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## **Non-clinical factors and citizens' satisfaction: A way to improve the quality of health systems**

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### **Abstract**

Users' self-reported satisfaction is often employed to assess the quality of health services and systems and guide actions for improvement. For this reason, health providers and policymakers are increasingly interested in identifying factors that promote people's higher satisfaction with the health system that protects them. Using data from the Spanish Healthcare Barometer survey, this paper aims at analysing the relation between non-clinical factors and people's overall satisfaction with the public Spanish National Health System. Specifically, we study whether a better experience with factors such as doctor-patient communication or prompt attention is relevant in improving overall satisfaction with the health system and identify which factors contribute most to satisfaction. Probit-adapted ordinary least squares, which has been increasingly employed in the most recent subjective well-being literature, is used as a methodology. The findings show that non-clinical factors are relevant in reporting higher overall satisfaction with the health system. Factors related to prompt attention and dignity contribute most to increasing overall satisfaction. These findings provide health

policymakers with information about where to best allocate economic resources to improve the quality of the health system.

**Keywords:** quality assessment; non-clinical quality; patient satisfaction; POLS; health system performance; responsiveness

## 1. Introduction

Ensuring that people have an overall satisfactory experience with the health system that they use has been one of the main concerns of health policymakers in the last four decades [1,2]. Firstly, because the level of satisfaction has been conventionally used as a reliable indicator of the quality of the services provided by a health system [3–6] and, secondly, due to the potential implications of satisfaction on population health. People who are more satisfied with the care they receive from the health system are usually more cooperative in managing their health problems, accept treatment procedures, and follow the advice of the health staff [1,7–9]. Accordingly, promoting satisfaction with the health system could lead to a healthier population. In fact, due to the importance of this concept, measuring satisfaction has become mandatory in countries such as Germany or the Netherlands to inform decision-making processes regarding quality of care [10,11].

In this study, we analyse the Spanish National Health System (SNHS); a universal coverage system that is free of charge at the point of delivery, financed through taxes, and where management is highly decentralised to the state governments. The public sector is the main health provider and accounts for around 70% of total healthcare expenditure [12]. In the Spanish case, overall satisfaction with the health system is one of the key indicators used by the SNHS to assess its performance [13]. In recent years, however, this indicator has not shown significant improvements. According to data provided by the Spanish Ministry of Health, the mean satisfaction of people with the SNHS remained in the range 6.74–6.29 on a scale of 10 during the period 2008–2019 [14].

To improve overall satisfaction with health systems, it is necessary to identify which factors contribute to more satisfactory experiences or perceptions. Overall satisfaction is a multidimensional concept which can be driven by several factors [8]. So far, the literature has focused on studying the influence of particular aspects on users' satisfaction with both health systems and the services they provide. These include factors such as individuals' characteristics (age, gender, or level of education) [11,15], country features (culture, GDP per capita, or unemployment rates) [4,16], or the health systems themselves (health expenditure per capita, cost of services, or type of financing of a health system, i.e. public or private) [4,16,17].

This paper aims at analysing the relationship between the so-called non-clinical factors and overall satisfaction with the SNHS. Specifically, we study whether the experience people have with non-clinical factors could be a good mechanism to improve their satisfaction with the health system and identify which factors contribute most to achieving it. Non-clinical factors refer to items patients interact with when they come into contact with health systems that are not directly related to health, but relevant to guaranteeing people's well-being [1,3]. These include aspects such as the confidence and security transmitted by health staff; being treated with respect; being promptly served; having enough time to ask questions about the illness; or receiving clear, sufficient, and reliable information about health problems, among others. In its annual report of 2000 [18], the World Health Organization (WHO) established three intrinsic goals for any health system: *system responsiveness*, *health* (ability to safeguard people's health in terms of mortality, disease, life expectancy), and *fairness in financial contribution* (ensure that households contribute to financing the health system in an equitable way) [19,20]. Likewise, it developed eight domains divided into two groups encompassing the main non-clinical factors: 1) those related to *respect for persons* (autonomy, communication, confidentiality, and dignity); and 2) those related to *client orientation* (access to social support, choice, prompt attention, and quality of basic amenities) [20].

Several studies have underlined the relevant role played by non-clinical factors. For instance, Bartlett et al. (1984) examined the care of chronically ill patients in Baltimore City Hospital (US) and found that the quality of physicians' interpersonal skills played a

prominent role in patients' medication adherence [21]. More recently, Banerjee and Duflo (2011) observed that not treating patients particularly well, not providing enough time to be served, and limiting the number of questions patients can ask might be some of the reasons people decide not to use the public health system in India [22]. Likewise, Świątoniowska-Lonc et al. (2020) showed that patients with hypertension who reported more satisfaction with physician-patient communication tend to indicate better treatment adherence and self-care [23]. Therefore, improving the responsiveness of health systems to non-clinical factors may have a positive impact not only on people's satisfaction with the health system, but also on population health.

In the context of the pandemic caused by the SARS-CoV-2 virus, the identification of factors that could explain more positive or favourable attitudes towards COVID-19 preventive behaviours, such as vaccination or social distancing, has aroused great interest. The results reveal some key attitudinal factors that should be encouraged by public health policies to address the disease: trust in science and confidence about vaccination [24], as well as scientific literacy and perceived understanding of the disease [25]. In the case of Spain, the high rates of voluntary vaccination (according to WHO, 77% of the population was fully vaccinated in February 2022) can be explained, above all, by citizens' strong trust in the national health system and because the vaccination strategy has been communicated in a transparent manner [26]. In the setting of the pandemic in China, Wang et al. (2020) highlighted the relevance of improving non-clinical factors, such as confidence in doctors or satisfaction with health information, to minimise the impact of COVID-19 disease on the mental health of the general population [27]. In short, these findings reveal that promoting these cognitive and subjective non-clinical factors should be one of the priorities in the design of public health policies to overcome the current global public health crisis.

As some studies have urged [28], the results of this study can contribute, firstly, to knowledge about non-clinical factors as a potential mechanism for improving overall satisfaction with the SNHS. Secondly, the study can aid in identifying the most relevant factors that promote overall satisfaction. Accordingly, these findings allow us to provide health policymakers with recommendations about where to best allocate economic resources to improve the quality of non-clinical factors more efficiently. Likewise, this

study is particularly relevant in the current context of the COVID-19 pandemic, which has brought to light the relevance of having high-performance health systems to successfully address a health crisis [29].

## **2. Empirical Strategy**

### **2.1. Dataset**

We use cross-sectional microdata obtained from the Spanish Healthcare Barometer (SHB) survey of 2015. The SHB is an annual opinion survey conducted in Spain by the Ministry of Health in coordination with the Spanish Centre for Sociological Research (CIS) since 1993. The survey is administered to citizens (both users and non-users of the SNHS) over 18 years of age by means of a questionnaire in respondents' households. The survey sample size is 7,800 interviews distributed in three waves of 2,600 interviews each. The sampling procedure is multistage and stratified by cluster. The sample set is representative of the Spanish adult population with a sample error of  $\pm 1.14\%$  for a 95% confidence level [30]. In this study, we consider all respondents without missing values in the variables analysed. Accordingly, we work with 4,080 observations.

The SHB survey asks respondents for their opinion about several topics related to the Spanish health system. Thus, in line with some studies, we rely on self-reported measures to evaluate the actual responsiveness of the health system [31–33]. More specifically, the SHB provides information about how the SNHS and its main health services respond to the expectations of the population regarding various non-clinical factors. Some of these non-clinical factors are related to the responsiveness domains developed by WHO. Unfortunately, the SHB survey does not include the same non-clinical factors every year to be assessed by respondents. For that reason, we employ the 2015 dataset since it is the year the survey included the highest number of non-clinical factors to be analysed.

To the best of our knowledge, the SHB is the only official survey at national level that reports indicators measuring aspects related to the non-clinical quality of the SNHS. Furthermore, it is included in the National Statistic Plans of the Spanish Government [34]. Likewise, the Quality Plan 2010 of the SNHS considers the SHB a necessary informative tool to guarantee both the high quality of the system and the informed

participation of citizens [35]. The dataset is publicly available on the website of the Spanish Ministry of Health [36].

## **2.2. Variables**

### **2.2.1. Dependent variable: overall satisfaction with the SNHS**

Our dependent variable measures respondents' overall satisfaction with the SNHS. This measurement is obtained by the following question: 'Are you satisfied or unsatisfied with how the public healthcare system works in Spain?' Respondents rate this question on a scale ranging from 1 (*very dissatisfied*) to 10 (*very satisfied*).

### **2.2.2. Explanatory variables: responsiveness domains**

The SHB survey collects respondents' assessments by means of 13 non-clinical factors with which they interact in the main three health services (primary, specialised, and hospital care services). Specifically, for each health service, the respondents are asked the following question: 'Based on your own experience or the idea that you have: I would like you to assess the following aspect'. A scale ranging from 1 (*completely unsatisfactory*) to 10 (*completely satisfactory*) is used. Table 1 indicates the 13 non-clinical factors included in the SHB survey in 2015 (Column 1), the survey questions (Column 2), and the health service for which the non-clinical factor is assessed (Column 3).

We observe that the number of non-clinical factors included in each of the three health services is different (nine factors for primary care, seven for specialised care, and six for hospital care). For instance, *Advice of doctor* is assessed for all the health services, whereas *Confidence and security* is only assessed for primary and specialised care. In order to consider all non-clinical factors in the same model and avoid potential multicollinearity problems, we group the factors in the responsiveness domains following the WHO's proposal to link each non-clinical factor with its corresponding domain (see Table SM1 in Supplementary Material) [1,3,37]. Table 2 shows the grouping of the non-clinical factors in the SHB survey with their corresponding responsiveness domains. We identify four responsiveness domains (*Communication*, which includes five non-clinical factors; *Dignity*, which includes four; *Prompt attention*, which includes

three, and *Quality of basic amenities*, with one). Next, we apply principal component analysis to synthesize all the non-clinical factors associated with the first three domains in a responsiveness domain. We take the first component and then normalise the factors between 0 and 1. With the first component, between 61.6% and the 69.2% of the variance of the information of each of the estimated dimensions (*Communication*, *Dignity* and *Prompt attention*) is explained. Finally, we apply the overall Kaiser–Meyer–Olkin (KMO) test to check the adequacy of the factorial analysis. The KMO test suggests a proper grouping since the level of the index is over 0.7 in all the domains (Table 2) [38].

Table 1. Non-clinical factors from the SHB survey selected by health service. 2015

<b>Non-clinical factor</b>	<b>Question in the SHB survey: Based on your own experience or opinion that you have, please rate:</b>	<b>Health service<sup>a</sup></b>
Treatment received	The treatment received from the health staff	Primary Specialised
Time devoted by doctor	The time the doctor devotes to each patient	Primary Specialised
Confidence and security	The confidence and security transmitted by the doctor	Primary Specialised
Knowledge and follow-up of health problems	Knowledge of medical records and follow-up of health problems	Primary
Information received on health problem	The information received on your health problem	Primary Specialised Hospital
Advice of doctor	Doctor's advice about exercises, diet, smoking, alcohol consumption, etc.	Primary Specialised Hospital
Waiting time for appointments	The time you must wait since you made the appointment until you are seen by the doctor	Primary Specialised
Waiting time for diagnostic tests	The waiting time for performing diagnostic tests	Primary Specialised
Care by nursing staff	The care delivered by nursing staff	Primary
Waiting time for non-emergency admission	The waiting time for a non-emergency admission	Hospital
Care and attention by medical staff	The care and attention delivered by medical staff	Hospital
Care and attention by nursing staff	The care and attention delivered by nursing staff	Hospital
Number of people sharing room	The number of people who share a room	Hospital

*Note:* SHB = Spanish Healthcare Barometer. Information retrieved from the Spanish Healthcare Barometer.

<sup>a</sup> Health service for which the non-clinical factor is assessed.

Table 2. Correspondence between the responsiveness domains and non-clinical factors included in the SHB survey. 2015

<b>Responsiveness domain</b>	<b>Non-clinical factor</b>	<b>Health service</b>
<b>Communication</b> Items: 11 KMO test: 0.906	Advice of doctor	Primary Specialised Hospital
	Confidence and security	Primary Specialised
	Time devoted by doctor	Primary Specialised
	Knowledge and follow-up of health problems	Primary
	Information received on health problem	Primary Specialised Hospital
<b>Dignity</b> Items: 5 KMO test: 0.7997	Treatment received	Primary Specialised
	Care by nursing staff	Primary
	Care and attention by medical staff	Hospital
	Care and attention by nursing staff	Hospital
<b>Prompt attention</b> Items: 5 KMO test: 0.7447	Waiting time for appointments	Primary Specialised
	Waiting time for diagnostic tests	Primary Specialised
	Waiting time for non-emergency admission	Hospital
<b>Quality of basic amenities</b> Items: 1	Number of people sharing room	Hospital

Note: KMO = Kaiser-Meyer-Olkin

### 2.2.3. Socioeconomic variables

We control for a set of socioeconomic characteristics of individuals. We have chosen these socioeconomic variables in accordance with the literature [9,11,17,39–41]. Specifically, we consider the following 10 variables: age (Aged 60); sex (Female); level of education (Higher education); marital status (Single); place of residence (Urban); place of birth (Born abroad); occupational status (Employed); self-reported health (Good



health); self-reported chronic illness (Chronically ill); and experience with the public health system. The definitions and descriptive statistics of the socioeconomic variables are shown in Table 3.

Table 3. Socioeconomic variables in the SHB survey. 2015

Variable	Definition	Mean (SD)
Aged60	1 if respondent is aged over 60 and 0 otherwise	0.28 (0.45)
Female	1 = female, 0 = male	0.52 (0.50)
Higher education	1 if respondent has secondary or tertiary education and 0 if respondent has primary education or no schooling	0.76 (0.43)
Single	1 if respondent is single and 0 if respondent is married, widowed, separated, or divorced	0.30 (0.46)
Urban	1 if respondent lives in a municipality over 10,000 inhabitants and 0 otherwise (rural)	0.80 (0.40)
Born abroad	1 if respondent was not born in Spain and 0 otherwise	0.09 (0.29)
Employed	1 if respondent is employed and 0 otherwise	0.43 (0.50)
Good health	1 if respondent perceives his/her state of health as good or very good and 0 otherwise	0.73 (0.44)
Chronically ill	1 if respondent reports being chronically ill and 0 otherwise	0.33 (0.47)
Experience with public health system	1 if respondent has used, at least once, the Spanish public health system in the last 12 months and 0 otherwise	0.75 (0.43)

Note: SD = Standard deviation, SHB = Spanish Healthcare Barometer. Adapted from Centre for Sociological Research. N = 4,080

### 2.3. Method

To study the association between non-clinical factors and the overall satisfaction of people with the SNHS, we propose the following model:

$$Y = \alpha + D\beta + Z\rho + R\lambda + \varepsilon$$

where  $Y$  is the vector of the dependent variable *overall satisfaction with the SNHS as a whole* of  $n$  individuals and  $D$  is a matrix containing the four responsiveness domains identified in the previous section (Communication, Dignity, Prompt attention, and Quality of basic amenities). Let  $\beta$  denote a vector of parameters where  $\beta = (\beta_1, \dots, \beta_j)'$  with  $j$  being the number of responsiveness domains included in the model;  $Z$  denotes

the socioeconomic characteristics;  $\rho$  denotes a vector of parameters  $\rho = (\rho_1, \dots, \rho_k)'$  with  $k$  being the number of socio-economic characteristics included in the model; and  $\varepsilon$  is the error term that is assumed to have a normal distribution of zero mean and  $\sigma^2$  variance. Likewise, given that the SNHS is highly decentralised to the regional government, we include the matrix  $R$  to control for a set of regional dummies.

Our parameters of interest are represented by the vector  $\beta$  which indicates the level of correlation between the non-clinical factors and overall satisfaction with the SNHS.

We apply probit-adapted ordinary least squares (POLS) to estimate the parameters of the model. POLS is a method that is increasingly used in the most recent subjective well-being literature [42,43]. The method was developed to estimate coefficients using the ordinary least squares method instead of an ordered probit or logit method for regression models where the dependent variable is ordered categorically [44]. The application of the POLS method involves two stages. Firstly, the dependent variable is changed from ordinals to cardinal values, what is known as the 'cardinalisation process'; and secondly, the OLS estimation is applied on the new transformed variables.

In the cardinalisation process, the POLS method draws on the implicit cardinalisation of  $y_i^*$  (a continuous unobserved variable) of the latent variable model of the ordered probit method to transform the observed variable ( $y$ ), which in our case only takes ordered integer values from 1 to 10, into a variable able to take any value on the real line  $(-\infty, +\infty)$  ( $\bar{y}$ ). We first obtain the  $\mu_j$  values (ordered probit cut-points) which are associated to the standard normal distribution function from accumulated frequencies of the  $J$  response categories of the ordered categorical variables. Then, we calculate the conditional expectation of the unobserved variable for each of the response categories in accordance with the normal distribution theory as follows:

$$\bar{y}_i = E(y_i^* | \mu_{j-1} < y_i^* < \mu_j) = \frac{n(\mu_{j-1}) - n(\mu_j)}{N(\mu_j) - N(\mu_{j-1})}$$

where  $\bar{y}_i$  is the cardinalisation of the dependent variable,  $n(\cdot)$  stands for the standard normal density function, and  $N(\cdot)$  is the accumulated normal distribution function. Once

this transformation has been carried out, we can estimate the coefficients using the OLS method on the transformed variable.

### 3. Results

Table 3 shows that around 30% of respondents are over 60 years of age, single, and chronically ill. Of the total respondents, 52% are women and around 75% of them have secondary or tertiary education and self-report good or very good health. Additionally, 80% of the sample resides in urban areas, 44% is employed, and 9% was born abroad. Likewise, 75% of the sample had at least one experience with the SNHS in 2015. The mean overall satisfaction of respondents with the SNHS is 6.4 on a scale of 10 with a standard deviation of 2. Descriptive statistics of the non-clinical factors are provided in the Supplementary Material (see Table SM2).

Table 4 presents the results of the model estimations. After checking with the corresponding tests, we found no problems of heteroscedasticity (corrected by the robust standard errors after using weights), multicollinearity (tested using the variance inflation factor), and omitted variables (Ramsey test) (see Tables SM3 and SM4 in the Supplementary Material).

All the coefficients associated with the responsiveness domains are positive and statistically significant, except for the *Quality of basic amenities* domain. This means that people who report a more satisfactory experience with the non-clinical factors related to those domains tend to report higher satisfaction with the SNHS.

We observe that the non-clinical factors related to the *Prompt attention* and *Dignity* domains have the strongest correlation. The Wald test of equality of the estimated parameters indicates that both coefficients are statistically equal ( $F [1, 3897] = 0.22$ ;  $p = .6373$ ), but different from the third domain (Communication) with the highest coefficient ( $F [1, 3897] = 4.93$ ;  $p = .0006$ ). Therefore, these are the most relevant factors for people to report higher overall satisfaction with the SNHS.

Table 4. Association between responsiveness and overall satisfaction with the SNHS

Variables	Coefficient (standard error)
<i>Responsiveness domains</i>	
Communication	0.422* (0.175)
Dignity	1.214*** (0.171)
Prompt attention	1.343*** (0.117)
Quality of basic amenities	0.018 (0.020)
<i>Socioeconomic variables</i>	
Aged60	0.219*** (0.047)
Urban	0.101** (0.037)
Born abroad	0.216*** (0.057)
Good health	0.112** (0.040)
Experience with public health system	-0.124*** (0.033)
Female	Yes
Higher education	Yes
Single	Yes
Employed	Yes
Chronically ill	Yes
Region	Yes
Constant	-1.959*** (0.110)
Observations	4,080
R <sup>2</sup>	0.3209

Note: POLS regression. Robust standard errors in parentheses. 'Yes' indicates that the variables have been included in the regressions but their coefficients are not statistically significant.

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$

Regarding the socioeconomic characteristics of the respondents, for the sake of simplicity, we omit the coefficients of the socioeconomic variables which are not significant. We observe that people over the age of 60 report a significantly higher level of overall satisfaction with the SNHS. Likewise, people born outside Spain (Born abroad), self-reported good or very good health (Good health), and people living in a municipality with over 10,000 inhabitants (Urban) also tend to report higher overall satisfaction with

the Spanish health system. In contrast, we find that people who have had at least one experience with the SNHS in the last 12 months report significantly lower levels of overall satisfaction with the health system.

#### **4. Discussion**

The findings of this study provide empirical evidence about the relevance of non-clinical quality in healthcare. By focusing on the SNHS, we observe that people who report a more satisfactory experience with certain non-clinical factors tend to report a significantly higher average level of overall satisfaction with the Spanish health system. Some authors have highlighted the need to improve satisfaction with health systems to guarantee that people visit them when they really need to, are more cooperative in managing their health problems, accept treatment procedures, or follow the advice of health staff [1,7–9]. These results reveal that satisfaction with a health system cannot be improved solely in terms of clinical, medical, or technical aspects, but also by ensuring that people have more satisfactory experiences with non-clinical issues of healthcare.

In the case of the SNHS, we find that non-clinical factors related to the domains of *Prompt attention* (waiting times to get an appointment, diagnostic tests in primary and specialised care, or non-emergency admission in hospitals) and *Dignity* (treatment by medical and nursing staff) are the most correlated with overall satisfaction with the health system as a whole. The relevance of these domains has been reported in the literature. For instance, the Multi-Country Survey 2000-2001 of the WHO showed that, on average, around 46% of respondents in developed countries chose *Prompt attention* as one of the most important aspects to consider when assessing a health system [20]. In addition, most studies highlight that delays in care delivery are one of the main causes of dissatisfaction among patients [39], particularly in emergency services [17]. On the other hand, Tinelli et al. (2015) found that patients consider waiting times to be the least important feature when choosing primary care services in Germany, England, and Slovenia [45]. This could be explained by the short waiting times in primary care in these three countries, which would cause low concern about these factors. Likewise, according to the literature review of Crow et al. (2002), the relationship between patient and health staff (including the information received) is the factor with the strongest correlation between patient satisfaction and health services [40]. Courtesy, empathy,

and friendliness towards the patient are significantly associated with patient satisfaction [11].

As regards *Prompt attention*, the domain showing the strongest correlation with higher satisfaction with the SNHS, it is important to recall that the SNHS provides free and universal healthcare based on the equity principle of 'equal access to health services for equal need'. In this setting, waiting lists are the main mechanism for allocating health resources. One of the positive aspects of waiting lists is their ability to mitigate problems of moral hazard, that is, the costs arising from the inappropriate behaviour of users and medical staff in consuming medical services above the threshold of efficiency. However, waiting lists also have negative effects in terms of loss of physical and mental well-being. In addition, waiting lists could jeopardise the principle of equity of the system, because people with higher incomes could sidestep them by using private healthcare systems. Our study provides empirical evidence that the *Prompt attention* domain has the strongest correlation with higher satisfaction with the SNHS, but it also shows that these factors receive the lowest ratings by respondents. More specifically, the non-clinical factors with the lowest average ratings in each health service are waiting times to get an appointment or a diagnostic test both in primary (6.5 and 5.6 on a scale of 10, respectively) and specialised care (5.0 and 4.9 on a scale of 10, respectively), as well as the waiting time for non-emergency admission in hospital care (4.9 out of 10) (see Table SM2 in the Supplementary Material). This means that there is ample room for improvements in this aspect. Reducing waiting times is likely to be the best way to improve people's experience with the *Prompt attention* domain and, consequently, to increase satisfaction with the SNHS. In fact, and according to data provided by the key indicators of the SNHS, the average waiting times for the first medical specialist consultation in Spain increased from 54 days in 2006 to 99 days in 2020, an average annual growth of around 6% [35]. The saturation of the Spanish health system due to the COVID-19 pandemic could justify a worsening in the last year, but the trend dates back 15 years. Improving the *Prompt attention* domain tends to be more resource-demanding than other domains (i.e. *Dignity* or *Communication*) since more staff and clinical resources are usually needed. De Silva and Valentine (2000) suggested that

access to emergency care, as well as a wide range of primary healthcare services, could help to strengthen the prompt attention process [46].

In contrast, non-clinical factors related to the *Dignity* and *Communication* domains, which in turn may not be so dependent on economic resources [3,18,46], are positively related to higher overall satisfaction with the SNHS. These findings, together with the most recent empirical evidence in the pandemic context, underline the importance of cognitive and subjective non-clinical factors to foster favourable attitudes towards COVID-19 preventive behaviours [24–26,47] and indicate that investment in training programmes focusing on health staff are key [31]. More specifically, the content of such training could be aimed at improving the personal skills of health staff to ensure respectful treatment, as well as transmitting transparent and adequate medical information to users.

Finally, as regards the influence of socioeconomic variables, we find that older people as well as foreign-born people tend to report greater overall satisfaction with the SNHS. Several authors have found a positive association between age and satisfaction [5,11,17], which may be explained by the fact that older people are less critical of healthcare services or have more realistic expectations [48]. Muntlin et al. (2008) also highlighted the role expectations play in the case of people who were born abroad, which may be explained by the ‘happy migrant effect’ [41]. This means that people from other countries tend to minimise the negative effects of their care and are usually more satisfied with the care they receive than nationals [49].

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