the body which represents all the Official Medical Colleges nationally, pronounced itself for the first time about homeopathy in 2011, in a statement in which it recalled that medical professionals are obliged by the standards of the Code of Medical Ethics preferably to use procedures and prescribe drugs whose efficacy has been scientifically proved <sup>[10]</sup>. Regarding financing by the public healthcare system, homeopathic products and therapies are not financed in Spain.

The Spanish National Health System is characterised by the extension of its benefits to the entire Spanish population, and its objective is to ensure equal access to and use of healthcare services by all citizens, based on their need for assistance. In this sense, one aspect which has not been studied at all is the interaction of the use of alternative therapies with the use of healthcare services, either because of the characteristics of this type of patient and their health problems, or because it could facilitate or hinder access to these services by other users. So far there has been no study in Spain which analyses the impact of the use of non-conventional therapies, and in particular

homeopathy, as one of the most popular, on the use of healthcare services. The objective of this work is to try to fill this gap.

## Materials and Methods

The sources of information were the Spanish National Health Survey, corresponding to the years 2011 and 2017, and the data for Spain from the European Health Survey of 2014. The geographical scope of these surveys was the entire Spanish territory, our study population being adults aged 15 years and older and living in family homes. The main purpose of the previous surveys was to obtain data about the state of health, its determinant factors, and the use of healthcare services from the citizens' perspective. In each survey, between 24,000 and 37,500 homes were investigated, distributed among 2,000 and 2,500 census sections respectively.

In this work we propose a quasi-experimental comparative design, with the consideration of a treatment group and a control group with similar observable characteristics to those of the treatment group. The treatment group corresponds to the respondents who said that they had used homeopathic products in the past two weeks (665; 1.06%), while the control group consisted of those who stated that they had not used this type of product but do use conventional medicines (40,565; 64.55%). Table 1 shows the percentage distribution of responses about drug use, including homeopathic products, throughout the surveys analysed. The observations in columns T1+T2 relate to the treatment group, while column C acts as a control group.

**Table 1. Variables which define the treatment group and the control group**

	Drug use in the past two weeks			No drug use in the past two weeks	Don't Know/No Answer
	T1. Use only homeopathy products	C. Use only conventional medicines	T2. Use both		
2011	7	13,279	224	7,493	4
2014	71	13,452	209	9,089	21
2017	31	13,834	123	9,093	8

Treatment group = T1+T2

Control group = C

As a measure of the use of healthcare resources, we analysed the number of visits to the general practitioner and specialist in the past four weeks, and the number of visits to emergency services and hospital admissions in the past 12 months. We also analysed the performance of routine tests: blood pressure, blood cholesterol level measurement, faecal occult blood test, vaginal cytology and mammography. Finally, preventive vaccination against influenza was also analysed.

### Independent variables

The independent variables included in the logistic regression model could be grouped into two types of categories: (1) individual, geographic and socioeconomic characteristics of the home: autonomous community of residence, sex, age, marital status, educational level, and social class (constructed from the occupation and level of studies of the

person who contributes the most income to the home), and (2) State of health and determinants of health: self-perceived state of health, smoking, physical exercise in leisure time, and body mass index. The medical diagnosis of chronic illnesses in the past 12 months was also included. The descriptive analysis of the selected independent variables, before and after the matching, is presented in Table A1 of the appendix.

## Statistical analysis

The dependent variable was binary, use (Yes=1, No=0) of homeopathic products in the past two weeks. Given the low proportion of 1 in the dependent variable, the traditional logit model could underestimate the probability of occurrence of the event by clearly violating the 50/50 balance, so, as an alternative, we proposed an estimate using the weighted logistic regression called rare events logistics regression (relogit) <sup>[11]</sup>. As prior information about the fraction of ones in the population, we used a mean relative value of users of homeopathy in Spain of 1.16%, with a range between 0.65% and 1.75%, obtained by the National Statistics Institute by inference from the total population in each survey.

From the estimate of the relogit model we obtained the estimated propensity score of an individual belonging to the treatment group using homeopathy. The propensity score summarised all the relevant information contained in the selected independent variables and helped to match individuals in the treatment group with other identical individuals in the control group who were non-users of homeopathy. For the selection of the sample from the control group, a genetic matching was performed, using the previous propensity score <sup>[12]</sup>. Genetic matching is a generalisation of the propensity score matching proposed by Rosenbaum and Rubin <sup>[13]</sup> and which avoids the need to manually and iteratively check the propensity score using a search algorithm to iteratively check and improve covariate balance.

Assuming that  $T$  takes two values: 1= treatment and 0=control,  $U_{i1}$  and  $U_{i0}$  represent the use of healthcare resources or the performance of routine tests of the individual  $i$  in the treatment and control group, respectively. The average treatment effect on treated ( $ATT$ ) is calculated as  $E(U_1 - U_0 | T=1)$ .

The  $ATT$  measured, on average, the effect of homeopathy uses on the utilisation of healthcare resources. Differences in the use of resources were evaluated using the Wilcoxon signed-rank test for count data and the Pearson's chi-squared test statistic for binary data, a non-parametric statistical hypothesis tests used to compare two related samples. The null hypothesis is that the use of healthcare resources does not differ between users and non-users of homeopathic products. Statistical analysis was performed using the R packages "Zelig version" 5.1.6 <sup>[14]</sup> and "Matching" version 4.9-3 <sup>[15]</sup>. To show the results, we calculated the odds ratios (ORs) and the confidence intervals (CIs) at a 95% confidence level.

## Results

The results of the relogit regression are shown in Table 2, and the equivalent results obtained by the logit model are presented in the appendix. The final number of observations used is 39,885 due to missing values in the independent variables, 7.97% in the treatment group and 3.16% in the control group, respectively. According to these results, the socioeconomic profile of the user of homeopathy is a woman (OR: 1.97; CI: 1.61-2.41), middle-aged, between 35 and 55 years old (OR: 1.66 CI: 1.66-2.57 and OR: 1.72 CI: 1.09-2.70, reference 15-24 years of age); unmarried; and there is a 22% lower risk of using homeopathy in married people compared with single people (OR: 0.78 CI: 0.63-0.97, reference single), with higher education (OR: 3.10 CI: 1.89-5.08, reference no studies finished), belonging to a high- or middle-class home (professional-managerial class); belonging to a low-class home (unskilled class) carries a 62% lower risk of using homeopathic products than in homes of high social class (OR: 0.38 CI: 0.26-0.56).

**Table 2. Factors associated with the use of homeopathy in the past two weeks. Estimation by rare event logistic regression**

Variable		OR (95% CI)	p-value	Variable	OR (95% CI)	p-value
Gender	Male	1		Education		
	Female	1.97 (1.61-2.41)	<0.01	No studies finished	1	
Age (yr)	15-24	1		Primary	1.21 (0.75-1.98)	0.43
	25-34	0.91 (0.56-1.47)	0.71	Secondary	1.92 (1.20-3.05)	<0.01
	35-44	1.66 (1.06-2.57)	0.03	Post-secondary	2.43 (1.48-4.01)	<0.01
	45-54	1.72 (1.09-2.70)	0.02	First stage tertiary	3.20 (1.97-5.18)	<0.01
	55-64	1.30 (0.81-2.10)	0.28	Second stage tertiary	3.10 (1.89-5.08)	<0.01
	65-74	0.89 (0.53-1.51)	0.67	Social Class		
	+75	0.78 (0.43-1.42)	0.42	Professional occupat.	1	
Civil status	Single	1		Managerial and tech.	0.95 (0.72-1.26)	0.72
	Married	0.78 (0.63-0.97)	0.03	Skilled (non-manual)	0.77 (0.60-1.00)	0.05
	Widowed	1.13 (0.79-1.61)	0.50	Skilled (manual)	0.52 (0.37-0.72)	<0.01
	Divorced	1.00 (0.74-1.36)	0.99	Partly-skilled	0.54 (0.41-0.72)	<0.01
Self-perceived health status				Unskilled occupat.	0.38 (0.26-0.56)	<0.01
	Very good	1		Physical activity		
	Good	1.09 (0.84-1.42)	0.51	None	1	
	Fair	1.24 (0.92-1.67)	0.16	Occasional	1.48 (1.21-1.81)	<0.01
	Bad	1.74 (1.19-2.54)	<0.01	Days a month	2.04 (1.57-2.66)	<0.01
	Very bad	1.17 (0.63-2.17)	0.62	Days a week	1.94 (1.47-2.57)	<0.01
Diseases/condition	No	1		Asthma	1.25 (0.94-1.66)	0.12
High blood pressure		0.81 (0.65-1.00)	0.05	Constipation	1.41 (1.06-1.87)	0.02
Diabetes		0.61 (0.40-0.91)	0.02	Chronic depression	1.20 (0.95-1.53)	0.13
Varicose veins		1.33 (1.08-1.63)	<0.01	Malignant tumour	1.40 (1.02-1.93)	0.04
Neck disorder		1.32 (1.09-1.61)	<0.01	Osteoporosis	1.49 (1.11-2.01)	<0.01
Allergy		1.33 (1.10-1.62)	<0.01	Thyroid	1.24 (0.97-1.58)	0.08
Year (Survey 2011)		1				
Survey 2014		0.89 (0.74-1.08)	0.24			
Survey 2017		0.56 (0.45-0.69)	<0.01			

Nº obs. = 39,855

Pseudo R<sup>2</sup> = 0.11

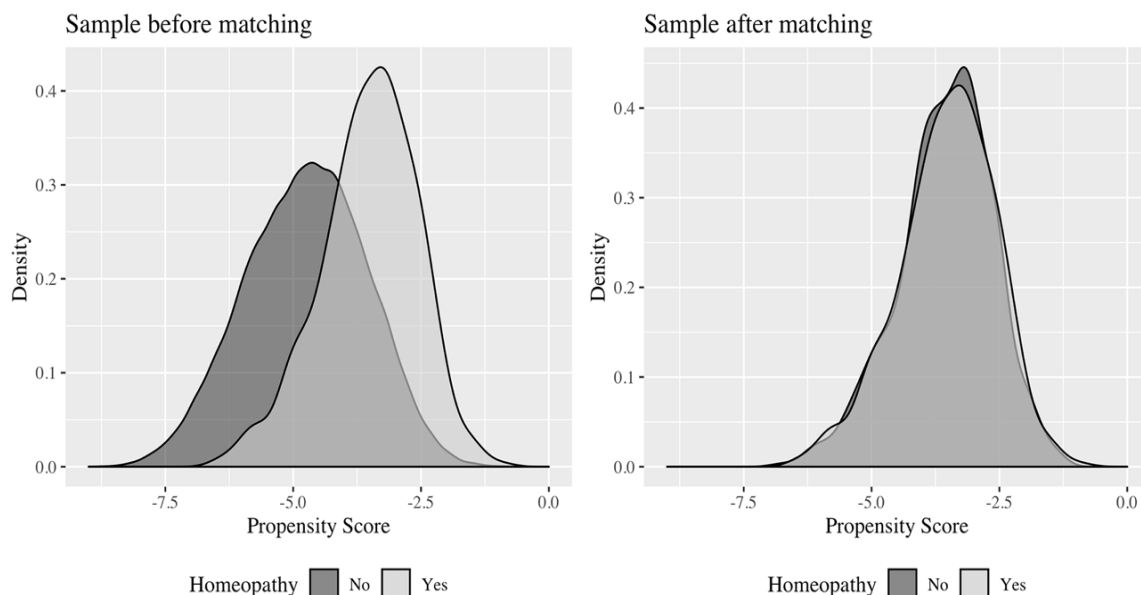
Likelihood ratio test Pr(>Chi-square) <0.000

Note: OR= odds ratio; CI= 95% confidence interval; Region of residence coefficients are not presented in the table due to space limitations

Regarding the health variables, a user of homeopathy, despite taking exercise regularly, states that their health is bad (OR: 1.74 CI: 1.19-2.54, reference very good health), and has been diagnosed as having chronic problems related to: varicose veins (OR: 1.33 CI: 1.08-1.63), neck disorder (OR: 1.32 CI: 1.09-1.61), allergy (OR: 1.33 CI: 1.10-1.62), constipation (OR: 1.41 CI: 1.06-1.87), malignant tumour (OR: 1.40 CI: 1.02-1.93) and osteoporosis (OR: 1.49 CI: 1.11-2.01). The model also incorporates a categorical variable for the time of the survey; the significance of the coefficient for 2017 indicates a significant drop in its use in that year (OR: 0.56 CI: 0.45-0.70, reference survey 2011). Regarding the region of residence, some significant results were obtained, but they are not included in the table because it is not considered important to discuss them.

Fig 1 shows the precision achieved in the matching. For this, we compared the density functions of the propensity score for the two groups, treatment and control, before and after the matching.

**Fig 1. Density functions of the estimated propensity score**



The average number of visits to the doctor and hospitalisations for users and non-users of homeopathy, as well as the proportion who attend routine tests or are vaccinated in the influenza campaign are shown in Table 3. It is noted that the average number of visits is very similar for users and non-users of homeopathic products, with a slight difference in favour of users of homeopathy in terms of emergency services, an average of 0.60 versus 0.50. In routine tests, there is also some equality between treatment and control, except in faecal occult blood, in which users of homeopathy outnumber non-users by more than 3 points, 20.9% versus 16.4%, and in preventive vaccination against influenza, in which the relationship is reversed, leaving homeopathy users about 8 points below non-users, 12.6% versus 20.2%.



**Table 3. Differences in the use of healthcare resources between users and non-users of homeopathy**

Visits to the doctor and hospitalisations							
(%) and means	Uses of homeopathy products			(%) and means	Uses of homeopathy products		
	Yes	No	No		Yes	No	No
	After matching N=609	N=609	Before matching N=38,984		After matching N=609	N=609	Before matching N=38,984
General practitioner				Medical specialist			
0	(66.8)	(64.0)	(60.8)	0	(74.2)	(74.1)	(81.2)
1	(25.1)	(27.8)	(31.1)	1	(19.0)	(20.4)	(14.7)
2	(5.9)	(4.8)	(5.4)	2	(4.6)	(3.0)	(2.6)
3	(1.5)	(1.8)	(1.3)	3	(0.3)	(1.6)	(0.8)
4	(0.7)	(1.6)	(1.4)	4	(1.8)	(1.0)	(0.7)
Average number of visits	0.44	0.50	0.52	Average number of visits	0.37	0.37	0.26
Emergency services				Hospitalisations			
0	(66.3)	(69.5)	(68.4)	0	(89.5)	(92.4)	(89.3)
1	(21.7)	(20.5)	(20.0)	1	(8.2)	(5.4)	(8.4)
2	(5.7)	(5.4)	(6.4)	2	(2.0)	(1.0)	(1.6)
3	(3.1)	(2.5)	(2.5)	3	(0.3)	(0.8)	(0.4)
4	(3.1)	(2.1)	(2.7)	4	(0.0)	(0.3)	(0.4)
Average number of visits	0.66	0.50	0.57	Average number of visits	0.13	0.12	0.15
Routine tests				Routine tests			
		(%) Yes			(%) Yes		
Blood cholesterol	(95.6)	(96.2)	(96.1)	Cytology	(91.7)	(90.0)	(76.9)
Blood pressure	(97.2)	(98.2)	(97.6)	Mammography	(73.6)	(75.8)	(67.6)
Faecal occult blood test	(20.9)	(16.4)	(16.6)				
Preventive vaccination							
Influenza	(12.6)	(20.2)	(28.9)				

Table 4 shows the results of the statistical tests of differences between the treatment group and the control group, under the null hypothesis that there are no differences between the two groups. In the visits to the doctor and hospitalisations, the results do not show statistically significant differences, at 5% of significance, between users and non-users of homeopathy:  $p$ -value 0.248 for visits to the general practitioner,  $p$ -value 0.912 for the specialist doctor,  $p$ -value 0.209 for hospitalisations and  $p$ -value 0.085 for visits to emergency services, although this latter resource would accept greater use in users of homeopathy at 10% of significance.

Nor are there any statistically significant differences in the performance of routine tests, except for the faecal occult blood test, which is more prevalent in consumers of homeopathic products,  $ATT=0.044$ . The contrast of proportions shows a  $p$ -value of 0.047 in this test. Significant differences are also shown in relation to influenza vaccination in the last campaign, in this case with negative  $ATT$  for users of homeopathy, -0.077, and  $p$ -value <0.001.

**Table 4. Statistical contrasts in the effect of homeopathy use on the utilisation of healthcare resources**

Visits to the doctor and hospitalisations	Observ.	ATT	Wilcoxon signed-rank test <i>p</i> -value
Visits to Generalist (in the past 4 weeks)	609	-0.059	0.248
Visits to Specialist (in the past 4 weeks)	609	0.002	0.912
Visits to emergency services (in the past 12 months)	609	0.013	0.209
Hospitalizations (in the past 12 months)	609	0.156	0.085
Routine tests (Yes, No)			Proportion test <i>p</i> -value
Cytology	459	0.013	0.360
Mammography	459	-0.023	0.448
Blood cholesterol	609	-0.007	0.564
Blood pressure	609	-0.010	0.251
Faecal occult blood test	609	0.044	0.047
Vaccination against influenza	609	-0.077	<0.001

Note: ATT = Average Treatment Effect on the Treated

## Discussion

In the European Union, homeopathy is the second most widely used modality in alternative medicine after herbal medicine<sup>[16]</sup>. The key factors in the demand for it range from the construction of a social identity as a user of healthcare products<sup>[17]</sup> to the balance between perceived benefit and risk<sup>[18,19]</sup>, or the search for more personalised care in response to dissatisfaction or bad experience with conventional medicine<sup>[20]</sup>.

Our results for the Spanish population relate certain socioeconomic characteristics to the use of homeopathic products: being a woman, being between 35 and 55 years of age, high educational level, and high social status. This user profile is shared with other developed countries, European<sup>[4, 21, 22]</sup> and non-European<sup>[3]</sup>.

Regarding the use of healthcare resources, the results of our study show that users of homeopathic products have resource utilisation, frequency of consultation with the general practitioner, consultations with the specialist doctor, visits to emergency departments and days of hospitalisation which are not statistically different from those of non-users of this type of treatment. Although, a priori, this is contradictory because these products are considered as being within what is called alternative medicine, most homeopathic products are used as a complement to treatments with conventional medicines<sup>[23]</sup>.

For manufacturers of homeopathy, the use of their products provides economic savings, as they explain in their reports and scientific articles. Colas et al.<sup>[24]</sup>, in an article published in the Health Economics Review of 2015, funded by the Boiron laboratories, the first manufacturer of homeopathic products in France, use data from the French epidemiological study EPI3 La-Ser to conclude that “management of patients by homeopathic general practitioners may be less expensive from a global perspective and may represent an important interest to public health”. However,

according to our results, if homeopathy does not act as a substitute for conventional medicine, it will hardly save resources.

Additionally, when homeopathy has been used, together with other practices of complementary medicine, as a substitute for treatment by conventional medicine, the literature has not been able to find better clinical results <sup>[25, 26]</sup> or the causal associations have not been clear <sup>[27]</sup>. The HCSTC report <sup>[1]</sup> warned in 2010 that the systematic reviews and available meta-analyses conclusively showed that homeopathic products work in the same way as a placebo. A new, more up-to-date review, May 2015, by the Australian Government reaches the same conclusion <sup>[2]</sup>.

The lack of evidence about the benefits of homeopathic products prevents a coherent analysis of cost-effectiveness. The great heterogeneity of available economic evaluation studies, and sometimes their important methodological deficiencies, prevent firm conclusions <sup>[28]</sup>. Most economic evaluations of homeopathy consider only the costs of treatment, but the costs for consultation time are usually higher than the costs for medication. It is important to include the costs of consultations when conducting economic evaluations of homeopathic products. In the absence of funding, the prices of homeopathic medicines are generally lower than those of conventional medicines, but a consultation usually lasts longer and therefore costs more, and much more if the consultation with the homeopath does not replace the visit to the conventional doctor, as we found in our results <sup>[28]</sup>. Additionally, it has been found recently that in the long term the possible budgetary saving of the homeopathic medications results in greater costs to the system, due to the low quality of the prescription in terms of therapeutic efficacy and adherence <sup>[29]</sup>.

The manufacturers of homeopathic products justify their legitimacy by arguing their own scientific evidence and highlighting certain positive aspects, mainly their innocuousness <sup>[30]</sup>. But this harmlessness is not entirely true: although, owing to their high dilution, homeopathic products can be considered “safe”, this does not prevent the negative consequences of their use: they delay or avoid effective medical attention, waste resources, encourage false beliefs and weaken the credibility that science has <sup>[31]</sup>. In this sense, our work shows results which should worry the healthcare authorities, because they warn about certain negative consequences. At 90% confidence, our results reject the hypothesis of an equal number of visits to emergency services between users and non-users of homeopathic products, finding a greater number of visits among the former.

The fact that individuals who state that they have been diagnosed with certain chronic problems have a greater predisposition to consume homeopathic products is a circumstance to which attention must also be paid. Particularly in the case of cancer patients, because suffering a tumour is significant in our model of factors which predict the use of homeopathy. Recent studies have found that users of alternative medicines tend to reject conventional treatments, considerably increasing their risk of death <sup>[32]</sup>.

Finally, we must also be concerned about the lower demand for vaccines in the influenza campaign by users of homeopathy. Among users of alternative therapies, distrust of vaccines has considerable support, which is leading to a major health problem because they refuse to vaccinate themselves and their children <sup>[33]</sup>.

## Conclusion

Users of homeopathy do not save resources for the Spanish Healthcare System. Most homeopathic products are used as a complement to treatments by conventional medicine. Nevertheless, despite this complementary, our work finds some warning signs which should worry the healthcare authorities. The use of these therapies in patients with malignant tumours, the use of emergency services and the rejection of vaccines, are signs warning of possible negative consequences in the long term.

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## APPENDIX

**A1 Table. descriptive analysis of the selected independent variables, before and after the matching**

Variable Nº. observations	Before matching			After matching		
	Homeopathy Yes 609	No 38,984	(p-value)	Homeopathy Yes 609	No 609	(p-value)
Region (%)			<0.001			0.911
Andalucía	41 (6.7)	4,791 (12.3)		41 (6.7)	39 (6.4)	
Aragón	47 (7.7)	1,656 (4.2)		47 (7.7)	41 (6.7)	
Asturias	18 (3.0)	1,557 (4.0)		18 (3.0)	24 (3.9)	
Balears	31 (5.1)	1,162 (3.0)		31 (5.1)	35 (5.7)	
Canarias	46 (7.6)	1,850 (4.7)		46 (7.6)	32 (5.3)	
Cantabria	11 (1.8)	1,108 (2.8)		11 (1.8)	13 (2.1)	
Castilla y León	12 (2.0)	2,398 (6.2)		12 (2.0)	13 (2.1)	
Castilla-La Mancha	16 (2.6)	1,750 (4.5)		16 (2.6)	19 (3.1)	
Cataluña	98 (16.1)	4,033 (10.3)		98 (16.1)	101 (16.6)	
Valencia	60 (9.9)	3,387 (8.7)		60 (9.9)	66 (10.8)	
Extremadura	7 (1.1)	1,605 (4.1)		7 (1.1)	6 (1.0)	
Galicia	23 (3.8)	2,221 (5.7)		23 (3.8)	28 (4.6)	
Madrid	74 (12.2)	3,874 (9.9)		74 (12.2)	79 (13.0)	
Murcia	24 (3.9)	1,702 (4.4)		24 (3.9)	27 (4.4)	
Navarra	40 (6.6)	1,514 (3.9)		40 (6.6)	33 (5.4)	
País Vasco	37 (6.1)	2,353 (6.0)		37 (6.1)	34 (5.6)	
Rioja	20 (3.3)	1,279 (3.3)		20 (3.3)	19 (3.1)	
Ceuta	2 (0.3)	327 (0.8)		2 (0.3)	0 (0.0)	
Melilla	2 (0.3)	417 (1.1)		2 (0.3)	0 (0.0)	
Year (%)			<0.001			0.13
2011	208 (34.2)	10768 (27.6)		208 (34.2)	188 (30.9)	
2014	249 (40.9)	14028 (36.0)		249 (40.9)	284 (46.6)	
2017	152 (25.0)	14188 (36.4)		152 (25.0)	137 (22.5)	
Sex = Women (%)	458 (75.2)	21843 (56.0)	<0.001	458 (75.2)	452 (74.2)	0.742
Years (Intervals) (%)			<0.001			0.921
[15-24]	28 (4.6)	2122 (5.4)		28 (4.6)	23 (3.8)	
[25-34]	52 (8.5)	3653 (9.4)		52 (8.5)	48 (7.9)	
[35-44]	157 (25.8)	6295 (16.1)		157 (25.8)	170 (27.9)	
[45-54]	161 (26.4)	6783 (17.4)		161 (26.4)	162 (26.6)	
[55-64]	112 (18.4)	7145 (18.3)		112 (18.4)	110 (18.1)	
[65-74]	59 (9.7)	6648 (17.1)		59 (9.7)	63 (10.3)	
Age +75	40 (6.6)	6338 (16.3)		40 (6.6)	33 (5.4)	



**A1 Table. Continuation (Descriptive analysis of the selected independent variables, before and after the matching)**

Marital Status (%)			<0.001		0.599
Single	164 (26.9)	8495 (21.8)		164 (26.9)	157 (25.8)
Married	310 (50.9)	22080 (56.6)		310 (50.9)	332 (54.5)
Widowed	65 (10.7)	5539 (14.2)		65 (10.7)	60 (9.9)
Divorced	70 (11.5)	2870 (7.4)		70 (11.5)	60 (9.9)
Highest education degree (%)			<0.001		0.935
Not finished primary	26 (4.3)	5550 (14.2)		26 (4.3)	26 (4.3)
Primary	51 (8.4)	8082 (20.7)		51 (8.4)	53 (8.7)
Secondary	118 (19.4)	9321 (23.9)		118 (19.4)	115 (18.9)
Post-secondary	81 (13.3)	4372 (11.2)		81 (13.3)	75 (12.3)
First stage tertiary	128 (21.0)	5135 (13.2)		128 (21.0)	143 (23.5)
Second stage tertiary	205 (33.7)	6524 (16.7)		205 (33.7)	197 (32.3)
Self-perceived health status (%)			0.463		0.076
Very Good	77 (12.6)	4476 (11.5)		77 (12.6)	57 (9.4)
Good	288 (47.3)	18465 (47.4)		288 (47.3)	328 (53.9)
Fair	164 (26.9)	11359 (29.1)		164 (26.9)	164 (26.9)
Bad	66 (10.8)	3627 (9.3)		66 (10.8)	50 (8.2)
Very Bad	14 (2.3)	1057 (2.7)		14 (2.3)	10 (1.6)
High blood pressure =Si (%)	132 (21.7)	13623 (34.9)	<0.001	132 (21.7)	133 (21.8)
Varicose veins =Si (%)	147 (24.1)	7198 (18.5)	<0.001	147 (24.1)	146 (24.0)
Neck Disorder =Si (%)	185 (30.4)	9055 (23.2)	<0.001	185 (30.4)	186 (30.5)
Allergy =Si (%)	166 (27.3)	6794 (17.4)	<0.001	166 (27.3)	165 (27.1)
Asthma =Si (%)	64 (10.5)	2808 (7.2)	0.002	64 (10.5)	61 (10.0)
Diabetes =Si (%)	28 (4.6)	4769 (12.2)	<0.001	28 (4.6)	17 (2.8)
Constipation =Si (%)	66 (10.8)	2539 (6.5)	<0.001	66 (10.8)	66 (10.8)
Chronic depression =Si (%)	109 (17.9)	5457 (14.0)	0.007	109 (17.9)	105 (17.2)
Malignant tumour =Si (%)	46 (7.6)	2169 (5.6)	0.042	46 (7.6)	46 (7.6)
Osteoporosis =Si (%)	64 (10.5)	2687 (6.9)	0.001	64 (10.5)	64 (10.5)
Thyroid =Si (%)	85 (14.0)	3513 (9.0)	<0.001	85 (14.0)	85 (14.0)
Physical Activity (%)			<0.001		0.227
None	165 (27.1)	15661 (40.2)		165 (27.1)	157 (25.8)
Occasional	253 (41.5)	15919 (40.8)		253 (41.5)	287 (47.1)
Days a month	104 (17.1)	3678 (9.4)		104 (17.1)	87 (14.3)
Days a week	87 (14.3)	3726 (9.6)		87 (14.3)	78 (12.8)
Social Class (%)			<0.001		0.563
Professional occupat.	128 (21.0)	4103 (10.5)		128 (21.0)	109 (17.9)
Managerial and tech.	89 (14.6)	2998 (7.7)		89 (14.6)	96 (15.8)
Skilled (non-manual)	153 (25.1)	7389 (19.0)		153 (25.1)	150 (24.6)
Skilled (manual)	61 (10.0)	5866 (15.0)		61 (10.0)	75 (12.3)
Partly-skilled	137 (22.5)	13008 (33.4)		137 (22.5)	144 (23.6)
Unskilled occupat.	41 (6.7)	5620 (14.4)		41 (6.7)	35 (5.7)



**A2 Table. Factors associated with the use of homeopathy in the past two weeks. Estimation by logistic regression**

Variable		OR (95% CI)	p-value	Variable	OR (95% CI)	p-value
Gender	Male	1		Education		
	Female	1.98 (1.62-2.42)	<0.01	No studies finished	1	
Age (yr)	15-24	1		Primary	1.22 (0.75-1.99)	0.42
	25-34	0.92 (0.57-1.48)	0.72	Secondary	1.93 (1.21-3.08)	<0.01
	35-44	1.67 (1.07-2.60)	0.02	Post-secondary	2.45 (1.49-4.04)	<0.01
	45-54	1.73 (1.10-2.72)	0.02	First stage tertiary	3.23 (1.99-5.24)	<0.01
	55-64	1.31 (0.81-2.11)	0.27	Second stage tertiary	3.14 (1.91-5.15)	<0.01
	65-74	0.89 (0.53-1.51)	0.68	Social Class		
	+75	0.79 (0.43-1.42)	0.43	Professional occupat.	1	
Civil status	Single	1		Managerial and tech.	0.95 (0.72-1.25)	0.71
	Married	0.78 (0.63-0.97)	0.03	Skilled (non-manual)	0.77 (0.60-1.00)	0.05
	Widowed	1.13 (0.79-1.61)	0.51	Skilled (manual)	0.51 (0.37-0.72)	<0.01
	Divorced	1.00 (0.74-1.36)	1.00	Partly-skilled	0.54 (0.41-0.72)	<0.01
Self-perceived health status				Unskilled occupat.	0.38 (0.25-0.56)	<0.01
	Very good	1		Physical activity		
	Good	1.10 (0.84-1.42)	0.49	None	1	
	Fair	1.24 (0.92-1.68)	0.15	Occasional	1.48 (1.21-1.82)	<0.01
	Bad	1.74 (1.19-2.54)	<0.01	Days a month	2.04 (1.57-2.66)	<0.01
	Very bad	1.15 (0.62-2.12)	0.67	Days a week	1.94 (1.47-2.57)	<0.01
Diseases/condition	No	1		Asthma	1.24 (0.94-1.65)	0.13
High blood pressure		0.80 (0.65-1.00)	0.05	Constipation	1.40 (1.06-1.86)	0.02
Diabetes		0.61 (0.40-0.90)	0.01	Chronic depression	1.20 (0.95-1.53)	0.13
Varicose veins		1.33 (1.08-1.63)	<0.01	Malignant tumour	1.40 (1.01-1.92)	0.04
Neck disorder		1.32 (1.09-1.61)	<0.01	Osteoporosis	1.49 (1.11-2.01)	<0.01
Allergy		1.33 (1.10-1.62)	<0.01	Thyroid	1.24 (0.97-1.58)	0.08
Year (Survey 2011)		1				
Survey 2014		0.89 (0.74-1.08)	0.24			
Survey 2017		0.56 (0.45-0.69)	<0.01			



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