

Revista Científica  
ISSN: 2224-5545  
DOI: <https://doi.org/10.54495/Rev.Cientifica.v29i1.47>  
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# Revista Científica

Facultad de Ciencias Químicas y Farmacia



## Determinants of Perceived Health Status after Suffering from Depression through the Spanish Health Survey 2017

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Revista Científica, vol. 29, no. 1, 2019  
University of San Carlos of Guatemala, Guatemala

## Articles

# Determinants of Perceived Health Status after Suffering from Depression through the Spanish Health Survey 2017

Determinantes del estado de salud percibido tras padecer una depresión a través de la encuesta de salud española 2017

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Revista Científica, vol. 29, no. 1, 2019

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Received: March 4<sup>th</sup>, 2016  
Approved: October 30<sup>th</sup>, 2019

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**Abstract:** The study of the effect of medicine on perceived health status is wide and necessary. In mental health issues, perceived health status could act as a determinant for the treatment of some complaints. The case of depression is an example in which improving the perceived health status can influence positively in the treatment. In this article, some relevant variables from the Spanish health survey 2017 have been analyzed, with the aim of contrasting the effect of some essential variables on the perceived health status, such as having suffered from depression, the use of homeopathy and antidepressants, nationality, age, or academic level. It is convenient to point out that the coefficient of the subjects that have used antidepressant and homeopathy have got good and very good health status, superior in the case of antidepressant. This can be interpreted as both treatments being good for getting a better perceived health, making both treatments useful, but homeopathy has the advantage of having no adverse effects. On the other hand, it is worth stressing that for the very bad perceived health status, the use of homeopathy does not worsen said status, whereas antidepressants does. This confirms lower adverse effects produced by homeopathy.

**Keywords:** health survey, depression, homeopathy, antidepressants.

**Resumen:** El estudio sobre el efecto de los medicamentos en el estado de salud de las personas es amplio y necesario. En salud mental, el estado de salud percibido puede ser determinante para el tratamiento de algunas afecciones. El caso de la depresión es uno de los ejemplos en los que mejorar el estado de salud percibido puede incidir positivamente en el tratamiento. En este artículo se ha realizado un análisis de algunos indicadores relevantes obtenidos en la encuesta española de la salud de 2017, con el objetivo de contrastar el efecto sobre el estado de salud percibido de algunas variables que se consideran fundamentales tales como haber padecido depresión, haberse sometido a un tratamiento con homeopatía o antidepresivos, el nivel de estudios, la edad o la nacionalidad. Es conveniente señalar que los coeficientes de los sujetos que han tomado antidepresivos y homeopatía son próximos entre sí para los estados de salud bueno o muy bueno, algo superior en el caso de los antidepresivos, lo cual se puede interpretar como que ambos tratamientos generan una mejor salud percibida pudiendo optar por cualquiera de ellos por reduciendo los efectos adversos en el caso de la homeopatía. Por otra parte, cabe destacar que, para el caso de salud percibida muy mala, el uso de homeopatía no empeora ese estado mientras que los antidepresivos sí, lo que confirma esos menores efectos adversos generados por la homeopatía.

**Palabras clave:** encuesta de salud, depresión, homeopatía, antidepresivos.

## Introduction

The study of health by means of social sciences is getting more popular. The usage of statistical and econometrical models provide relevant information on results, profiles, treatment effectiveness, etc. There are different fields of study related to health in social sciences, one of them is Health Economics, which is a science that manages the resources of the health system (Abellán-Perpiñan, Matínez-Pérez, & Pinto-Prades, 2008). One way of studying this science is using a health survey. Using a health survey, we can know patients' profiles, effectiveness of some treatments depending on the population type and other variables available in the survey with a statistical analysis.

The Spanish health survey shows information on health and how it is perceived by the respondents, as well as its connection to other personal variables or to other health services. Thanks to this survey, decisions can be made and politics related to the subject matter can be evaluated. This survey provides information that helps establishing hypothesis, such as the ones mentioned in this article, and other relationships within the different variables presented by the survey in its diverse editions. Studies such as the Rajmil et al. (1997) study already worked with the health survey, in this case used in Catalanian one, to give results and establish probabilities for various cases of the respondents. This way, it is possible to get to conclusions with different sections of the population affected by certain illnesses, providing results to medical directors on the necessity of taking action depending on each one of the aforementioned sections.

For the study expounded below, a variable used to determine health in patients is health perception. This variable is considered decisive on account of the expected type of analysis. Because health perception is an indicator of high incidence in mental health of people, especially in mental illnesses such as depression, the action on this variable is vital. This indicator has been already used several time in literature, Sécúli et al. (2001) worked with health perception in Catalonia with data of the Catalanian health survey of 1994, obtaining significant results depending on gender, age of the respondents, and the illnesses they had suffered. When dealing with a variable such as health perception, it is important to take into consideration that, in order to get a positive variation in this indicator, traditional medication and other means that cause the placebo effect can be used. The goal is to improve health perception, therefore it is possible that the placebo effect helps achieve this without side effects.

The placebo effect has been under study for several years, since it comprises other non-specific effects that are contrastable. Campagne (2002) developed a study with 2 types of placebo, one was normal and the other was homeopathic. It is important to distinguish between both types, since the homeopathic preparation has properties based on its concept of natural medicine. In fact, his results are different and significant, confirming results regarding change and symptoms of placebo on the patients. Other study

(Buñuel Alvarez & Cortés Marina, 2006) analyzes the different effects of homeopathic treatments against conventional medicine, concluding that homeopathy provides a similar effect to the placebo effect. This article does not attempt to demonstrate that homeopathy has better or worse results than conventional medicine; what it expects to prove is that if the homeopathic treatment gets a placebo effect on the patients, it can be positive for improving health perception and, thus, improve mental health.

Homeopathy has been used in medicine for 200 years, Samuel Hannehman was its forefather. Homeopathy is based in diluting substances to minimize their adverse effects, i.e. it consists of treating an illness with the same substance that causes it but diluting in water up to infinitesimal numbers, this way the toxicity of the substance can be suppressed. Recent announcements on homeopathic medication withdrawal suggest the realization of deep studies about the real effects this medication causes to health. Some authors consider that homeopathy causes a placebo effect in patients, although in cases regarding a mental illness such as depression, the belief that homeopathic medication works can be fundamental.

Homeopathic treatment is currently used by several people (especially with adult population), and in several countries as Relton, Cooper, Viksveen, Fibert and Tomas (2017) point out, even though homeopathic acceptance as part of primary health care is discussed in some countries where it is used. Riverón Garrote (2012) points out the important worldwide rise of homeopathy and the importance of the homeopathy use due to the results of the treatment application in its study. Compounds such as *Gelsemium Sempervirens* have been contrasted in several articles (Bellavite, Bonafini & Marzotto, 2018; Magnani, Conforti, Zanolin, Marzotto, & Bellavite, 2010), which show positive results in the treatment of disorders related to anxiety.

As it has been noted before, the treatment for depression in diagnosed patients to get a better perceived health is fundamental. Depression is an illness of high prevalence and has severe consequences, it is a vague pathological entity, difficult to define at times (Calleja, 2006), and its treatment is necessary. The conventional pharmacotherapy uses medicine to attempt to improve the living standards of the patients, although it has some side effects. On the other hand, homeopathy has several compounds depending on the type of depression, and the author stresses on the accuracy of these treatments for depression. The use of homeopathy in depression cases is quite spread out; besides, it is where homeopathy can work better, both because of its medicinal effect and the placebo effect, without adverse effects on the patient. The patients perceive a better health status when using homeopathy and they actually achieve it.

Works such as the one from Hechavarría-Torres, Benítez-Rodríguez y Pérez-Reyes (2014) show significant results of the effectiveness of the homeopathic treatment on patients with depression. After applying different homeopathic compounds such as Sepia Vara, Staphisagria or Pulsatilla the majority of the patients show improvement. Viksveen, Fibert y Relton (2018) emphasize that, according to their study, which was developed based

on different articles and looking into their data bases, the effectiveness of homeopathy for treating depression is superior to placebo and also comparable to the effectiveness of antidepressant medicine, contrasting with significant results.

The objective of this written work is the analysis of the health survey, having as a final objective to provide the health management with significant information regarding the use of homeopathy that allows the improvement of the perceived health status and, consequently, an improvement in the treatment of depression without adverse effects. In the development of a model that explains the perceived health status, we also considered the possible effect that the use of different medications can cause in health depending on the age, academic level, the different nationalities and, therefore, the different medicinal culture in Spanish and foreign people.

The hypothesis presented in the Health Survey 2017 to analyze the effects on perceived health are, first of all, if the patients that use homeopathy perceive a better health status or, if on the contrary, the patients that use antidepressant perceive a better health status. In addition, it is important to present another hypothesis related to health, depending on the profiles of the survey respondents: if there is any relation between a higher academic level and having suffered depression, if age plays an important and decisive role, and finally if there are any spatial factors, studied by means of the nationality of the subjects of the survey, that affect perceived health.

## Materials and Methods

To contrast the presented hypothesis, we have turned to the last Spanish health survey available, which was held in 2017. It is a periodic study that has been held since 1987 by the Ministry of Health, Consumer Affair and Social Welfare, and that is currently held every five years. It has as its main objective to monitor the health of the population residing in Spain during the collection and analysis of a wide set of health aspects separated depending on the demographic and socioeconomic features. This contributes to decision making and the evaluation of health policies, it also provides material for research studies on health of the Spanish people.

The area of the survey is comprised by the people that reside in the main family homes of all the national territory. The data collection has been carried out throughout a year, from October 2016 to October 2017, and interviews were conducted to 23,989 adults (over 15 years old). The type of sample used was a trietapic stratified, where the units of the first stage are the census section, and the units of the second stage are the main family homes. In each one of the homes, one adult person (over 15 years old) was selected to fill in the individual survey. We selected a sample of 37,500 homes, distributed in 2,500 census sections. The sample is distributed in autonomous communities, assigning a part uniformly and another one in proportion to the size of the community, so that the sample would be

representative at national level and at autonomous community level, at least for the main variables.

To estimate the population characteristics, we used estimators, to which a reweighting technique has been applied, taking as auxiliary variables the age and nationality groups of each autonomous community. The data collection technique used was the Computer-Assisted Personal Interviewing (CAPI), and the survey consists of four big blocks: sociodemographic, health status, health care, and health determinants.

The health survey as a tool to collect data about phenomena related to health of certain population has been used in various similar studies (Borrel & Rodríguez-Sanz, 2008). The data obtained from the survey was processed using a SPSS Statistics V.22 to make segments, frequency tables and some correlations within the indicators. Through the multinomial model, we also obtain a regression, from which we expect to get the incidence of the described variables about the perceived health status, on the basis of normal health as the reference to observe the evolution of health and its dependence on the variables.

The data obtained from the survey requires the realization of a multinomial model (Pando Fernández & San Martín Fernández, 2004). This model fits the values of the selected indicators and, this way, we can obtain significant results for the present model. The study implies that the dependent variable must be the perceived health status of the respondents. Therefore, the rest of the variables will have certain influence on the perceived health status.

The multinomial logistic regression model is applied to the variables with more than two answers, that is, when the answer exceeds the binary model. Since it is unknown if the distribution of the errors follows a normal one, the logistic model will be used instead of the probabilistic one. Given that the perceived health status comprises five possible answers and it is the dependent variable, the multinomial model is the one that fits best; besides, this is the ordered model, for the answers present a specific order. The rest of the variables are binary, the “yes” or “no” type, except for the one regarding the academic level, which could be changed into binary making a distinction in having university studies or not. However, since its original form works correctly, it keeps the nine possible answers.

The probability that a respondent chooses certain option for health will be determined by how he/she perceives his/her health.

With the data of the survey and the information of the layout, the following indicators have been chosen to be studied. They are described here below:

**Identification Variables:** nationality, it could be Spanish or not. This provides spatial data. Age, with a variability of 15-103; and academic level, which has a range that goes from 1 (no studies) to 9 (university studies).

**Health Variables:** The perceived health status is the dependent variable of the study, its range goes from 1 (very good) to 5 (very bad). On the other hand, the variable of having suffered depression will filter the cases for the

later analysis.

Use of Medication Variables: The choice of these variables diverges between the use of homeopathy or antidepressants to treat depression.

## Results

First, some descriptions of the data from the Spanish health survey 2017 were made. The respondents with Spanish nationality were 21,642 and the respondents with other nationality were 1,447. Therefore, the sample of Spanish respondents is higher. However, any of these two variables is ideal, given the criteria followed by the National Institute of Statistics (INE, Instituto Nacional de Estadística) regarding the selected population. The descriptions are segmented by nationality, indicating the frequency of each value in relation to nationality.

The results are presented in a series of tables of information that gather the analyzed cases, the statistical contrasts, and the incidence of the variables in the perceived health status in accordance with the conducted model. Table 1 shows the description of the variables employed in the model.

**Table 1.**

Descriptions of the used sample.

	Minimum	Maximum	Mean
Spanish nationality	1	2	1.06
Academic level	2	9	5.76
Perceived health status	1	5	2.27
Have you suffered depression?	1	2	1.88
Antidepressant	1	2	1.93
Homeopathy	1	2	1.99
Age	15	103	53.44

The variables that are object of study from a total of 23,089 cases present a description where the mean profile of the respondent corresponds to a Spanish nationality person, with an academic level equivalent to high school level, and age of around 54 years old. This mean profile perceives his/her health status as good, has not suffered depression, and has not received medications such as antidepressant or homeopathy.

Based on this respondent profile, we will look into the data and divide it into segments depending on health status, which is the dependent variable of the study and, based on this, we will know which subjects have suffered depression and the effect they cause on the model depending on the treatment they have followed. In Table 2, the cases of health status that are analyzed

in the model are summarized. The highest percentage is a “good” health status.

**Table 2.**

Cases depending on health status.

		N	Margin percentage
Perceived health status	Very good	4,190	18.1
	Good	11,145	48.3
	Average	5,531	24.0
	Poor	1,724	7.5
	Very bad	499	2.2
Total		23,089	100

The employed model fits the data and is a robust model. The tests based on the Pearson’s chi-squared and deviance show good results regarding the adjustment of the model with  $p$ -values that equal 0. The chi-squared behave as expected, its significance is lower than .05 reason why the independent variables explain the dependent one (perceived health status). The amount of explained variance measured by the pseudo  $R$ -squared is sufficient, the model is acceptable, the set of variables explains between the .2 and the .3 according to the criteria of Cox and Snell (.25) and Nagelkerke (.28), which have good quality at comprising values between 0.2 and 0.4. On the other hand, the contrast of the reason of verisimilitude ( $-2\ln$  of the verisimilitude in this case) indicates a good adjustment of the model with a statistically significant result.

Table 3 shows to what extent the independent variables affect the dependent one. The rest of the results and the more influent variables are analyzed on a basic health status (3). In good and very good health status, the analyzed variables affect in a positive way said health status; however, in poor and very bad health status, the variables affect in a negative way, except for one of them.

**Table 3.**  
Estimation of the model.

Perceived health status		Coef.	Sig.
Very good	Antidepressants	1.81	.00
		1	0
	Homeopathy	1.33	.00
		4	0
	Have you suffered depression?	2.04	.00
		1	0
	Spanish nationality	.057	.51
Good	Age	-.056	.00
		0	0
	Academic level	.296	.00
		0	0
	Antidepressants	.897	.00
		0	0
	Homeopathy	.560	.00
Poor		5	5
	Have you suffered depression?	1.12	.00
		8	0
	Spanish nationality	-.216	.00
		5	5
	Age	-.025	.00
		0	0
Very bad	Academic level	.131	.00
		0	0
	Antidepressants	-.363	.00
		0	0
	Homeopathy	-.273	.31
		3	3
	Have you suffered depression?	-.509	.00
		0	0
	Spanish nationality	-.236	.13
		3	3
	Age	.011	.00
		0	0
	Academic level	-.092	.00
		0	0
	Antidepressants	-.795	.00
		0	0
	Homeopathy	.238	.65
		2	2
	Have you suffered depression?	-.600	.00
		0	0
	Spanish nationality	.013	.00
		0	0
	Age	.334	.25
		5	5
	Academic level	-.026	.37
		4	4

For very good health status (1), this perceived status is very good for people that have suffered depression and have treated it with antidepressants. Immediately, there are the ones that have treated depression with

homeopathy, being those the Spanish population, with higher academic level and age under the mean. The positive coefficient of having suffered depression, both in this status and in the good health status implies that the respondents feel better compared to the average perceived health status level and after suffering depression and following a treatment.

In good health status (2), the perception is, in a larger extent, due to the patients that have suffered depression and have treated it with antidepressants, followed by the ones that were treated with homeopathy. Here, the academic level is more important, whereas Spanish nationality is not a positive determinant for the model, as well as the negative effect of advanced age.

Summarizing, these two health status in patients that have suffered depression is perceived as good or very good after being treated, with both antidepressant with a higher significance, and with homeopathy with also a high significance.

For poor (4) and very bad (5) health status, patients perceive that they are worse if they have suffered depression, which seems coherent. However, in addition to the data, it is perceived that their health status is worse when taking antidepressants and that using homeopathy has a lower effect in poor health status, and what is more important, it does not cause a negative effect in very bad health status. This can be interpreted as the fact that using homeopathy has not cause the patients with very bad health for having suffered depression to feel worse, whereas antidepressant do.

This results point out that the academic level has a positive incidence in good and very good health status, which can mean that a higher academic level can help overcome this illnesses. Spanish nationality also seems to affect in a positive way good health status, perhaps due to the way of living in the country, Spanish culture or any other reason, whereas in the other states, it is not a determinant. In any case, this is a variable with low incidence. Age, on the other hand, in spite of its scarce incidence in the model, does seem to be an element that helps younger people perceive better health status. In worst health status, it shows how a more advanced age helps the respondents to not perceive their health status as worst after suffering depression. The use of homeopathy gets results that are very similar to the use of medications to obtain good and very good health status.

## Discussion

Through the Spanish health survey 2017, the perceived health status of 23,000 cases has been analyzed, with majority of the cases having an average, good and very good perceived health status. The presence of a relation between the respondents that suffer depression and their perceived health has been demonstrated. This fact is also contrasted in the study of Nguyen, Anderson, Miracle and Rifkin (2017), which is also a cross section of the American National Health and Nutrition Examination Survey (NHANES) 2011-2012.

The presented model is suitable for the utilized data, it shows a good fit depending on the contrasted criteria, and the obtained results are significant. The multinomial model has been used in several occasions to contrast certain illnesses on health status. Barreto y Figueiredo (2009) applied this in a cross section in 2006, with significant results on the academic level.

The variables of nationality and academic level do not seem to have a high incidence in the model, although their contribution is positive in the cases of good and very good perceived health. Other studies implicate the variable of academic level in a positive way at obtaining good or very good perceived health (Quispe-Llanos et al., 2019, Xiao & Barber, 2008).

In patients that have suffered depression and perceive a good or very good health status, the variable of highest incidence in those health status is the use of antidepressant; however, the use of homeopathy also has a very high significance in the model. As Cartwright et al. (2016) point out in their clinical study about patients with depression that take antidepressants in the long term, it is determined that most cases have improved their health status thanks to the antidepressants, but a high percentage of the same cases has experienced problems derived from the long-term treatments, such as drug withdrawal syndrome, weight and sexual problems. This agrees to a large extent with the results obtained in this study.

In cases of depression, these results are aligned with the fact that, in order to improve a health status, the important thing is to feel good and perceive it that way. In fact, the attention on these patients by means of different therapeutic techniques is essential to get the best health status, just as Latorre-Postigo et al. (2012) point out. Although they also criticize the need of varying the treatment model used in Spain due to the need of attention of these patients, since the different therapies require a great effort regarding resources, in these cases, if homeopathy helps the patient feel well, its use is fair, being less detrimental for health.

In the cases where patients perceive their health status as very bad, the use of homeopathy has a positive effect, whereas the antidepressants seem, according to the obtained results, to have a negative effect in the health status. Therefore, an improvement in the patient's attitude is always important, and it seems good to recommend the use of homeopathy to treat these cases, at least as an alternative to traditional medicine.

There are several studies that show the effectiveness of homeopathy, as it has been stated in the introduction. In the work of Viksveen, Relton and Nicholl (2017), a research of one year is developed applying homeopathy to patients with depression, and said work is concluded with positive effects from this treatment. Other authors such as Schyma (2010) or Rhee, Ng and Dusek (2017) also relate homeopathy positively to a better health status.

Being a cross-sectional analysis, the temporary limitation of the studied series is present. However, contemporary works as the one from Mittal et al. (2018) or Hughs, Kabir, Kee and Bennett (2017) stay in this methodological line aiming to provide information on this type of surveys. In spite of being a cross section, it is relevant to practice this type of studies that confirm how

the collected data from other clinical analysis is statistically compared.

In future studies, it would be interesting to confirm if this tendency is maintained in the health surveys. This is not a fact referent only to the period covered by a sole health survey. The spurious relation of the presented indicators is also a limitation for the study. Although it is true that the relation is confirmed, it would be necessary to keep on investigating in future surveys to complete the proposed study. This way, the model presented in this study is taken as a starting point to add other variables and other temporary periods that complement it, although it would be necessary to establish a more unhurried model to take as a starting point for those future researches.

Finally, it can be concluded that in the case of having suffered depression, both traditional medicine and homeopathy allow the respondent to perceive a better health status. Besides, in the case of homeopathy, no side effects are produced by the treatment. The variable of academic level contributes positively in the case of very good perceived health, reason why it does not seem to be a determinant in the model, whereas age, in spite of not showing a high incidence, improves good perceived health status, and causes the opposite in worst health status. In addition, homeopathy does not worsen the very bad health status, reason why we suggest the use of this treatment for any health status.

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