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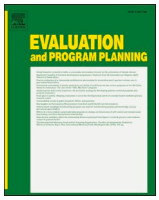

Patient satisfaction and quality of hospital care

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ABSTRACT

The analysis summarises the experience of a sample of patient at the University Polyclinic in Messina (Italy) and provides a detailed assessment of the satisfaction of patients experiencing healthcare at different Departments. Information collected through a specific survey allowed to build a dataset with more than 350 observations. Regressors were carefully selected and compared through a radar chart. The estimation of a logistic model was then carried out. The results outlined the relevant factors for patient satisfaction: they depend both on the ambulatory where the care is provided and the judgement about quality of care. Other crucial factors in determining a higher satisfaction were the availability of parking lots, the cleaning of structures and the judgment on physicians, the latter endorsing the probability of being highly satisfied when expectations on physicians' competences and professionalism are confirmed. The "Contact details", i.e., the indications of the people to contact in case of need, strengthen the overall patients' positive experience. The study enriches the existing literature on patient satisfaction and is aimed at rethinking the organization of the health assistance offered at University Polyclinics, outlining the aspects to improve, with the objective to guarantee the highest patient satisfaction.

1. Introduction

Any approach to care directed at improving health outcomes, as well as patient satisfaction, should be considered among the primary social policymakers' objectives to implement (Sitzia & Wood, 1997).

In the last decade, consumer satisfaction has been gaining growing importance as a measure of quality in many public sector services. In UK, this has become manifest in the call by the 1983 Management inquiry for the NHS, with the aim to ascertain how healthcare services are being delivered at the local level, accomplishing the objective to learn about the experience and perceptions of patients and the whole community (The UK Parliament, 1983). Patient satisfaction is deemed an important outcome measure for health services: there are implicit assumptions about the nature and meaning of expressions of *satisfaction* (Dufrene, 2000). Patients may have a complex set of important and relevant beliefs unlikely to be embodied in terms of common expressions of satisfaction (Williams, 1994). Hence, any research on this topic must first identify the ways and terms through which patients perceive and evaluate the service.

Both researchers, healthcare providers and regulators consider patient satisfaction, together with clinical results, a constituent part of healthcare quality (Hudak & Wright, 2000).

Satisfaction is a key factor, pertaining to government policy or, in a private context, required to a successful business. It requires effective and punctual service delivery, cost control, and management strategies, to implement within health structures. Providing appropriate and qualitatively adequate healthcare is important in building stable institutions and in reinforcing the social state.

Studies relating to patient satisfaction originate in the 1950 s in the United States and were initially aimed at studying the doctor-patient interaction (Parsons, 1975). Stemming from patient satisfaction, there is the notion of quality of care that concerns individual experience and expectations fulfilled that leads to identify as qualitatively adequate the service. In the medical literature, these issues have been investigated through the development and later refinements of the questionnaire SERVQUAL (Parasuraman et al. (1988), (1991a), (1991b)).

More recently, the analysis of quality of care is the focus of surveys which take into consideration, together with physicians, the role played by other health professionals such as nurses (Aiken et al., 2012).

Studies on patient satisfaction are numerous in U.S. literature: in this context, much of the discussion on patient satisfaction revolves around "patient experience" and the result of surveys related to hospital patients and administered on a national scale can impact on hospital reimbursement. Among the latest studies, Lee et al. (2021) concentrate on

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organizational culture and how this is linked to performance and patient satisfaction. The already mentioned work of Aiken et al. (2012) looks at organizational issues reflecting on quality of care and patient outcomes.

In Europe, the study carried out by Perneger et al. (2020) examines the association between average satisfaction and survey response rate in Swiss hospitals.[1]

Patient satisfaction has been investigated in other contexts as Eastern Asian and developing countries.[2] Some Asian studies examined the satisfaction of patients in private healthcare facilities and the quality of outpatient services, examining data collected through questionnaires looking at different dimensions of healthcare (Zarei et al., 2015). Besides staff professionalism, staff reliability and ability in dealing with emergencies, such dimensions are related to aspects as clinic accessibility and basic facilities, such as cleanliness (Lescher and Sirven (2019)).

The common feature of all these works lies on the fact that they are not limited only to the effectiveness of treatments and the physicians' competence for determining patient satisfaction. These studies reinforce the intuition that satisfaction depends on multiple factors, and patient involvement must be regarded as a founding element of an efficient clinical governance.

In this perspective, the ratio underlying the involvement of patients in clinical governance has been described in a study related to the British NHS, that has moved on from being an organisation that simply delivered services to people, to being a service that is totally patient-led and responds to people needs and wishes. Patients rarely refer to technical quality information to choose between hospitals; rather, they are more prone to make use of subjective appraisals (such as word-of-mouth), and patient satisfaction is a proxy for such evaluations (Freedman, 2006).

In France, Health Authorities recently produced and made publicly available a wide array of updated quality measures for hospital care, and a methodology which allows the grouping of various dimensions of health assistance may be identified in hierarchical models (Otani et al., 2003).

The issue of quality in health care looks at the role of physicians as providers of care that is both clinically effective and patient centered (Stewart et al., 2000).

When considering patients' characteristics, as an input into the hospital care, it may be necessary to let patients eliciting preferences, comprehending, and processing the information shared with physicians.

The terms "patient satisfaction" and "patients' expectations" are often used interchangeably: patient satisfaction occurs when expectations are fulfilled. The combination satisfaction – patients' expectations is of major importance in the implementation of the Customer Satisfaction Management model, described, at the European level, by the European Primer on Customer Satisfaction Management report (EUPAN, 2020). According to the conclusions of the report, customers' expectations constitute the starting point for planning an efficient organization.

Surveys and questionnaires, already mentioned, are the tools through which it is possible to quantify the consumer's experience: in several studies, it is shown how patients welcomed the opportunity to be involved and give feedback about the services received (Matis et al., 2009).

Many criticisms have been raised about the validity of patient reported measures: it has been argued that patient feedback is not credible because patients lack formal medical training and because patient satisfaction measures capture some aspects of "happiness" that are easily influenced by factors unrelated to care.

Other final aspects contributing to build patient satisfaction are the actual experience of the service as reported by people other than the patient, such as family, colleagues, etc. (Battaglia et al., 2015), the relevance of statements heard from staff members or read on leaflets (Kitching, 1990).

Previous analyses outlined how patients may provide the best source of accurate information, primarily on issues such as clarity of explanations given by physicians or barriers to care (Epstein et al., 1996). The possibility that data collected from patients may be biased, however, is a risk to deal with (Gasquet et al., 2004). There may also be response errors, with the consequence of inaccurate answers.

Given these preliminary considerations, it will now be easier to understand the rationale of the research, which aims at exploiting the information retrieved through the administration of a questionnaire distributed to patients at Polyclinic hospitals.

The questionnaire has been developed in 2015 in Sicily, by the Department of Health, together with the Department of Economic, Business and Statistics of the University of Palermo and the Polyclinic Vittorio Emanuele of Catania, with the purpose of detecting quality perceived by users in the outpatient clinics of University Hospitals (Adragna et al., 2019). The administration of the same questionnaire at the University Polyclinic in Messina has allowed to collect the data employed in the analysis.

The results of this investigation could lead to rethinking the organization of the health assistance offered especially at University Polyclinics, with the primary objective to guarantee, together with an adequate level of care, the highest patient satisfaction.

Given that the latter is due, in large part, to doctors providing medical care, the role of physicians working at a University Polyclinic needs to be taken into account, as it has been done in other studies.[3]

The paper is organised as follows: the next section describes the dimensions included in the analysis and the questionnaire developed at the regional level; then, some statistics about the observed sample, and the econometric model estimated are presented. The discussion of the results, together with some comments regarding the strategies to follow to improve patient satisfaction and, consequently, healthcare quality, conclude this paper.

2. Methods

The analysis has been carried out on a sample of patients at the Polyclinic hospital in Messina, Sicily, Southern Italy.

In Italy, the collaboration between the National Health Service (NHS) and the universities is carried out through hospital university companies (*aziende ospedaliero universitarie*). The departmental organization ensures the integrated exercise of care, teaching and research activities: the departments, whose extended denomination is DAI – Integrated Activity Departments (*Dipartimenti ad Attività Integrata*).

About the Polyclinic hospital of Messina, observed for the present study, five departments have been considered (Surgery, Emergencies, Pediatrics and Obstetrics, Internal Medicine and Specialist Medicines).

2.1. The questionnaire

The questionnaire used for the present survey has been distributed within the Sicilian University Polyclinics right after 2016. Together with other dimensions, the questionnaire includes items examining patients'

[1] In Italy, the topic of organisational climate within hospitals and its relationship with patient satisfaction has been studied by Ancarani et al. (2009), who stress the relevance of patient satisfaction as indicator of process quality inside hospitals, reflecting a cohesive climate among workers. Hence, the link between quality within structures-quality of care-patient satisfaction can be demonstrated

[2] Analyses carried out in Pakistan assess physicians' behavior as a moderating factor between health care quality and patient reported satisfaction (Shabbir et al., 2016).

[3] University hospital physicians are requested to provide health assistance for patient, balancing those activities with teaching and academic research, as well as managerial responsibilities (Alibrandi et al., 2020). In this perspective, a higher number of duties, characterised by prestige and external exposure, may contribute to build a higher reputation for them.

Table 1
Description of relevant variables in the administered questionnaire.

Variables	Possible answers	Values	Definition
Ease of booking	No	0	The "Ease of booking" variable is a dummy variable associated with value = 1 if the visit was easy to book and = 0 otherwise.
	Yes	1	
Time between booking and medical consultation	72 h or less	1	This variable is an ordinal variable, with values between 1 and 5. In particular, the longer the time elapsed from the booking to the medical consultation, the higher the value of this variable.
	10 days or less	2	
	30 days or less	3	
	160 days or less	4	
	Over 160 days	5	
Parking	Definitely no	1	These ordinal variables assume values between 1 and 4. In detail, the higher the opinion expressed, the higher the score associated. When estimating the models, these variables have been converted into dummy variables, whose possible values are 1 and 0, and 1 is associated to the replies "More yes than no" or "Definitely yes" and 0 otherwise.
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Architectural barriers	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Punctuality	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Cleanliness	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Judgment on nurses	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Judgment on physicians	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Ease of collecting reports	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Information about therapy	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	
Contact details	Definitely no	1	
	More no than yes	2	
	More yes than no	3	
	Definitely yes	4	

perspectives of physicians' behaviour, and assessing the effectiveness in a medical consultation, which depends on professionalism, interpersonal and communication skills (Harpole et al., 1996).

The questionnaire looks at different phases in healthcare provision. The first phase relates to what happens before the visit (booking, getting to the hospital, ticket payment). The second phase concerns the service received and can be split into two moments: 1) getting to the hospital (that implies the issues of access to the structure, parking) and 2) receiving the medical consultation (that concerns issues as waiting time, comfort, cleanliness of the ambulatory, medical and nursing staff behaviour). The third phase regards the patient's experience after the visit (more specifically, the information received about the therapy to be followed, the contact details about the people to call in case of necessity, the easiness in getting the medical results). Finally, there are some questions related to the perceived effectiveness of medical treatment and the overall evaluation of the service.

In a polyclinic hospital, which is often a wide and dispersive structure, patients will evaluate positively elements related to accessibility, such as the ease of parking inside the structure and, consequently, the possibility of reaching the ambulatory without problems (Church & Marston, 2003). Such elements are reported in Table 1.

The dimensions listed in Table 1 can be explained as follows:

1. "Ease of booking" means that the patients replied he/she did not encounter any difficulty in making a reservation to receive a medical consultation and/or a clinical examination.
2. "Time between booking and visit" says how long the patient had to wait since the time of booking to the visit or clinical examination. Shorter waiting times may determine a higher quality (Viberg et al., 2013).
3. "Parking", as well as "Architectural barriers", refers to the patient's perception of obstacles limiting or complicating the access to the ambulatory.
4. "Punctuality" means that the time of the visit has been respected.
5. "Cleanliness" summarises the satisfaction or dissatisfaction about the cleaning conditions of waiting rooms (Rahimi et al., 2014).
6. "Judgment on physicians" refers to the other personnel involved in the relationship with patients and results from the combination of three factors (clarity of the doctor, courtesy of the doctor and attention of the doctor towards the patient).
7. "Judgment on nurses" is justified by the consideration that nurses play a major role in improving patient outcomes. Nurses may be determinant in recommending the hospital where they work too, because of the positive organizational climate (Vainieri et al., 2021). Judgment on nurses includes two dimensions: courtesy and clarity of nurses, since, in the questionnaire there is not a specific question concerning the attention of nurses towards patients.
8. "Ease of collecting reports" refers to the ease with which the patient manages to collect the report of the consultation (Ahmadian et al., 2014).

Table 2
Patients distribution according to personal information.

Variables	Modalities	%	Other information
Age	< 18	2,4	The patients' age is, on average, almost 55 with a std. deviation of 19 years.
	18–35	16,7	
	36–50	19,1	
	51–65	26,8	
	66–85	33,3	
	> 85	1,8	
Gender	Males	39,7	
	Females	60,3	
Education	None or Primary school	16,8	
	Compulsory education	32,7	
	Higher education	39,7	
	Graduate education	10,9	
Birthplace	Messina	52,1	
	Messina Province	22,4	
	Other Sicilian provinces	11,0	
	Calabrian towns	8,6	
	Other Italian towns	2,9	
	Abroad	3,1	

9. "Information about therapy" summarises the satisfaction or dissatisfaction regarding the therapy prescribed.
10. "Contact details" relates to the information received about people to call in case of need.

2.2. The observed sample

The questionnaire has been administered during 2019. The schedule for the distribution of the interviews envisaged that 228 questionnaires had to be collected every four months, within the various operating units. Overall, 456 patients replied to the questionnaire, providing socio-demographic information, as gender, age, education, etc., reported in Table 2.

The questionnaire was administered few days after the visit, to allow patients to recall their experience more clearly and express reliable judgments.

The anonymity of the answers, guaranteed to all responding patients, ensures the truthfulness of the declarations (Settineri et al., 2010).

The sample is representative of the patient population willing to be contacted (the patient, in order to be contacted, must express his/her consent.).

2.3. Statistical analysis

The statistical analysis was aimed at explaining the satisfaction expressed by patient.

To identify the factors that exert a significant influence on satisfaction, a binary logistic regression model has been estimated. Qualitative models are frequently used to assess patient satisfaction (Shan et al., 2016; Djambazov et al., 2019).

Here, the dependent variable is the likelihood to declare a high level of satisfaction (9–10 on a scale from 0 to 10, with, overall, the greater frequency of responses higher than 6); the original numerical variable has therefore been dichotomised.[4]

Table 3
Descriptive statistics of patient satisfaction indicators.

Variables	Mean ± SD
Punctuality	3,59 ± 0,79
Cleanliness	3,58 ± 0,75
Judgment on nurses	3,89 ± 0,37
Judgment on physicians	3,92 ± 0,32
Ease of collecting reports	3,34 ± 0,92
Information about therapy	3,72 ± 0,76
Contact details	3,60 ± 0,92

Among all possible predictors, some demographic variables (age, gender, education) and some dummy variables related to the departments (value = 1 if the patient accessed a specific department and = 0 otherwise) were used. In addition, it was included a set of patient satisfaction indicators, related both to the structure and the service received (Ease of booking, Time between booking and visit, Parking lots and Architectural barriers; Punctuality, Cleanliness, Judgment on nurses, Judgment on physicians, Ease of collecting reports, Information about therapy and Contact details).

To identify the potentially predictive factors of the response variable, univariate logistic regression models were estimated, thus obtaining the Crude Odds Ratio (OR); through this procedure the predictive power of each regressor was verified.

A radar chart examines graphically the indicators of patient satisfaction (see Appendix). Then, a multivariate logistic regression model was estimated, to obtain the Adjusted OR; it was used a stepwise procedure, which requires the estimation of multiple multivariate models in an iterative sequence that eliminate, each time, the less significant regressor of the immediately preceding model. Finally, the goodness-of-fit of the final model was evaluated through the calculation of global and local success rates, Pearson and deviance tests (Discacciati et al. (2017)).

3. Results

Table 4 shows the results of the logistic regression models estimated.

The demographic variables and the DAI dummies are not significant in the univariate model. Instead, the final multivariate model shows a significant p-value for Emergencies DAI and for some regressors already significant in univariate analyses ("Parking lots", "Cleaning", "Judgment about physicians" and "Contact details").

The low OR value for Emergencies DAI may reveal the critical issues in organizing the activities of this DAI, because of the high number of patients who access yearly the Emergency DAI (27.6% of the total number of patients in the sample considered) and insufficient health personnel.

The "Parking lots" variable records an OR value greater than 1: this may be explained by the consideration that the town of Messina, where the survey has been carried out, is characterized by an underperforming public transport service; patients may, therefore, be pushed to get to the Policlynic driving, considering availability of parking highly relevant.

Once the patient has reached the ambulatory, he/she will pay attention to other factors unrelated with medical care, such as the cleaning of surrounding rooms: here, the "Cleanliness" indicator shows an OR value greater than four.

Instead, the "Judgment on physicians" confirms the probability of

[4] Another regression model has been estimated considering, as dependent variable, the level of patient satisfaction expressed through numerical values corresponding to ordered levels of satisfaction. The results of this ordered logit model can be seen in the Appendix (Table 1. A). However, since the results do not radically vary with the inclusion of an ordinal variable, it is preferable to consider the dichotomous dependent variable above described, given the presence of high values of satisfaction.

Table 4
Results of Logistic Regression Models for patient satisfaction.

Independent Variables	Univariate Models			Multivariate Model		
	Crude OR	95% C.I.	p-value	Adjusted OR	95% C.I.	p-value
Age	1.01	1.00–1.02	0.166			
Gender	1.32	0.90–1.92	0.153			
Education	0.89	0.73–1.10	0.297	0.78	0.59–1.03	0.081
DAI – Surgery	0.91	0.60–1.38	0.652	0.60	0.33–1.10	0.098
DAI – Emergencies	0.90	0.59–1.35	0.595	0.48	0.26–0.89	**0.019**
DAI – Pediatrics and Obstetrics	1.49	0.75–2.95	0.259			
DAI – Internal Medicine	1.27	0.74–2.17	0.388	.		
DAI – Specialist Medicine	0.91	0.60–1.40	0.676			
Ease of booking	3,84	1.82–8.13	**< 0.001**			
Time elapsed between booking and visit	0.81	0.69–0.95	**0.009**			
Parking lots	1.73	1.16–2.56	**0.007**	1.88	1,12–3,15	**0.017**
Architectural barriers	1.09	0.69–1.72	0.726			
Punctuality	3.81	1.96–7.41	**< 0.001**			
Cleanliness	6.78	3.09–14.91	**< 0.001**	4.18	1.58–11.09	**0004**
Judgment on nurses	8.68	1.06–7.14	**0.044**			
Judgment on physicians	3.26	1,53–6,95	**0.002**	2.58	1.01–6.63	**0.048**
Ease of collecting reports	1.06	0.56–2.02	0.851			
Information about therapy	3.47	1.63–7.39	**0.001**			
Contact details	3.28	1.77–6.07	**< 0.001**	3.99	1.58–10.09	**0.004**

being highly satisfied when expectations on physicians' competences are confirmed.

The "Contact details", i.e., the indications of the people to contact in case of need, confirm the overall positive experience of patients: the high cost-opportunity that the patient has to face, due to the time spent to book the visit/clinical exam, travelling to the hospital, parking and waiting to receive medical care, is compensated by the health personnel expertise.

Comparing the results of the univariate and multivariate models, some factors gain significance and can therefore be interpreted in a more comprehensive framework. At the same time, some significant regressors in the univariate estimations are not meaningful in the multivariate model.

After carrying out the estimation of the multivariate model, the tests to measure the goodness-of-fit were carried out, whose results, available on request, can be summarised as follows:

a) a highly significant p-value of the final model ensures that the inclusion of more explanatory variables significantly increases the information and predictive quality of the model.
b) a non-significance of the Deviance test and the Pearson test leads to accept the hypothesis according to which there are no significant differences between the observed and theoretical values from the logistic regression model.

4. Discussion

The results of the analysis carried out in this study confirm the conclusions of the existing literature on measuring patient satisfaction. The findings endorse the usefulness of surveys that allow a greater involvement of the patient in the provision of healthcare.

The estimation of logistic regressions fulfils the objective to identify which factors are crucial, when strategies to improve healthcare quality are developed. In this process, patients are empowered: they can express their satisfaction and are active part in suggesting the dimensions to correct to improve the service.

However, some limitations of this study must be outlined.

The judgment on the skills of the doctors is affected by possible bias: the patient undergoing the health service will, in any case, be satisfied, because he is the person choosing the Polyclinic hospital, making the reservation, and waiting for the visit or clinical examination to take place.

The data used were collected from a convenience sample. Indeed, the sample was representative not of the entire patient population, but of the patient population willing to be contacted. This is because in the construction of the sample there was inevitably a self-selection of the sample, due to the fact that, as it has been already outlined, the patient, in order to be contacted, had to express his/her consent.

Given the importance of the study, which highlights the elements that can improve quality in patients' perspectives, it would be appropriate to widen the dataset used, and to extend the analysis to other Polyclinics in the same Region or across different countries too. The procedure for selecting the variables could be replicated in other studies to be carried out in similar contexts. In addition, the impact of the organization where health care is provided may be considered, including some dummy variables for the DAIs.

Moreover, a future development of this analysis could be based on further refinement of the methodology, for example by rethinking the survey design. For example, the questionnaire could be improved by adding some subsections which consider the specific characteristics of each DAI: this could be useful to better understand if there are specific factors that influence patient satisfaction. In this regard, latent class analysis could be useful to extract the latent factors that affect patient satisfaction in a specific DAI (Cavrini et al., 2009).

This study adheres to the interpretation which sees patient satisfaction among the elements that constitute the quality of health services and that should be enhanced to continue guaranteeing it: for all these reasons, policymakers are the subjects primarily interested in the issues explored.

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CRediT authorship contribution statement

All the authors have written, read and approved the final version of the research. In particular, **Angela Alibrandi** has suggested the method of analysis and carried out the estimations, **Lara Gitto** has carried out the literature review, wrote the paper, commented the results and revised the manuscript, **Michele Limosani** has conceptualised the whole research and drafted the conclusions and policy implications, **Paolo Fabrizio Mustica** has collected the data and organised the dataset, and reviewed the manuscript. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

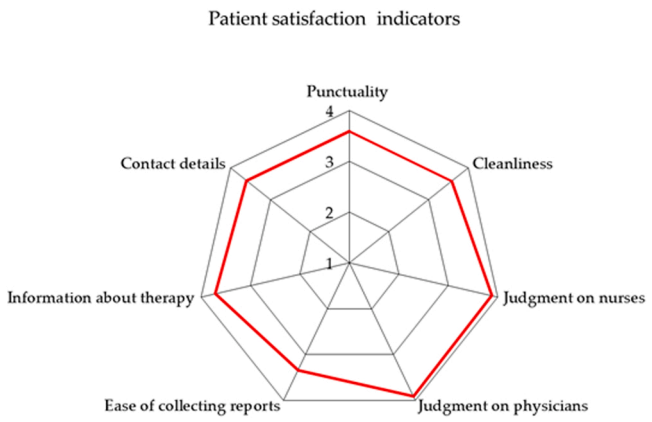

Fig. 1. Radar chart related to patients satisfaction indicators.

Table A1
Results of Ordinal Regression Model for patient satisfaction (link function: logit, reference category: [satisfaction = 10]).

		Estimate	Std. Error	p-value
Threshold	[satisfaction = 2]	-3.671	1.093	**0.001**
	[satisfaction = 4]	-2.958	0.832	**< 0.001**
	[satisfaction = 5]	-1.651	0.587	**0.005**
	[satisfaction = 6]	-0.362	0.511	0.479
	[satisfaction = 7]	1.090	0.507	**0.032**
	[satisfaction = 8]	2.539	0.524	**< 0.001**
	[satisfaction = 9]	3.280	0.531	**< 0.001**
Independent Variables	Education	-0.206	0.107	0.055
	DAI – Surgery	-0.138	0.231	0.549
	DAI – Emergencies	-0.161	0.229	0.481
	Parking lots	0.413	0.198	**0.037**
	Cleanliness	1.562	0.331	**< 0.001**
	Judgment on physicians	1.224	0.348	**< 0.001**
	Contact details	0.557	0.295	0.059

Appendix

Fig. 1 shows a radar chart realized to compare the different indicators measured on the same scale (https://blog.scottlogic.com/2011/09/23/a-critique-of-radar-charts.html). This is the ideal tool for displaying which indicators record the best performances.

The indicators with the highest values refer to the health personnel (both physicians and nurses) (https://degree.lamar.edu/articles/nursing/improve-patient-outcomes/). With the exception of the item related to the Ease of collecting reports, that has the lowest value among all the indicators (average value of 3.34 out of **4**), the judgment about nurses and physicians presents, on the other hand, extremely positive assessments (average values of 3.88 and 3.91), hence expressing high consideration for health professionals' work.

With regard to the indicators selected for the pre-visit phase "Cleanliness" and "Punctuality", they show more modest results comparing to the other indicators.

The indicators "Information about therapy" and "Contact details" show satisfying results (the highest average value was observed for the provision of details about whom contact in case of need). (Table A1).

As a robustness check, the final multivariate model was tested using as the dependent variable the original ordinal variable (the patient expressed a satisfaction between 0 and 10). For this purpose, the ordinal regression model was used.

Although the nature of the dependent variable is different, the results are basically the same. The only exception is Emergencies DAI, which is no longer significant. In any case, if the attention is paid to the main regressors (the patient satisfaction indicators), they are statistically significant again (the p-value of Contact details is barely above the significance level of 5%).

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