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Rating healthcare services: consumer satisfaction vs. health system performance

医疗保健服务评级：消费者满意度与卫生系统绩效

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ABSTRACT

The complex healthcare services and the consumer's lack of technical knowledge to assess them engender a debate over using consumer satisfaction ratings as a quality-of-care marker. This paper aims firstly to investigate the effect of socio-demographic, socio-economic and spatial characteristics on the perception of quality of healthcare and secondly to evaluate the relationship between consumer satisfaction and health system performance. Reporting a Eurobarometer survey and the scores of the Euro Health Consumer Index, the finding is that some socio-demographic groups are more likely to get unsatisfied with healthcare services than others (e.g. women, those over 24 years old, those who self-define themselves as working class). Moreover, a strong relationship is revealed between consumer satisfaction and health system performance. The higher the performance of a health system, the higher the propensity to have consumers with positive perception of the healthcare services (satisfied consumers). The implications of the findings are then discussed.

摘要

复杂的医疗保健服务和消费者缺乏技术知识来评估这些服务，引发了一场关于使用消费者满意度评级作为医疗质量指标的争论。本文首先研究社会人口学、社会经济和空间特征对医疗质量感知的影响，然后评估了消费者满意度与医疗系统绩效之间的关系。通过报告欧洲民意调查和欧洲健康消费者指数的得分，发现一些社会群体比其他人更有可能不满意医疗保健服务（例如，女性，24岁以上，自己定义为工人阶级的群体）。此外研究发现，消费者满意度和医疗系统绩效之间存在着密切的关系。医疗系统的绩效越高，消费者对医疗服务（满意的消费者）正面认知的倾向就越高。这些研究结果的含义也随后进行了讨论。

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Introduction

Over the last two decades, remarkable progress has been made in the field of medical services and this is obvious for developed economies in terms of both economic and

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technological development. Lately, new drugs have been discovered, some deadly diseases have been eradicated, the population has been informed about the methods of prevention and treatment, which has led to an increase in life expectancy and quality of life in developed countries. Despite these advances in the developed world, in the case of poor countries, economic development is the first barrier that causes poor population health and low life expectancy. Economic growth is associated with the development of service economy. Among these, healthcare services are important and their development is a priority for public authorities (Andaleeb, 2001). Thus, they are experiencing rapid expansion in the context of an aging population, competitive pressures and technological developments (Dagger, Sweeney, & Johnson, 2007).

Previous research on the services market confirms that ensuring the quality of the services offered is a key element for earning profitability and a good market share (Parasuraman, Zeithaml, & Berry, 1985; Parasuraman, Zeithaml, & Malhotra, 2005; Zeithaml & Bitner, 2000). Organisations improve their management strategies so that their efforts are focused on the customer (Andaleeb, 2001; Zeithaml & Bitner, 2000), meeting their requirements and needs, considering that the trust of stakeholders who are interested in service achievement is confirmed by quality assurance. In an organisation that delivers healthcare services, financial indicators or the system performance can be explained by the patients' appreciation of service quality (Dagger et al., 2007; Naidu, 2009; Nelson et al., 1992).

In order to gain competitive advantage and increase system performance on the current economic market, it is necessary to meet at least two conditions: to have satisfied clients and to provide quality services (Dagger et al., 2007). Concepts of service quality and consumer satisfaction are the target of marketing people's concerns because they have a strong impact on many behavioural variables. In fact, these concepts are at 'the core of the marketing concept' (Shemwell, Yavas, & Bilgin, 1998). Therefore, there is a continuing concern within the academic environment as well as among practitioners to study these concepts. Thus, it can be explained why a large number of studies that are analysing these unique but related constructs (Cronin & Taylor, 1994; Oliver, 1993; Shemwell et al., 1998; Taylor & Baker, 1994) consider the quality of services to be objective, cognitive (attributes that correspond to a left-brained person) while customer satisfaction is subjective, affective (attributes that correspond to a right-brained person). Some researchers argue that satisfaction is more important than service quality (Oliver, 1999) and others advocate that the service type is responsible for the salience of either components (Dabholkar, 1995; Shemwell et al., 1998).

Another reason that can justify the concern for these concepts is referring to the fact that more and more healthcare providers are competing to win a position on the European market. The one that implements quality management systems within the organisation (Campbell, Roland, & Buetow, 2000) will be successful. Managers will be required to implement, maintain and continuously improve their quality management systems (TQM) in order to improve the system performance (Dagger et al., 2007; Zastowny, Stratmann, Adams, & Fox, 1995). But is consumer satisfaction a good quality-of-care marker?

Theoretical background: health system performance and consumer satisfaction as a measure of healthcare quality

For researchers, defining the healthcare quality concept was a challenge due to its size and complexity. The peculiarity that makes defining the quality of medical services more difficult than for other services is that the assessment of the quality of the consumer's life and the customer itself is not an easy thing to do (Eiriz & Figueiredo, 2005; Naidu, 2009). In fact, we can find a large number of quality models in service research literature but only a few are applied to health services (Babakus & Mangold, 1992; Dagger et al., 2007; Ferreira, Marques, Nunes, & Figueira, 2017; Naidu, 2009; Ricci-Cabello et al., 2017).

In the quality of healthcare conceptual definition, there are still contradictory views (Campbell et al., 2000). The existence of different perceptions in the area of the quality levels resides in the multiple variety of the beneficiary, namely the client (specifically, the patient) (Rotariu et al., 2017). In most studies, conceptualisation of this term starts from the definition of Lee and Jones (1933) who is referring to 'articles of faith', which represent attributes or goals of the process of care. Criteria of quality represent a reflection of values and judgments of these 'articles' (Cleary & McNeil, 1988; Donabedian, 2005).

Healthcare quality can be evaluated using a triad framework, which is composed of three categories: structural, process and outcomes. The first, structural category refers to all organisational elements that facilitate the health service delivery. All the action initiatives taken by the hospital's employees and patients involved in the medical act can be synthesised into the *process* category. The last category includes the results of the medical service delivery such as mortality rate or patient satisfaction.

From Donabedian's point of view, patients' satisfaction is a part of quality care construct and not a consequence of it, as it can be found in other studies (Babakus & Mangold, 1992; Bowers, Swan, & Koehler, 1994; Ricci-Cabello et al., 2017; Shemwell et al., 1998; Zineldin, 2006). The attempt to establish a link between these three elements has not led to a unitary solution (Ferreira et al., 2017; Herald, Alexander, Fraser, & Jiang, 2008; Needleman, Buerhaus, Stewart, Zelevinsky, & Mattke, 2006; Ricci-Cabello et al., 2017; Rogers, Hwang, Scott, Aiken, & Dinges, 2004).

The disconfirmation of expectations paradigm describes the quality of healthcare services as an overall evaluation or judgment about an entity's superiority. This evaluation considers the discrepancy between the patient's expectations and the real service performance (Boulding, Kalra, Staelin, & Zeithaml, 1993; Cronin, Brady, & Hult, 2000; Dagger et al., 2007; Oliver, 1977; Zeithaml, Berry, & Parasuraman, 1996). Another approach examines two dimensions that can describe quality of care for a patient: access and effectiveness. It represents the patient's ability to access effective care in order to obtain a maximum health performance (Campbell et al., 2000).

As an indicator of future behaviour, performance represents a service quality marker which is linked with patient satisfaction (Boulding et al., 1993; Cronin et al., 2000; Naidu, 2009; Sequist et al., 2008). Another point of view on the quality of services presented in the research literature highlights two relevant dimensions: technical and functional (Babakus & Mangold, 1992; Gronroos, 1984). For medical services, the technical quality refers to the accuracy of the medical process itself, which is aimed at establishing diagnoses and treatments. Healthcare organisations are developing tools to measure medical and technical issues that are available to healthcare professionals and less to

the public. Thus, patients often do not have the necessary knowledge to assess the technical quality of the medical act. They are able to appreciate only the functional quality that refers to the manner in which the healthcare service is provided (Babakus & Mangold, 1992; Donabedian, 2005; Naidu, 2009). Therefore, consumers' perception of functional quality is the basis for their purchasing decision (Zeithaml et al., 1996; Zeithaml & Bitner, 2000).

The quality of care construct in recent research is a multidimensional and a formative one (Parasuraman et al., 2005) and for its measurement, various approaches are used that are focusing on: technical quality, patient satisfaction, patient experience, environment dimension, administrative dimension, health outcomes (Dagger et al., 2007; Fenton, Jerant, Bertakis, & Franks, 2012; Ferreira et al., 2017; Manary, Boulding, Staelin, & Glickman, 2013; Ricci-Cabello et al., 2017; Suess & Mody, 2018).

An analysis of the service quality research literature highlights the fact that the directionality of the customer satisfaction/quality relationship is still unclear (Cronin & Taylor, 1994; Fenton et al., 2012; Ferreira et al., 2017; Manary et al., 2013; Parasuraman et al., 1985). However, a review of the satisfaction research literature highlights several theoretical approaches and also a large number of empirical evidence to support it. A synthesis of these studies emphasises two important issues for this research: (1) the definition of satisfaction and (2) the relationship between satisfaction, quality of care and health system performance.

Firstly, the dictionary definition of this term comes from the Latin word 'satis' which means 'enough'. Thus, a satisfied customer is a person whose expectations or needs are adequately fulfilled. While Hunt (1977) defines it as 'an evaluative reaction resulting from the interaction of the product/situation with the individual's expectations' and considers it a 'quasi-cognitive construct' (Hunt, 1977 in Pascoe, 1983), Linder-Pelz (1982), states that it is 'an affective response'. Considering the psychological factors that influence satisfaction, Pascoe (1983) defines it as 'a health care recipient's reaction to salient aspects of the context, process and result of their service experience' (Pascoe, 1983). From another perspective, patient satisfaction is 'an important measure of health system performance and outcome' (Zastowny et al., 1995), one of the most important measures of quality healthcare (Zarastowny & Lehman, 1988).

Secondly, research regarding satisfaction and quality of care state that there is no absolutely or fixed relation between them, although they are intertwined (Zastowny et al., 1995). Studies that considered the quality of services as input and satisfaction as an output were disputed from a methodological point of view (Chaniotakis & Lymperopoulos, 2009; Cleary & McNeil, 1988; Dagger et al., 2007; Shemwell et al., 1998). The arguments refer to the limited availability of standardised questionnaires and a large number of healthcare quality dimensions: technical quality of care, personal aspects of care, accessibility and availability of care, and physical setting and financial considerations. Researchers emphasise that satisfaction measurement scales do not offer a direct or accurate evaluation of the complex quality of care construct (Dagger et al., 2007; Zastowny et al., 1995). Another objection states that the patient cannot assess technical aspects of care and they use interpersonal or affective criteria for evaluation. In certain cases, the patient can be unsatisfied by the fact that he does not receive expected medicine or tests which, in fact, are not indicated for his medical status (Crow et al., 2002). In fact, the relevance of patient satisfaction research is often questioned because of the unclear

nature of the concept, the validity of the measurement instrument used, the determinants associated with the construct (Sixma, Kerssen, Campen, & Peters, 1998).

Another research direction examines patient satisfaction as a dimension of quality of care services and the findings indicate a positive relation (Andaleeb, 2001; Ferreira et al., 2017; Jerant, Fenton, Bertakis, & Franks, 2014; Larson, Nelson, Gustafson, & Batalden, 1996; Naidu, 2009; Ricci-Cabello et al., 2017). Only a few studies that analysed healthcare industry reported a negative relation between customer satisfaction and healthcare quality (Eriksen, 1987; Fenton et al., 2012).

The findings of Lewis (1994) reveal that age and education are the demographic variables correlated to patient satisfaction. Naidu (2009) proposed a model that measures patient satisfaction and care quality in healthcare. He reveals a positive influence of socio-demographic variables (marital status or education). Other researchers indicate that spatial characteristics (like distance from the hospital, rural or urban residence) and economic ones (median household income) as factors that are linked with patient satisfaction (Goodman, Fisher, Stukel, & Chang, 1997).

Therefore, following the literature outlined above and considering that the debate over using consumer satisfaction ratings as a quality-of-care marker continues, this paper aims firstly to investigate the effect of socio-demographic, socio-economic and spatial characteristics on the perception of quality of healthcare among EU nationals and secondly to evaluate the relationship between consumer satisfaction and health system performance. To achieve these objectives, therefore, based on previous findings in the literature, we here test the following hypotheses:

Hypothesis 1: Consumer satisfaction with healthcare services (consumer perception of quality of healthcare) varies according to socio-demographic and socio-economic status.

H1a: Women are more likely to have a negative perception of the healthcare services than men.

H1b: Younger age groups are more likely to have a negative perception of the healthcare services than older age groups.

H1c: Those living in large households are more likely to have a negative perception of the healthcare services than those in single-person households.

H1d: Lower social class is more likely to have a negative perception of the healthcare services than higher social class.

H1e: Those not working are more likely to have a negative perception of the healthcare services than employed or self-employed people.

H1f: Those with financial difficulties are more likely to have a negative perception of the healthcare services than those without financial difficulties.

Hypothesis 2 (H2): Consumers living in affluent EU regions are more likely to have a positive perception of the healthcare services in their country than those living in less affluent EU regions.

Hypothesis 3 (H3): The likelihood of a positive perception of the healthcare services is higher in health systems with high performance levels.

Considering the hypotheses to be tested, we advance knowledge in the field of quality of healthcare services by examining consumer satisfaction along with a set of individual-level characteristics (socio-demographic, socio-economic and spatial characteristics) and health system performance indexes. The remaining of this paper proceeds with introducing the methodology used and then continues by reporting the results. Finally, the last section presents the implications of the findings.

Methods

To evaluate people's satisfaction with healthcare services and to explore the relationship between consumer satisfaction and health system performance, we here report the results of special Eurobarometer survey no. 418 (Social Climate), conducted as part of wave 81.5 of Eurobarometer series, in the 28 Member States of the European Union (EU-28) (European Commission, 2015). This survey interviewed some 27,910 citizens in EU-28 (from different social and demographic groups) during June 2014 on a face-to-face basis, with some 500 conducted in smaller countries (e.g. Malta) and 1500 in larger countries (e.g. Germany). The methodology used is that of Eurobarometer surveys, interviewing adults aged 15 years and older in the national language and ensuring that on the issues of gender, age, region and locality size, each country is representative in proportion to its population size. Thus, the sample represents the whole territory of the countries surveyed according to the Nuts II regions (or equivalent) and according to the distribution of the resident population of the respective nationalities in terms of metropolitan, urban and rural areas. In each of the selected area the starting address was drawn at random. From the initial address, using a standard 'random route' procedure, further addresses were selected (every Nth address). The respondent in each household was selected at random, following the 'closest birthday rule' (details in the Special Eurobarometer No. 418 methodology; European Commission, 2014). Therefore, in this study, for the univariate analysis data were weighted as recommended in the Eurobarometer methodology (European Commission, 2014) and wider literature (Solon, Haider, & Wooldridge, 2015). Regarding the multivariate analysis, as debate exists over whether a weighting scheme should be used (Pfeffermann, 1993; Solon et al., 2015), we here decided not to use it, given the majority opinion in the literature.

For analysing the proposed hypotheses, the dependent variable is whether EU citizens are satisfied with the quality of healthcare services. This is based on their response to the question: 'How would you judge the current situation in healthcare provision in (your country)?'. The responses are collated in a dummy variable with recoded value 0 for individuals rating the situation in healthcare services as very good or fairly good (total good) and 1 for those rating the situation in healthcare services as fairly bad or very bad (total bad). This therefore, considers the perceptions of EU citizens regarding the quality of the healthcare services in their countries (consumer satisfaction with the quality of healthcare services).

To analyse the hypotheses regarding the variations of consumer satisfaction with socio-demographic, socio-economic and spatial characteristics (*H1a – H1f* and *H2*), the following individual-level variables are used:

- *Gender*: a dummy variable with value one for women and zero for men.

- *Age*: an interval variable for the age of the respondents with value one for those aged 15–24 years old, value two for 25–39 years, value three for 40–54 years and value four for those aged 55 and over.
- *Household size*: a categorical variable for the size of the household where the respondent lives, with value one for one person, value two for two persons, value three for three persons and value four for four persons or more.
- *Social class – self-assessment*: a categorical variable for the respondent perception regarding the social class of society to which it belongs, with value one for the working class of society, value two for the middle class of society and value three for the higher class of society, from other class of society or from none, or for those who refuse to answer and do not know to answer.
- *Occupation*: a categorical variable grouping respondents by their occupation with value one for self-employed, value two for managers, value three for other white collars, value four for manual workers, value five for house persons, value six for unemployed persons, value seven for retired persons and value eight for students.
- *Difficulties paying bills*: categorical variable for the difficulties in paying bills in the last year, with value one for those having difficulties most of the time, value two for those having difficulties from time to time, value three for almost never/never and value four for those who refused to answer.
- *Region*: a categorical variable for the EU region where the respondent lives, with value one for Southern Europe, value two for Western Europe, value three for East-Central Europe and value four for Nordic Nations.

To analyse hypothesis 3 (*H3*), we evaluate the relationship between consumer satisfaction and health system performance. The performance of a country's health system is evaluated using the Euro Health Consumer Index (EHCI) (Health Consumer Powerhouse, 2014). According to EHCI methodology, the health system is evaluated using personal interviews and an active feedback from national healthcare agencies and institutions. Indeed, since 2009, in developing EHCI much more active feedback has been received from national healthcare agencies (Health Consumer Powerhouse, 2014). For evaluating the performance of a country's health system, the EHCI is using 48 indicators grouped in seven sub-disciplines. All indicators in each sub-discipline are graded on a three grade scale, where the grades have the rather obvious meaning of 'Good', 'So-so' and 'Not so good'. The evaluated country, therefore, receives 3 points for high performance, 2 points for average performance and 1 point for low performance levels. Thereafter, the sub-discipline scores are multiplied by the weight coefficients (certain indicators being considered more important than others), obtaining a maximum possible score of 1000 points and a minimum possible score of 333 points. The higher the index, the higher the performance of a country's health system.

Therefore, to test *H3*, we used EHCI total score and the sub-disciplines' total scores, namely:

- *Patient rights and information*: sub-discipline in EHCI, evaluating European health systems by patient's rights and information (example of healthcare performance indicators included: Right to second opinion; Access to own medical record).

- *Accessibility (waiting times for treatment)*: sub-discipline in EHCI, evaluating European health systems by accessibility to healthcare services (example of healthcare performance indicators included: Family doctor same day access; CT scan < 7days).
- *Prevention*: sub-discipline in EHCI, evaluating European health systems considering preventive care (example of healthcare performance indicators included: Infant 8-disease vaccination; Smoking Prevention).
- *Outcomes*: sub-discipline in EHCI, evaluating European health systems by health outcomes (example of healthcare performance indicators included: Infant deaths; Cancer survival).
- *Range and reach of services provided*: sub-discipline in EHCI, evaluating European health systems by Range and reach of services provided (example of healthcare performance indicators included: Equity of healthcare systems; % of dialysis done outside of clinic).
- *Pharmaceuticals*: sub-discipline in EHCI, evaluating European health systems considering pharmaceuticals market (example of healthcare performance indicators included: Novel cancer drugs deployment rate; Arthritis drugs).

To analyse the results, we firstly used a descriptive analysis, and secondly, given the hierarchical structure of the data (individuals nested within countries), a multi-level mixed logistic regression analysis is conducted. An additive model is used, by firstly examining the individual-level variables (socio-demographic, socio-economic and spatial variables) and then integrating each country-level independent variable (health system performance indexes) in turn to analyse their relationship with consumer's satisfaction with the quality of healthcare services. Indeed, previous tests indicated significant moderate and strong correlation between country-level variables (except Accessibility and Prevention) and, therefore, we treated each index in separate models, providing alternative perspectives on health system performance (details in Table A2 in Appendix).

The regression models are also used to graphically display whether significant variations between countries exist in the propensity to be unsatisfied with healthcare services, after controlling for socio-demographic and socio-economic variables. Also, predicted probabilities of a 'representative' EU citizen to be unsatisfied with healthcare services are graphically displayed, by various health system performance indexes. Therefore, logistic regression is used to test hypotheses $H1-H3$, while graphs are used to further investigate hypotheses $H2$ and $H3$ (residual country effects for $H2$ and predicted probabilities for $H3$). Below, we report the results.

Results and discussion

The interviews conducted during 2014 across the EU-28 show that 62% of EU citizens have a positive perception of healthcare system, being satisfied with the quality of healthcare services in their countries. This reveals that more than 1 in 3 EU citizens are unsatisfied with healthcare services (38%). Indeed, people's satisfaction with the healthcare system varies considerably by EU region and country. As Table 1 displays, the percent of people satisfied with the quality of healthcare services is higher in Western Europe (81%) and Nordic Nations (78%) and lower in Southern Europe (47%) and East-Central Europe (34%).

Table 1. Consumer satisfaction with healthcare services ($N = 27,447$) and Euro Health Consumer Index.

Region/country	Consumer satisfaction		Euro Health Consumer Index	Sub-discipline in Euro Health Consumer Index					
	Total Satisfied (%)	Total Not satisfied (%)		S1	S2	S3	S4	S5	S6
EU 28	62	38	–	–	–	–	–	–	–
Western Europe	81	19	–	–	–	–	–	–	–
Belgium	93	7	820	100	225	83	198	138	76
Luxembourg	93	7	814	108	188	101	219	131	67
Austria	91	9	780	125	200	83	177	119	76
Netherlands	88	12	898	146	188	89	240	150	86
France	83	17	763	117	175	89	198	113	71
United Kingdom	80	20	718	129	100	95	177	131	86
Germany	78	22	812	121	188	95	229	94	86
Ireland	41	59	644	83	88	89	198	100	86
Nordic nations	78	22	–	–	–	–	–	–	–
Denmark	82	18	836	142	200	89	198	131	76
Finland	79	21	846	133	175	95	219	138	86
Sweden	75	25	761	117	88	107	219	150	81
Southern Europe	47	53	–	–	–	–	–	–	–
Malta	91	9	582	88	125	95	115	113	48
Spain	57	43	670	96	100	107	188	113	67
Portugal	52	48	722	133	163	83	188	94	62
Cyprus	45	55	619	83	150	71	177	75	62
Italy	44	56	648	104	138	95	167	88	57
Greece	9	91	561	58	138	83	156	69	57
East-Central Europe	34	66	–	–	–	–	–	–	–
Czech Republic	70	30	714	100	175	71	177	119	71
Slovenia	59	41	668	96	113	89	198	106	67
Estonia	57	43	677	121	150	54	177	119	57
Lithuania	54	46	510	104	100	48	125	81	52
Croatia	48	52	640	104	163	60	156	100	57
Slovakia	41	59	665	113	175	83	135	88	71
Hungary	37	63	601	96	163	83	115	88	57
Latvia	27	73	593	113	150	71	125	81	52
Poland	24	76	511	96	100	71	104	88	52
Romania	23	77	453	83	100	71	83	63	52
Bulgaria	20	80	547	79	163	71	125	56	52

Notes: S1: Patient rights and information; S2: Accessibility (waiting times for treatment); S3: Prevention; S4: Outcomes; S5: Range and reach of services provided; S6: Pharmaceuticals.

Source: own calculations based on data from Special Eurobarometer 418 (2014) & Euro Health Consumer Index (2014).

It is similarly the case that people's satisfaction with the healthcare system is uneven across EU countries. Evaluating the satisfaction level with healthcare services across nations, Table 1 shows that the quality of healthcare services is higher in Belgium and Luxembourg where 93% of citizens are satisfied with healthcare services, compared with 37% in Hungary, 27% in Latvia, 24% in Poland, 23% in Romania, 20% in Bulgaria and 9% in Greece. It is worth mentioning that Ireland and Greece have a very low percent of satisfied people compared to regional average (41% compared to 81% and 9% compared to 47%) while Malta and Czech Republic have a higher percent compared to regional average (91% compared to 47% and 70% compared to 34%).

Again, however, marked cross-national variations exist at the level of health system performance (Table 1). Moreover, when analysing the scores of EHCI, in general, in countries with high index scores, the percent of satisfied citizens is higher. For instance, Netherland scored 898 points in the EHCI and 88% of its citizens are satisfied with the quality of

healthcare services and Finland scored 846 points in EHCI and 79% of its citizens are satisfied with the quality of healthcare services. In contrast, Romania scored 453 points in EHCI and just 23% of its citizens are satisfied with the quality of healthcare services.

Not only is the satisfaction level with healthcare services lower in certain countries, it is also lower in some socio-demographic and socio-economic groups rather than others.

As such, [Table 2](#) displays the socio-demographic and socio-economic groups more likely to be unsatisfied with healthcare services.

Examining the results in [Table 2](#), the finding is that women are more likely to be unsatisfied with healthcare services than men (39% compared to 37%). Indeed, although just 52% of the individuals surveyed were women, they constituted 53% of all unsatisfied consumers. This, therefore, shows that unsatisfied consumers are more concentrated among women. Similarly, younger people (15–24 years old) are less likely to be unsatisfied with healthcare services (31%) and those living in large households (three persons or more) are more likely to be unsatisfied with healthcare services (41%) than those living in smaller households (one person – 34% or two persons – 35%). [Table 2](#) also shows that although 13% of the individuals surveyed were aged between 15 and 24 years, they

Table 2. Unsatisfied consumers with healthcare services in EU-28: by socio-demographic and socio-economic characteristic ($N = 27,447$).

	Unsatisfied consumers (%)	Percent of all consumers (%)	Percent of all unsatisfied consumers (%)
EU-28	38	100	100
Gender			
Male	37	48	47
Female	39	52	53
Age (years)			
15–24	31	13	11
25–39	39	24	25
40–54	40	26	28
55+	37	37	36
Household size			
One	34	20	19
Two	35	32	30
Three	41	19	20
Four or more	41	29	31
Social class – self-assessment			
The working class of society	45	40	48
The middle class of society	32	52	44
The higher class of society ^a	37	8	8
Occupation			
Self-employed	42	8	9
Managers	27	11	8
Other white collars	38	10	10
Manual workers	41	20	21
House persons	43	7	8
Unemployed	47	9	12
Retired	37	26	26
Students	27	9	6
Difficulties paying bills			
Most of the time	55	11	15
From time to time	48	26	33
Almost never/never	31	60	49
Refusal	33	3	3

^a Other/none/refusal/ don't know included.

Source: own calculations based on data from Special Eurobarometer 418 (2014).

constituted just 11% of all unsatisfied consumers. When examining the social class of society to which they belong, respondents in the working class of society seem to be more likely to be unsatisfied with healthcare services (45%) than those perceiving themselves as belonging to the middle or higher class of society (32% and 37%). Indeed, although just 40% of the individuals surveyed were in the working class of society, they constituted 48% of all unsatisfied consumers. Unemployed people are more likely to be unsatisfied with healthcare services than managers or students (47% compared to 27%). So too are those facing difficulties in paying their bills more likely to be unsatisfied with healthcare services than those who never, or almost never, have difficulties. Indeed, although only 11% of respondents had most of the time difficulties in paying their bills, 15% of unsatisfied consumers involved respondents often facing financial difficulties.

Therefore, by analysing these descriptive statistics, the tentative conclusion is that the level of satisfaction with healthcare services in EU-28 varies across regions, socio-demographic and socio-economic groups. It is similarly the case that regional variations exist when analysing health system performance. Nevertheless, whether the relationship with satisfaction level is significant when other variables are taken into account and held constant needs to be tested. [Table 3](#) reports the results of a staged multi-level logistic regression model.

The first stage model (Model 1) evaluates whether the relationship between consumer satisfaction and socio-demographic variables is significant when other control variables are taken into account (*H1a–H1d*) while the second stage model (Model 2) adds the socio-economic factors alongside the socio-demographic variables (*H1e* and *H1f*), and the third stage model (Model 3) adds spatial factors to the socio-demographic and socio-economic factors to examine their influence on consumer satisfaction. The fourth stage models (Model 4–9) analyse the relationship between health system performance indexes and consumer's satisfaction with the quality of healthcare services (*H3*).

Model 1 in [Table 3](#) reveals that some socio-demographic groups are more likely to have a negative perception of the healthcare services. Women are significantly more likely to get unsatisfied with healthcare services (confirming *H1a*). Indeed, the odds of being unsatisfied for females are 1.13 times that of males. Similarly, individuals over 24 years old are significantly more likely to get unsatisfied with healthcare services when compared to those under 25 years old (refuting *H2b*) and so too are those who self-define themselves as working class compared to those defining themselves as middle, higher, other or none class of society (confirming *H1d*). However, no significant relationship is found between consumer satisfaction and the household size (refuting *H1c*). When adding socio-economic variables in Model 2, all the other significant socio-demographic influences on consumer satisfaction remain. However, the additional finding is that managers and students are significantly less likely to get unsatisfied with healthcare services (partially confirming *H1e*) and those who have difficulties paying the household bills most of the time are significantly more likely to have a negative perception of the healthcare services than those having such difficulties more seldom (confirming *H1f*). Furthermore, when spatial factors are added to the socio-demographic and socio-economic variables in Model 3, the finding is that those living in the more affluent EU region of the Western Europe are significantly less likely to get unsatisfied with healthcare services (partially confirming *H2*).

In order to determine whether significant variations between countries exist in the propensity to get unsatisfied with healthcare services, after controlling for socio-demographic

Table 3. Multi-level mixed-effects logistic regression of the propensity to get unsatisfied with healthcare services.

Fixed part	Model 1			Model 2			Model 3		
	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)
Constant	-0.709***	0.244	0.492	-0.154	0.250	0.857	0.265	0.357	1.303
Gender (male)									
Female	0.125***	0.029	1.133	0.107***	0.030	1.113	0.107***	0.030	1.113
Age (15–24 years)									
25–39	0.430***	0.054	1.537	0.203***	0.071	1.225	0.203***	0.071	1.225
40–54	0.599***	0.053	1.819	0.375***	0.072	1.456	0.376***	0.072	1.456
55+	0.385***	0.054	1.470	0.318***	0.077	1.374	0.318***	0.077	1.374
Household size (one)									
Two	-0.050	0.040	0.952	-0.028	0.040	0.973	-0.028	0.040	0.972
Three	0.029	0.049	1.029	0.036	0.050	1.037	0.035	0.050	1.036
Four or more	-0.062	0.046	0.940	-0.039	0.047	0.962	-0.040	0.047	0.961
Social class – self-assessment (the working class of society)									
Middle class	-0.343***	0.031	0.710	-0.207***	0.033	0.813	-0.206***	0.033	0.814
Higher class ¹	-0.376***	0.058	0.687	-0.251***	0.059	0.778	-0.250***	0.059	0.779
Occupation (self-employed)									
Managers				-0.154**	0.071	0.857	-0.154**	0.071	0.857
Other white collars				0.113	0.070	1.120	0.113	0.070	1.119
Manual workers				0.101	0.064	1.107	0.101	0.064	1.106
House persons				-0.116	0.085	0.891	-0.116	0.085	0.891
Unemployed				0.066	0.074	1.069	0.066	0.074	1.068
Retired				-0.110	0.067	0.896	-0.110	0.067	0.896
Students				-0.355***	0.096	0.701	-0.355***	0.096	0.701
Difficulties paying bills (most of the time)									
From time to time				-0.276***	0.051	0.759	-0.276***	0.051	0.758
Almost never/never				-0.637***	0.050	0.529	-0.637***	0.050	0.529
Refusal				-0.599***	0.108	0.549	-0.599***	0.108	0.549
EU region (Southern Europe)									
Western Europe							-1.590***	0.453	0.204
East-Central Europe							0.405	0.425	1.499
Nordic Nations							-1.147*	0.592	0.318
N		27,421			27,421			27,421	
Random part									
\Country-level variance (Standard error)		1.563***			1.447***			0.693***	
Countries		0.421			0.390			0.188	
Variance at country level (%)		28			28			28	
		32.21			30.55			17.40	
Fixed part	Model 4			Model 5			Model 6		
	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)
Constant	5.632***	0.855	279.3	3.489***	1.008	32.75	5.092***	1.229	162.7
Gender (male)									
Female	0.107***	0.030	1.113	0.108***	0.030	1.114	0.107***	0.030	1.113
Age (15–24 years)									
25–39	0.203***	0.071	1.225	0.203***	0.071	1.225	0.203***	0.071	1.225
40–54	0.376***	0.072	1.457	0.375***	0.072	1.456	0.376***	0.072	1.456
55+	0.318***	0.077	1.374	0.318***	0.077	1.374	0.318***	0.077	1.374
Household size (one)									
Two	-0.028	0.040	0.972	-0.028	0.040	0.972	-0.027	0.040	0.973
Three	0.035	0.050	1.036	0.036	0.050	1.036	0.037	0.050	1.037
Four or more	-0.040	0.047	0.961	-0.040	0.047	0.961	-0.039	0.047	0.962
Social class – self-assessment (the working class of society)									
Middle class	-0.206***	0.033	0.814	-0.207***	0.033	0.813	-0.206***	0.033	0.813
Higher class ^a	-0.249***	0.059	0.779	-0.250***	0.059	0.779	-0.250***	0.059	0.779
Occupation (self-employed)									
Managers	-0.154**	0.071	0.857	-0.153**	0.071	0.858	-0.155**	0.071	0.856
Other white collars	0.113	0.070	1.120	0.113	0.070	1.120	0.113	0.070	1.120
Manual workers	0.101	0.064	1.106	0.102	0.064	1.107	0.101	0.064	1.106
House persons	-0.120	0.085	0.887	-0.118	0.085	0.889	-0.117	0.085	0.890

(Continued)

Table 3. Continued.

Fixed part	Model 4			Model 5			Model 6		
	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)
Unemployed	0.066	0.074	1.068	0.067	0.074	1.069	0.066	0.074	1.068
Retired	-0.110	0.067	0.896	-0.109	0.067	0.897	-0.110	0.067	0.896
Students	-0.355***	0.096	0.701	-0.355***	0.096	0.701	-0.355***	0.096	0.701
Difficulties paying bills (most of the time)									
From time to time	-0.276***	0.051	0.759	-0.276***	0.051	0.759	-0.276***	0.051	0.759
Almost never/never	-0.636***	0.050	0.529	-0.635***	0.050	0.530	-0.637***	0.050	0.529
Refusal	-0.599***	0.108	0.550	-0.598***	0.108	0.550	-0.599***	0.108	0.549
Euro Health Consumer Index	-0.008***	0.001	0.992						
Patient rights and information				-0.034***	0.009	0.966			
Accessibility (waiting times for treatment)							-0.015***	0.005	0.985
Prevention							-0.036***	0.012	0.965
<i>N</i>		27,421			27,421			27,421	
Random part									
Country-level variance		0.528***			0.967***			0.843***	
(Standard error)		0.145			0.262			0.228	
Countries		28			28			28	
Variance at country level (%)		13.83			22.72			20.40	
Fixed part	Model 7			Model 8			Model 9		
	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)	β	SE (β)	Exp (β)
Constant	3.055***	0.770	21.21	3.916***	0.567	50.21	3.482***	1.034	32.52
Gender (male)									
Female	0.107***	0.030	1.113	0.107***	0.030	1.113	0.107***	0.030	1.113
Age (15–24 years)									
25–39	0.203***	0.071	1.225	0.203***	0.071	1.226	0.203***	0.071	1.225
40–54	0.376***	0.072	1.457	0.376***	0.072	1.457	0.376***	0.072	1.456
55+	0.318***	0.077	1.375	0.318***	0.077	1.375	0.318***	0.077	1.374
Household size (one)									
Two	-0.028	0.040	0.973	-0.029	0.040	0.972	-0.028	0.040	0.972
Three	0.036	0.050	1.036	0.034	0.050	1.035	0.035	0.050	1.036
Four or more	-0.040	0.047	0.961	-0.041	0.047	0.960	-0.040	0.047	0.961
Social class – self-assessment (the working class of society)									
Middle class	-0.207***	0.033	0.813	-0.207***	0.033	0.813	-0.207***	0.033	0.813
Higher class ^a	-0.250***	0.059	0.779	-0.250***	0.059	0.779	-0.250***	0.059	0.779
Occupation (self-employed)									
Managers	-0.154**	0.071	0.857	-0.153**	0.071	0.858	-0.154**	0.071	0.857
Other white collars	0.113	0.070	1.120	0.114	0.070	1.120	0.113	0.070	1.120
Manual workers	0.101	0.064	1.106	0.101	0.064	1.106	0.101	0.064	1.106
House persons	-0.118	0.085	0.889	-0.118	0.085	0.889	-0.117	0.085	0.890
Unemployed	0.066	0.074	1.069	0.067	0.074	1.069	0.067	0.074	1.069
Retired	-0.110	0.067	0.896	-0.110	0.067	0.896	-0.110	0.067	0.896
Students	-0.355***	0.096	0.701	-0.354***	0.096	0.702	-0.355***	0.096	0.701
Difficulties paying bills (most of the time)									
From time to time	-0.277***	0.051	0.758	-0.276***	0.051	0.759	-0.276***	0.051	0.759
Almost never/never	-0.637***	0.050	0.529	-0.634***	0.050	0.531	-0.636***	0.050	0.529
Refusal	-0.600***	0.108	0.549	-0.599***	0.108	0.550	-0.599***	0.108	0.549
Outcomes	-0.019***	0.004	0.981						
Range and reach of services provided				-0.039***	0.005	0.962			
Pharmaceuticals							-0.054***	0.015	0.947
<i>N</i>		27,421			27,421			27,421	
Random part									
Country-level variance		0.864***			0.474***			0.985***	
(Standard error)		0.234			0.130			0.267	
Countries		28			28			28	
Variance at country level (%)		20.80			12.59			23.04	

Notes: Significant at *** $p < .01$, ** $p < .05$, * $p < 0.1$; Benchmark category, shown in brackets.

^aOther/none/refusal/don't know included.

Source: Own calculations based on data from Special Eurobarometer 418 (2014) & Euro Health Consumer Index (2014).

and socio-economic variables, [Figure 1](#) displays the residual country effects. A country whose confidence interval does not overlap the line at zero differs significantly from the EU-28 average at the 5% significance level. For instance, at the lower end, consumers living in Belgium, Luxembourg, Austria, Malta or Netherlands have a significantly lower propensity to get unsatisfied with healthcare services, and at the upper end, those living in Greece, Poland, Romania, Bulgaria or Latvia have a significantly higher propensity to get unsatisfied with healthcare services in their countries. These results further support the hypothesis that those living in the more affluent regions are significantly less likely to get unsatisfied with healthcare services.

Given these significant variations between countries in the propensity to get unsatisfied with healthcare services ([Figure 1](#)), Models 4–9 in [Table 3](#) evaluate the relationship between consumer satisfaction and country's health system performance (*H3*). Indeed, according to Model 4, the finding is that the likelihood of a positive perception of the healthcare services is higher in countries with health systems having high performance levels (confirming *H3*). Breaking the EHCI by each sub-discipline in Models 5–9, there is strong evidence that unsatisfied consumers are more likely to live in countries with low performance of healthcare system, no matter the sub-discipline considered (confirming *H3*).

To graphically display the relationship between consumer satisfaction and health system performance and to help interpret the findings, [Figures 2](#) and [3](#) present the predicted probabilities of a 'representative' EU citizen to get unsatisfied with healthcare services, according to various health system performance indexes. By taking the modal values of other independent variables, the representative EU citizen is here a 55+ years-old retired women, who self-defines herself as belonging to the working class of the society and lives in a two person household and has never or almost never difficulties in paying the household bills.

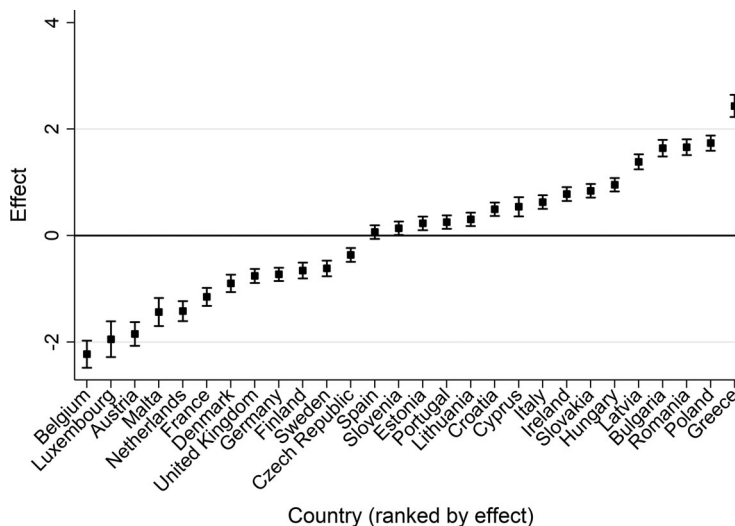


Figure 1. Cross-national variations in the propensity to get unsatisfied with healthcare services in EU-28: residual country effects within a 95% confidence interval ($N = 27,421$). Source: own calculations based on data from Special Eurobarometer 418 (2014) & Euro Health Consumer Index (2014).

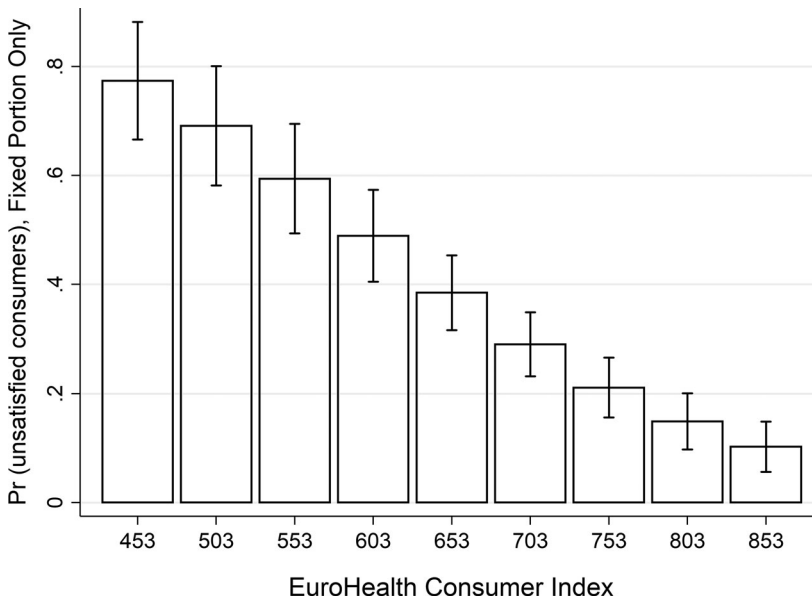


Figure 2. Predicted probability to get unsatisfied with healthcare services by a 'representative' individual in EU-28, by Euro Health Consumer Index ($N = 27,421$). Source: own calculations based on data from Special Eurobarometer 418 (2014) & Euro Health Consumer Index (2014).

As graphically displayed in [Figure 2](#), as EHCI increases, and, therefore, the health system performance is higher, the predicted odds of this representative citizen unsatisfied with healthcare services becomes smaller. Moreover, this is similarly the case when analysing the sub-disciplines of EHCI in [Figure 3](#) (a–f).

The graphs in [Figure 3](#) clearly reveal how consumers living in countries with better patient rights and information ([Figure 3](#)(a)), better accessibility to healthcare services (lower waiting times for treatment) ([Figure 3](#)(b)), with a health system having a large range and reach of service provision ([Figure 3](#)(e)), oriented towards prevention ([Figure 3](#) (c)), better health outcomes ([Figure 3](#)(d)) and high quality of pharmaceuticals market ([Figure 3](#)(f)) have lower predicted odds of being unsatisfied with healthcare services. It can be asserted, therefore, that low performing health systems appear to engender higher predicted odds of being unsatisfied with healthcare services (further confirming *H3*). As such, according to Models 4–9 in [Table 3](#) and [Figures 2](#) and [3](#), there is a significant positive relationship between consumer satisfaction and health system performance. The higher the performance of a health system, the higher the propensity to have consumers with positive perception of the healthcare services (satisfied consumers).

Conclusions

The aim of this paper was to investigate the effect of socio-demographic, socio-economic and spatial characteristics on the perception of quality of healthcare and secondly to evaluate the relationship between consumer satisfaction and health system performance. Previous findings in the literature emphasise a positive relationship between healthcare service quality and customer satisfaction (although the directionality of this link is still

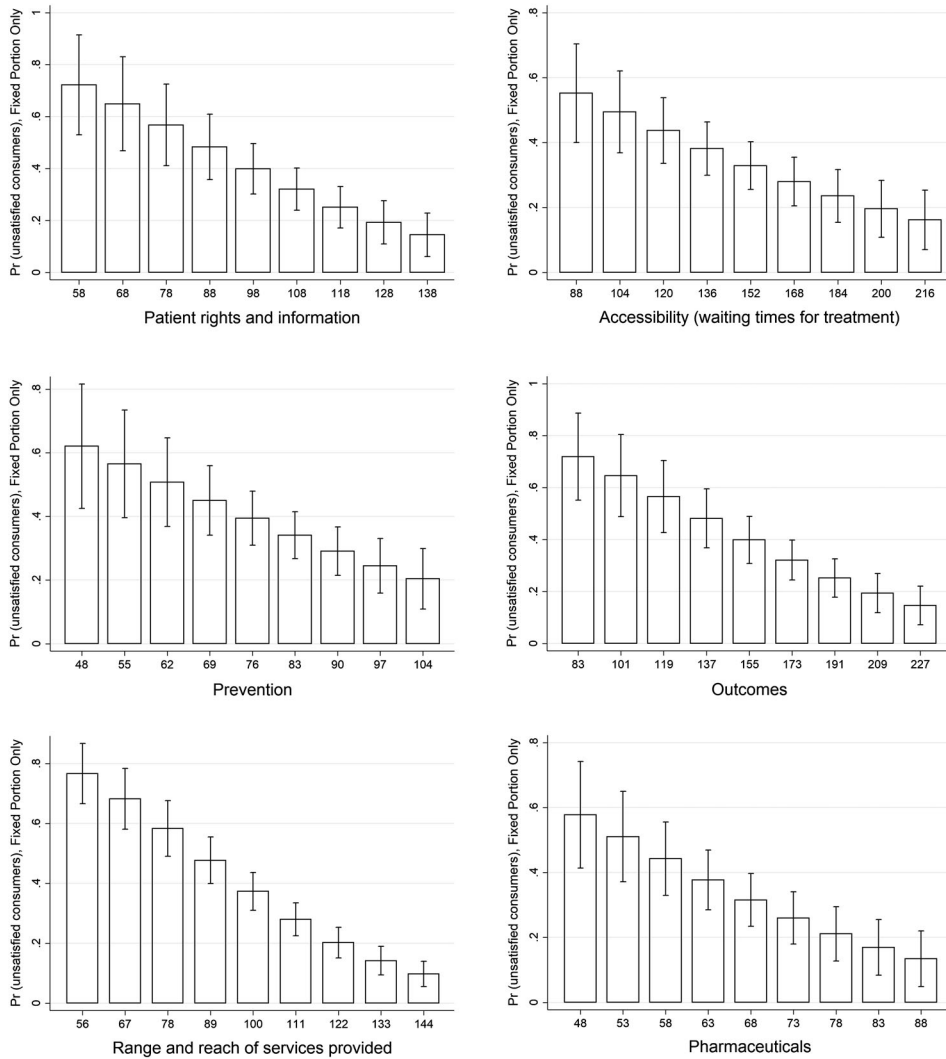


Figure 3. Predicted probability to get unsatisfied with healthcare services by a ‘representative’ individual in EU-28, by Euro Health Consumer Index ($N = 27,421$). Source: own calculations based on data from Special Eurobarometer 418 (2014) & Euro Health Consumer Index (2014).

unclear) as well as a positive influence of socio-demographic and socio-economic status among EU nationals upon customer satisfaction. Based on their findings in this research, we start from the assumption that the likelihood of a positive perception of the healthcare services is higher in health systems with high performance levels.

A general evaluation of the results shows that 62% of EU citizens have a positive perception of healthcare system, being satisfied with the quality of healthcare services in their countries. This reveals that more than 1 in 3 EU citizens are unsatisfied with healthcare services. Also, the study showed that some socio-demographic groups are more likely to have a negative perception of the healthcare services. Not only are women significantly more likely to get unsatisfied with healthcare services but so too are

individuals over 24 years old when compared to those under 25 years old. In addition, those who self-define themselves as working class are significantly more likely to get unsatisfied with healthcare services. However, no significant relationship is found between consumer satisfaction and the household size. Also, socio-economic variables have a positive influence on consumer satisfaction. Managers and students are significantly less likely to get unsatisfied with healthcare services and those who have difficulties paying the household bills most of the time are significantly more likely to have a negative perception of the healthcare services than those having such difficulties more seldom. When analysing spatial characteristics, the study revealed that those living in the more affluent EU region of the Western Europe are significantly less likely to get unsatisfied with healthcare services. Also, it has been revealed that consumers living in Belgium, Luxembourg, Austria, Malta or Netherlands have a significantly lower propensity to get unsatisfied with healthcare services, while those living in Greece, Poland, Romania, Bulgaria or Latvia have a significantly higher propensity to get unsatisfied with healthcare services.

Related to health system performance, it has been revealed that consumers living in countries with better patient rights and information, better accessibility to healthcare services (lower waiting times for treatment), with a health system having a large range and reach of service provision, oriented towards prevention, better health outcomes and high quality of pharmaceuticals market are less likely to get unsatisfied with healthcare services. As such, a significant positive relationship between consumer satisfaction and health system performance was found. Indeed, feedback collection from patients will provide reliable knowledge for healthcare managers, practitioners or public policy analysts in the decision making process and for performance delivery. This paper, therefore, brings an additional argument on using patient satisfaction ratings as a quality-of-care marker and emphasises the need for a more nuanced understanding of consumer satisfaction with the healthcare services that they receive.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix

Table A1. Variables used in the analysis: definitions and descriptive statistics ($N = 27,447$).

Variables	Definition	Mode or mean
<i>Dependent variable</i>		
Unsatisfied consumers	Dummy variable for consumer satisfaction with healthcare services, with value 1 for unsatisfied and 0 for satisfied consumers.	Satisfied consumers (62)
<i>Independent variables</i>		
<i>Individual-level variables</i>		
Gender	Dummy for the gender of the respondent (0 = Male; 1 = Female).	Female (52%)
Age	Respondent age in intervals (1 = 15–24 years; 2 = 25–39 years; 3 = 40–54 years; 4 = 55+ years).	55+ years old (37%)
Household size	Respondent household size in categories (1 = One person; 2 = Two persons; 3 = Three persons; 4 = Four and more persons).	Two persons (32%)
Social class – self-assessment	Respondent class of society in categories (self-assessment) (1 = The working class of society; 2 = Middle class of society; 3 = Higher class of society/Other/None/Refusal/Don't know included).	The middle class of society (52%)
Occupation	Respondent occupation in categories (1 = Self-employed; 2 = Managers; 3 = Other white collars; 4 = Manual workers; 5 = House persons; 6 = Unemployed; 7 = Retired; 8 = Students).	Retired (26%)
Difficulties paying bills	Respondent difficulties in paying bills last year in categories (1 = Most of the time; 2 = From time to time; 3 = Almost never/Never; 4 = Refusal).	Almost never/ Never (60%)
Region	EU region where the respondent lives in categories (1 = Southern Europe; 2 = Western Europe; 3 = East-Central Europe; 4 = Nordic Nations).	Western Europe (49%)
<i>Country-level variables</i>		
Euro Health Consumer Index	A composite index measuring health system performance, which can present a telling tale of how the healthcare consumer is being served by the respective systems (maximum possible score: 1000). Sub-disciplines included: Patient rights and information; Accessibility (waiting times for treatment); Prevention; Outcomes; Range and reach of services provided; Pharmaceuticals.	701
Patient rights and information	Sub-discipline in Euro Health Consumer Index, evaluating European health systems by Patient rights and information (maximum possible score: 150). Healthcare performance indicators included: Healthcare law based on Patients' Rights; Patient organisation involvement; No-fault malpractice insurance; Right to second opinion; Access to own medical record; Registry of <i>bona fide</i> doctors; Web or 24/7 telephone HC info; Cross-border care seeking freely allowed; Provider catalogue with quality ranking; EPR penetration; On-line booking of appointments; e-prescriptions.	111
Accessibility (waiting times for treatment)	Sub-discipline in Euro Health Consumer Index, evaluating European health systems by Accessibility times (maximum possible score: 225). Healthcare performance indicators included: Family doctor same day access; Direct access to specialist; Major elective surgery < 90 days; Cancer therapy < 21 days; CT scan < 7days; A&E waiting.	145
Prevention	Sub-discipline in Euro Health Consumer Index, evaluating European health systems considering Prevention (maximum possible score: 125). Healthcare performance indicators included: Infant 8-disease vaccination; Blood pressure; Smoking Prevention; Alcohol; Physical activity; HPV vaccination; Traffic deaths.	89
Outcomes	Sub-discipline in Euro Health Consumer Index, evaluating European health systems by Outcomes (maximum possible score: 250). Healthcare performance indicators included:	180

(Continued)

Table A1. Continued.

Variables	Definition	Mode or mean
Range and reach of services provided	Decrease of CVD deaths; Decrease of stroke deaths; Infant deaths; Cancer survival; Preventable Years of Life Lost; MRSA infections; Abortion rates; Depression. Sub-discipline in Euro Health Consumer Index, evaluating European health systems by Range and reach of services provided (maximum possible score: 150). Healthcare performance indicators included: Equity of healthcare systems; Cataract operations per 100,000 age 65+; Kidney transplants per million population; Dental care included in public healthcare; Informal payments to doctors; Long-term care for the elderly; % of dialysis done outside of clinic; Caesarean sections.	105
Pharmaceuticals	Sub-discipline in Euro Health Consumer Index, evaluating European health systems considering Pharmaceuticals market (maximum possible score: 100). Healthcare performance indicators included: Rx subsidy; Layman-adapted pharmacopoeia; Novel cancer drugs deployment rate; Access to new drugs (time to subsidy); Arthritis drugs; Metformin use; Antibiotics/capita.	71

Source: Own calculations based on data from Special Eurobarometer 418 (2014) & Euro Health Consumer Index (2014).

Table A2. Partial correlations for country-level variables: Euro Health Consumer Index ($N = 27,447$).

	Euro Health Consumer Index	Patient rights and information	Accessibility (waiting times for treatment)	Prevention	Outcomes	Range and reach of services provided
Patient rights and information	0.759***					
Accessibility (waiting times for treatment)	0.636***	0.452***				
Prevention	0.556***	0.290***	-0.015			
Outcomes	0.872***	0.540***	0.367***	0.636***		
Range and reach of services provided	0.828***	0.612***	0.293***	0.498***	0.711***	
Pharmaceuticals	0.822***	0.562***	0.330***	0.624***	0.832***	0.708***

Notes: Significant at *** $p < .001$.

Source: own calculations based on Euro Health Consumer Index (2014).