

Patient Satisfaction at Tertiary Level Healthcare Services in Greece: Inpatient vs Outpatient Healthcare Services Assessment

Sofia Xesfingi¹, Dimitrios Karamanis¹, Athanassios Vozikis^{1, 2, *}

¹Department of Economics, University of Piraeus, Piraeus, Greece

²Laboratory of Health Economics and Management, Department of Economics, University of Piraeus, Piraeus, Greece

Email address:

xesfingi@unipi.gr (S. Xesfingi), karamanis@unipi.gr (D. Karamanis), avozik@unipi.gr (A. Vozikis)

*Corresponding author

To cite this article:

Sofia Xesfingi, Dimitrios Karamanis, Athanassios Vozikis. Patient Satisfaction at Tertiary Level Healthcare Services in Greece: Inpatient vs Outpatient Healthcare Services Assessment. *International Journal of Health Economics and Policy*. Vol. 2, No. 3, 2017, pp. 125-133.

doi: 10.11648/j.hep.20170203.16

Received: March 1, 2017; **Accepted:** March 15, 2017; **Published:** March 27, 2017

Abstract: The aim of this research is to investigate in- and out-patient satisfaction as revealed by patients' assessment in the Konstantopouleio General Hospital of Athens. The sample of the study consisted of 745 inpatients and 420 outpatients from a survey performed from June 2011 till October 2012. An ordered logit approach was used that allows for different satisfaction response categories. Medical and nursery staff attention to patients along with the hospital environment and administration positively correlate with patient satisfaction in both groups of in- and out-patients. Among the demographic factors, only age positively relates to patient satisfaction in both groups. While the perceived health status plays a positive and significant role in shaping only the in-patient satisfaction, education and insurance positively associate only with out-patient satisfaction. Our study confirms the important role of hospital performance measures, proxied by the hospital care delivered, as well as the socio-demographic factors. In general, hospitals and healthcare systems that invest in citizens' evaluation involvement and patients' assessment programmes, are expected to acquire valuable information to perform important transformational changes-reforms in their healthcare services.

Keywords: Healthcare, Health System Performance, In- and Out-Patient Satisfaction, Ordered Logit, Greece

1. Introduction

Expectations and the perceived value of goods and services were found to exert the strongest influences on customer satisfaction. The study of Fornell *et al.* [1] demonstrated that the expectations an individual has before proceeding to the purchase of a product or service have a negative impact on customer experience. In other words, according to Frank *et al.* [2], higher perceived quality and lower expectations lead to higher customer satisfaction. Choi *et al.* [3] confirmed the same findings for patient satisfaction as well, i.e. the satisfaction with respect to the services provided by the health system.

Over the last decades, hospitals have been working on improving patient-centered care by developing and implementing quality improvement strategies and activities based on the patients' perspectives [4]. Several studies have

shown that significant improvement may be achieved if organizations adopt a more strategic approach and give focus to the patients ([5], [6]). Nevertheless, the measurement of patient satisfaction has proven to be a difficult task.

According to Pascoe [7], who provided an explicit literature review with respect to patient satisfaction, the patient variables that have been studied in patient satisfaction research can be grouped into three areas: attitudes, socio-demographic characteristics, and health-related behaviors. As a variable in understanding health-related behavior and clinical outcome, satisfaction is hypothesized to be both a dependent variable and a predictor of subsequent health-related behavior [7]. Macro-level economic processes have an overwhelming impact up to 89% on variations in patient satisfaction [2]; therefore improvement programmes should also consider these external factors when using patient satisfaction surveys to evaluate the effects of managerial decisions [8].

For the case of Greece, a number of studies have been carried out, focusing on examining patient satisfaction from services provided both from general hospitals ([9], [10], [11], [12]) and specialized hospitals/clinics ([13], [14], [15]). In general, as Papanikolaou and Ntani [16] underline, results emerge a higher level of patient satisfaction for medical and nursing services than from those of accommodation and administration.

While the majority of recent studies regarding patient satisfaction explore the relationship between factors that contribute to higher levels of satisfaction with respect to a very specific procedure, such as the studies of Pini *et al.* [15] and Bamashmus *et al.* [17], this research documents the factors that correlate positively and negatively with the level of in- and out-patient satisfaction with respect to the healthcare provided (performance measure) of the Konstantopouleio General Hospital of Athens.

This paper purports to evaluate the degree of patient satisfaction, as revealed by patients' intention to recommend a hospital and its services to a relative or friend, and further assess the effect of socio-demographic factors and healthcare provision factors in shaping the patient satisfaction. To further enhance our understanding, we interview both in-patients (i.e. a patient that has been hospitalized/admitted to the hospital) and out-patients (i.e. a patient that has received medical attention without being hospitalized/admitted to the hospital) patients about their degree of content with the hospital. This would allow us to derive more detailed conclusions and propose more concrete suggestions.

We performed a survey on 3,000 patients of Konstantopouleio General Hospital in Athens, Greece, for the years 2011 and 2012. We choose the Konstantopouleio General Hospital for two reasons: first because it was one of the few greek hospitals which has complied with the Ministry of Health guidelines referring to the recent obligation for hospitals with more than 400 beds to operate a Quality Office (Greek law 3868/2010, article 8, paragraph 2), and, second, it is the first hospital in Greece, where through an electronic platform, patients can report medical malpractice and provide general assessment for the hospital overall performance.

The contribution of this paper lies in consisting the first attempt in the greek literature that studies patient satisfaction in a greek General Hospital, following international procedures and protocols for surveying data.

Our results demonstrate that the attention provided by medical and nursery staff along with the hospital environment, are positively correlated with patient satisfaction for both groups of in- and out-patients. The latter pertains for the positive age effect. The perceived health status plays a positive and significant role in shaping in-patient satisfaction, and education and insurance associate with out-patient satisfaction.

The remaining of the paper is organized as follows: Section 2 presents our framework of analysis, data and model. Sections 3 and 4 present and discuss our findings, respectively. Finally, Section 5 concludes.

2. Methodology

This section discusses the data used and presents the research methodology. The aim of the aforementioned Quality Office is to collect data with respect to patient satisfaction in order to use them for the evaluation of hospital performance and service quality. This research relies on data collected by the employees of Konstantopouleio General Hospital. Using the convenience sampling technique, a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher, 3,000 participants were recruited. Our final sample relies on 745 in-patients and 420 out-patients in Greece from June 2011 till October 2012.

Each patient when discharged from the hospital was asked to fill-in the corresponding questionnaire. The questionnaire included a wide range of socio-economic characteristics of the patient, who was requested to evaluate his/her experiences with respect to the services provided by the hospital. Finally, s/he had to grade the hospital's performance on an 11-grade scale of patient satisfaction. In order to capture the patient satisfaction level, we choose not to rely on the final grade from 0 to 10, but to the question "Would you recommend our hospital to friends and family", a satisfaction-measuring instrument that has been used in respective studies ([18], [19]).

The questionnaire of in-patients consists of almost 30 questions, excluding the ones referring to the demographic characteristics of the participant, while the questionnaire of out-patients consists of 25 questions. Part of the questions of the official questionnaires developed and distributed by the Ministry of Health was not used in our analysis, since no significant information was provided. Furthermore, we constructed four new variables for each group of patients. Three of those variables are common for both groups of patients (namely "doctors' attention", "nurses' attention", and "hospital environment") and the fourth variable is "pain related procedures" and "hospital administration" for the group of in- and out-patients, respectively. The score of each variable (e.g., *doctors' attention*) is the mean of all sub-questions referring to the corresponding variable (i.e., the evaluation of doctors' attention to the patients). Finally, we employed logit estimation techniques to study the effect of demographic and healthcare provision factors in shaping patient satisfaction. The questionnaires used for in- and out-patients are available upon request.

The variables corresponding to the hospital's performance were constructed based on the average grade patients gave to several questions. Although those questions were Likert-type, the average grade takes several values between 1 to 4 or 1 to 5 for in- and out-patients, respectively (bottom section of Table 1 in results section).

The likelihood of a certain patient being satisfied is assessed through his/her intention to recommend the hospital to others and can be described by an ordered logit model defined as follows:

$$\text{Prob}(Y=c|X_i) = F(X_i\beta), \quad (1)$$

where the endogenous variable Y is the willingness to recommend the hospital and takes values from 1 to 4 (c) and

more specific: 1 if the patient is certainly no willing to recommend the hospital, the value 2 if s/he is probably not willing to recommend it, the value 3 if s/he is probably willing to recommend it, and the value 4 if s/he is certainly willing to recommend it; F is the standard logistic cumulative distribution function and X_i is a set of covariates. The model for the in-patients is defined as follows:

$$Y_i = \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Age}_i + \beta_3 \text{Education}_i + \beta_4 \text{Perceived_Health_Status}_i + \beta_5 \text{Insurance}_i + \beta_6 \text{Nationality}_i + \beta_7 \text{Doctors_Attention}_i + \beta_8 \text{Nurses_Attention}_i + \beta_9 \text{Environment}_i + \beta_{10} \text{Pain_Related_Procedures}_i + \varepsilon_i, \varepsilon_i \sim \text{Logistic}(0, 1) \quad (2)$$

and for the out-patients as follows:

$$Y_i = \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Age}_i + \beta_3 \text{Education}_i + \beta_4 \text{Insurance}_i + \beta_5 \text{Nationality}_i + \beta_6 \text{Doctor_Attention}_i + \beta_7 \text{Nurses_Attention}_i + \beta_8 \text{Environment}_i + \beta_9 \text{Administration_Attention}_i + \varepsilon_i, \varepsilon_i \sim \text{Logistic}(0, 1) \quad (3)$$

where, *Gender* is a dummy variable that takes the values 0 and 1 if the patient is male and female, respectively; *Age* is the age of the patient and takes the value of 1 for ages less than or equal to 24 years old, 2 for ages 25-34 years old, 3 for ages 35-44 years old, 4 for ages 45-55 years old, 5 for ages 55-64 years old, 6 for ages 65-74 years old, and 7 for ages more than or equal to 75 years old; *Education* refers to educational level of each patient and takes the value of 1 for primary school, 2 for high school-3 first years (out of six), 3 for high school-3 last years (out of six), and 4 for university; *Perceived Health Status* is a variable corresponding to the health status of the participant ranging from terrible health status (1) to excellent (5); *Doctors_Attention*,

Nurses_Attention, *Environment*, *Administration_Attention*, and *Pain_Related_Procedures* are the constructed variables that take the values of 1 to 4 or 1 to 5 along with the grades given from the patients.

The selection of our variables can be justified by various studies, such as Linn *et al.* [20] who provided evidence for the importance of the attention received by the nursery staff. The latter is also demonstrated in the studies of Horrocks *et al.* [21] and Kutney-Lee *et al.* [22]. Several studies have examined the importance of the attention received by the medical staff, such as the ones of Dugdale *et al.* [23], Epstein *et al.* [24] and Mast *et al.* [25]. Hall *et al.* [26] and Beach *et al.* [27] investigated in particular the importance of doctors' behavior, while Krupat *et al.* [28] studied the effect of doctor-patient congruence on satisfaction, where apart from doctors' attention gender, age and perceived health status were also investigated.

The significance of education is mentioned in the studies of van Ryn and Burke [29], Siminoff *et al.* [30], Tarn *et al.* [31], Street *et al.* [32]. Hall and Press [33] identified the key elements for patient satisfaction in the emergency department. The importance of the hospital's environment is mentioned in the study of Lövgren *et al.* [34] and Johansson *et al.* [35]. Finally, a review with respect to issues and concepts regarding patient satisfaction [36] examined all the demographic and psychological variables as determinants of satisfaction.

3. Results

Table 1, below, present the socio-demographic characteristics of our two groups of patients and of our constructed variables, respectively.

Table 1. Descriptive statistics of all variables for in- and out-patients.

Socio-demographic variables	In-patients		Out-patients	
	Frequency	Percentage	Frequency	Percentage
Recommend				
Certainly no	11	1.48%	19	4.52%
Probably no	13	1.74%	34	8.10%
Probably yes	150	20.13%	145	34.52%
Certainly yes	571	76.64%	222	52.86%
Gender				
Male	338	45.37%	175	41.67%
Female	407	54.63%	245	58.33%
Age				
≤24 years old	39	5.23%	51	12.14%
25-34 years old	72	9.66%	64	15.24%
35-44 years old	63	8.46%	61	14.52%
45-54 years old	88	11.81%	53	12.62%
55-64 years old	116	15.57%	79	18.81%
65-74 years old	146	19.60%	70	16.67%
≥75 years old	221	29.66%	42	10.00%
Education				
Primary school	189	25.37%	5	1.19%
High school (3 first years)	111	14.90%	149	35.48%
High school (3 last years)	219	29.40%	123	29.29%
University	226	30.33%	143	34.04%
Insurance				
No	7	0.04%	13	3.10%
Yes	738	99.06%	407	96.90%
Nationality				

Socio-demographic variables	In-patients		Out-patients	
	Frequency	Percentage	Frequency	Percentage
Other than Greek	31	4.16%	18	4.16%
Greek	714	95.84%	402	95.71%
Constructed variables	Mean (Std. Dev.)	Min-Max	Mean (Std. Dev.)	Min-Max
Doctors' attention	3.795 (0.449)	1-4	4.280 (0.908)	1-5
Nurses' attention	3.685 (0.532)	1.333-4	4.094 (1.013)	1-5
Environment	3.519 (0.550)	1.5-4	3.838 (0.789)	1-5
Pain related procedures	1.849 (0.660)	1-2.5		
Administration's attention			3.675 (1.045)	1-5

As Table 1 shows (upper section), about half of the participants are men, while the majority of them intent to recommend the hospital. With respect to the age of two patient groups, it seems that out-patients are more equally distributed in all age classes, while in-patients seem to be older. In is quite reasonable if one takes into account that as out-patients we are referring to those visiting the emergency room and as in-patients we referring to those who proceed in admittance in one of the hospital's clinics. Furthermore, the highest percentage of not insured patients is documented among the out-patients (this is the meaning of emergency room).

Additionally, we measure the perceived health status only for the group of in-patients (due to unavailability of the corresponding variable in the out-patient satisfaction questionnaire) and find that only 6% and 21% believe that their health status is excellent or good, respectively. At the other hand, 4% and 40% consider that their health status is terrible or bad, respectively, while the 29% state having a moderate health status.

Although it appears that both patient groups are satisfied with the provided hospital care and are willing to recommend

the hospital to a friend and family member, there are several characteristics that shape their differences with respect to the hospital recommendation. With a closer look, we observe that in-patients are, on average, more satisfied than the out-patients.

Table 2, below, presents estimates of odds ratios for in- and out-patients, respectively, with respect to their satisfaction with hospital's performance and the probability of recommend it to friends and family. One can read the odds ratios as follows: if the odd ratio, a , is bigger than 1 ($a > 1$), then the probability of a patient to recommend the hospital increases by $(a-1)*100\%$, whereas the probability decreases by $(1-a)*100\%$, if the odd ratio is smaller than one ($a < 1$).

Part A refers to the in-patients. More specifically, column (1) presents estimates of the model for the in-patients where only the demographic (D) factors are included. Next, column (2) shows estimates of the model, where only the indicators regarding the hospital's performance (H) are included. Finally, column (3) presents estimates, where the full set of covariates (F) is included. Part B presents the corresponding estimates for out-patients.

Table 2. Log it estimates (odds ratios) of different specifications for in-patients (dependent variable: the probability of recommending the hospital to others).

Odds ratios	Part A: In-patients			Part B: Out-patients		
	Demographic	Hospital	Full set	Demographic	Hospital	Full set
	$D (In)$	$H (In)$	$F (In)$	$D (Out)$	$H (Out)$	$F (Out)$
Gender	0.862 (0.159)		0.997 (0.208)	1.002 (0.201)		1.601** (0.382)
Age	1.208*** (0.062)		1.157*** (0.064)	1.180*** (0.068)		1.120* (0.073)
Education	0.882 (0.077)		0.987 (0.097)	0.817* (0.096)		0.939 (0.130)
Perceived Health Status	1.403*** (0.148)		1.207* (0.136)			
Insurance	0.485 (0.406)		0.807 (1.174)	0.735 (0.409)		4.911*** (3.013)
Nationality	0.587 (0.241)		0.726 (0.289)	4.263*** (2.555)		1.720 (1.281)
Doctors' Attention		1.363*** (0.219)	4.192*** (1.025)		2.139*** (0.502)	2.020*** (0.503)
Nurses' Attention		1.121*** (0.190)	3.161*** (0.611)		1.570*** (0.264)	1.645*** (0.288)
Environment		0.441** (0.177)	1.520*** (0.277)		3.664*** (0.760)	3.843*** (0.800)
Pain Related Procedures		0.405** (0.162)	1.346*** (0.204)			
Administration's Attention					1.294 (0.221)	1.338* (0.226)
Pseudo- R^2	0.032	0.216	0.222	0.026	0.327	0.343
Wald	29.49	153.79	164.36	19.59	212.07	215.03
Obs.	745	745	745	420	420	420

Note: Heteroscedasticity robust standard errors in parentheses; (***), (**), (*) indicate significance at 1%, 5% and 10%, respectively.

As Table 2 shows, for the in-patient group, among the demographic factors presented in column *D (In)* only the age and the perceived health status of a patient seem to play a significant role in forming his/her satisfaction level. The same holds for the fully fledged specification *F (In)*, when all the variables are included. Nevertheless, of great importance, are the variables corresponding to the hospital's performance. The attention given to patients by the medical and nursery staff, the hospital environment, and the procedures followed for the pain management are all of them positively correlated with patient satisfaction level and statistically significant.

The same findings hold for the out-patients, as Table 2 demonstrates. All the variables referring to the hospital performance are statistically significant and associate positively with out-patients' satisfaction level. Among the demographic factors presented for this group of patients in column *F (Out)*, the age effect pertains statistically significant at a borderline level of significance (10%), and the gender of the patient along with whether s/he has an insurance also play an important role.

More specifically, if the attention to a patient by the medical staff increases, the patient satisfaction level also increases by $[(4.192-1)*100\%] = 319.2\%$ for the in-patients

and $[(2.020-1)*100\%] = 102\%$ for the out-patients. Furthermore, if the attention provided by the nursery staff increases, the probability of a patient being satisfied increases by 216.1% and 64.5%, for the in- and out-patients, respectively. Similar effect has a melioration of the hospital environment (the probability of a patient being satisfied increases by 52% and 284.3% for the in- and out-patients, respectively). An improvement of the procedures followed for pain management with respect to in-patients and of the attention received by the administrative staff with respect to out-patients, leads to an increase of their satisfaction level by 34.6% and 33.8%, respectively.

Next, in Table 3, below, we perform a marginal effect analysis, in order to capture the effect on maximum level of our dependent variable when an individual changes within variable classes, at the data means. The marginal effect analysis is performed for the fully fledged specifications of Table 2 that correspond to both groups of patients, i.e., for columns *F (In)* for the group of in-patients and *F (Out)* for the group of out-patients, respectively. In addition, the analysis is performed only for the statistical significant demographic variables. Same as above, Parts A and B of Table 3 correspond to in- and out-patients, respectively.

Table 3. Marginal Effect Analysis for in- and out-patients (dependent variable: maximum level of Recommendation).

Variables	Part A: In-patients		Variables	Part B: Out-patients	
	Marginal Effect	Heteroscedasticity Robust Std. Err.		Marginal Effect	Heteroscedasticity Robust Std. Err.
Age			Gender		
≤ 24 years old	0.707	0.648	Male	0.425	0.046
25-34 years old	0.707	0.047	Female	0.542	0.043
35-44 years old	0.730	0.047	Age		
45-54 years old	0.723	0.041	≤24 years old	0.383	0.078
55-64 years old	0.769	0.032	25-34 years old	0.321	0.066
65-74 years old	0.771	0.031	35-44 years old	0.654	0.088
≥ 75 years old	0.814	0.022	45-54 years old	0.558	0.094
Perceived Health Status			55-64 years old	0.548	0.072
Terrible	0.675	0.099	65-74 years old	0.428	0.063
Bad	0.767	0.027	≥75 years old	0.608	0.092
Moderate	0.828	0.029	Insurance		
Good	0.841	0.033	No	0.480	0.034
Excellent	0.776	0.069	Yes	0.819	0.090

Holding all variables at their mean value, the probability of an in-patient (Part A) to recommend the hospital with certainty is 70.7% among the two first age-classes, almost 73.0% among those who are between 35 and 54 years old, almost 77% among those belonging to the two next age classes (55-74 years old), and 81.4% among those who are older than 75 years old. The marginal effect analysis confirms the findings of Table 2, i.e. the positive age effect on patient satisfaction, since as the patient is getting older, his/her probability of recommending the hospital is increasing.

Turning to the impact of perceived health status on in-patient satisfaction, the marginal effect indicates that those that are perceiving to have a terrible or a bad health status, the probability of recommending the hospital is 67.5% and 76.7% respectively, while the probability is 82.8%, 84.1%

and 77.6% among those who believe that their personal health status is moderate, good or excellent, respectively.

As part B of Table 3 shows, holding all variables at their mean value, the probability of an out-patient being satisfied with the services received by the hospital, and, therefore, certainly recommending it is 42.5% among men and 54.2% among women. The probability of certainly recommend the hospital is 38.3% among those who are younger than 24 years old, 32.1% among the class age of 25-34 years old, 65.4% among those who are 35-44 years old, 55.8% among those of next category, 54.8% among those who are between the age of 55 and 64 years old, 42.8% among the class age 65-74 years old, and 60.8% among those who are above the age of 75 years old. The marginal effect analysis of the effect of various age classes on patient satisfaction confirms, on average, the finding from Table 2 that the age effect on

recommendation increases as participants becomes older. The positive insurance effect on patient satisfaction is also consistent with the findings from Table 2 as the marginal effects indicates, since the probability of recommending the hospital is 81.9% among those who have insurance and only

48% among those who have not.

Figure 1, below, shows the probabilities of the average in- and out-patient to recommend the hospital, given that all variables are at their mean value.

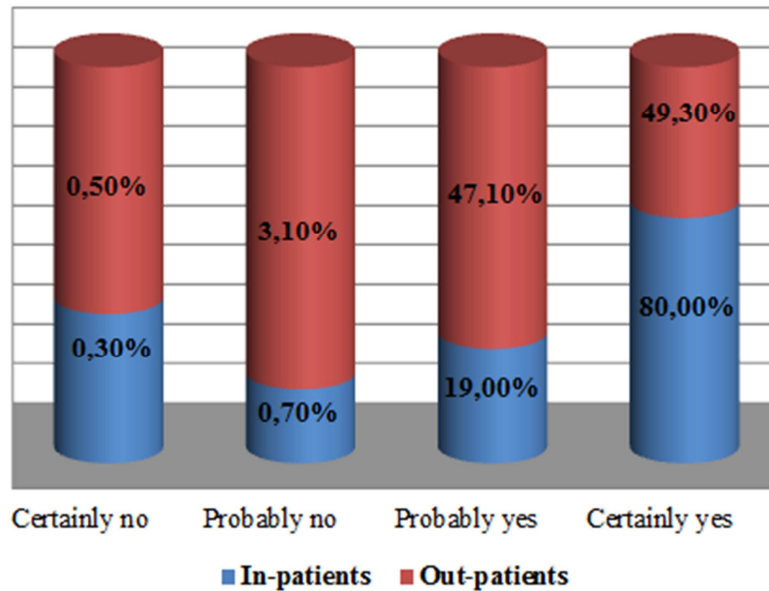


Figure 1. Probabilities of recommending the hospital.

As shown above, there are differences between in- and out-patients. The first ones are more willing to recommend the hospital with respect to the second ones. For example, the probability of an in-patient to certainly recommend the hospital, given that the rest of the variables are at their mean value, is 80%, while the same probability for out-patients is more than 30% lower (49.3%).

4. Discussion

Healthcare consumers are demanding excellence in care and services delivered from care providers [37]. The relationship between physicians and patients has been extensively studied in the literature and is more than reasonable that this relationship has positive effect on patient satisfaction. When the care delivered is patient-centered, the patient feels that he/she has the necessary time to ask questions and get the information needed. Dugdale *et al.* [23] pointed that physicians' behavior can improve outcome and satisfaction. The aforementioned relationship, and particularly the communication between doctor and patient, is related not only to satisfaction [24] but to patients' quality of life as well [38]. More recent studies [25] suggest that nonverbal behavior plays an important role for patient outcomes such as satisfaction.

The same finding holds for the attention received by the nursery staff. Nurse practitioners providing front line care in general practice and in emergency departments may potentially substitute for doctors [21] and therefore increase levels of patient satisfaction. The importance of nursery is

demonstrated in the study of Kutney-Lee *et al.* [22], where the patient satisfaction with respect to the services received by the nursery staff is related with the probability of recommending the hospital to others. Hospital's environment usually refers to cleanliness, food, temperature and sound level and has proved to be an important factor for patient satisfaction [35]. Nevertheless, clean clothes and beds, and tasty food sometimes are considered to be tokens of good nursing care [34], although in modern hospitals, the overall control on several physical aspects is on hand of technology or administration.

Quality of care may also be affected by physicians' perceptions of patients. For example, Hall *et al.* [26] demonstrated that if a patient likes his/her physician, s/he will give a more positive evaluation with respect to the physician's behavior, and therefore, s/he will have higher ratings of satisfaction. According to more recent studies [27], physicians who have provided more information or shown more empathy toward patients, they were respected and viewed favorably.

Understanding the current health status of the patient is useful because it can affect directly their quality of life and their ultimate satisfaction with care [39]. Finally, age is the most constant socio-demographic determinant of patient satisfaction. According to Blanchard *et al.* [40], the older generations tend to be more satisfied with health care than the younger generations, and they tend to demand less information from their doctors [39]. In addition to age, gender and education, and previous experience of nursing care have a primary influence on expectations, therefore, on

satisfaction [35]. It has been shown that men receive information more spontaneously from the nursing staff compared with women [41].

Reciprocity and mutual influence have a strong impact on the relation between medical staff and patients. Therefore, a more positive communication from one participant leads to similar responses from the other [32]. Consequently, educational level may play an important role for the patients, since some physicians associate more negative attributes to minority and less educated patients [29]. Physicians generally are more responsive to the actively involved patient in part because they have a better understanding of his/her needs [32], while college educated patients are often more assertive and inquisitive than patients with a high school education or less [30]. Furthermore, education about the prescribed medication is particularly important because it may lead to an increase in knowledge and a decrease in misunderstandings about the necessity or possible side effects of the medication ([31], [42]).

Nevertheless, according to Xesfingi and Vozikis [43], the patient satisfaction with the healthcare system might be influenced by other economic factors and properties of the healthcare system, such as safety, accessibility, equity, and comprehensiveness of care.

It is worth to further evaluate the construction of the corresponding questionnaire as there was no methodology to base upon. Validity and reliability of data selected, along with bias corresponding to selection method, need to be tested. Further research is needed to be done in order to evaluate the potential effect of confounding factors, although it is demonstrated that income plays an important role in shaping patient satisfaction. Many studies have shown the importance of income with respect to patient satisfaction, such as the study of Willems *et al.* [44] unfortunately there was no relevant question for this case study. Further research could focus on studying the patients' satisfaction before and after the 2007 economic crisis. One key group of constraints is environmental constraints [45] which include factors such as unemployment and political instability. Constraints beyond the control of an individual programmes, e.g., public sector employment rules which can have a major effect on the way health services operate, may not be even identified [46].

5. Conclusions

Patient satisfaction has been proven to be an important measure of healthcare quality. No matter where the study has taken place, all measures regarding the hospital's performance, i.e. the attention received by the medical and nursing staff, the hospital's environment etc., strongly correlate and positively affect patient satisfaction.

Our study unveils and documents the important role of the aforementioned factors, and demonstrates the positive age effect that holds for both in- and out-patients.

Overall, hospitals and healthcare systems, that invest in programmes to determine how patients assessing their

experiences, have valuable information to make transformational changes-reforms in care delivery and services.

Future research could also examine the impact of economic crisis on patient satisfaction and their willingness to pay for services of better quality, taking into account the perceived health status of patients.

Acknowledgements

We are grateful to Claire Economidou and Maria Raikou for support and providing useful comments on an earlier draft of this paper. The usual disclaimer applies.

References

- [1] Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J. and Bryant, B. E. (1996). The American Customer Satisfaction Index: Nature, purpose, and findings. *Journal of Marketing* 60 (4): 7-18.
- [2] Frank, B., Sudo, S. and Enkawa, T. (2009). Interpreting time series of patient satisfaction: macro vs. micro components. *Journal of Hospital Marketing & Public Relations* 19 (1): 15-39.
- [3] Choi, K. S., Cho, W. H., Lee, S., Lee, H. and Kim, C. (2004). The relationships among quality, value, satisfaction and behavioral intention in healthcare provider choice: A South Korean study. *Journal of Business Research* 57 (8): 913-921.
- [4] Kleefstra, S. M., Zandbelt, L. C., de Haes, J. C. and Kool, R. B. (2015). Trends in patient satisfaction in Dutch university medical centers: room for improvement for all. *BMC Health Services Research* 15 (1): 112.
- [5] Barr, J. K., Giannotti, T. E., Sofaer, S., Duquette, C. E., Waters, W. J. and Petrillo, M. K. (2006). Using public reports of patient satisfaction for hospital quality improvement. *Health Services Research* 41 (3): 663-682.
- [6] Luxford, K., Safran, D. G. and Delbanco, T. (2011). Promoting patient-centered care: a qualitative study of facilitators and barriers in healthcare organizations with a reputation for improving the patient experience. *International Journal for Quality in Health Care* 23: 510-515.
- [7] Pascoe, G. C. (1983). Patient satisfaction in primary health care: A Literature Review and Analysis. *Evaluation and Program Planning* 6 (3-4): 185-210.
- [8] Lee, M. A. and Yom, Y. H. (2007). A comparative study of patients' and nurses' perceptions of the quality of nursing services, satisfaction and intent to revisit the hospital: A questionnaire survey. *International Journal of Nursing Studies* 44 (4): 545-555.
- [9] Niakas, D., Gnardellis, C. and Theodorou, M. (2004). Is there a problem with quality in the Greek hospital sector? Preliminary results from a patient satisfaction survey. *Health Services Management Research* 17 (1): 62-69.
- [10] Gnardellis, C. and Niakas, D. (2005). Factors influencing inpatient satisfaction. An analysis based on the Greek National System. *International Journal of Healthcare Technology and Management* 6 (3): 307-320.

- [11] Priporas, C. V., Laspa, C. and Kamenidou, I. (2008). Patient satisfaction measurement for in-hospital services: a pilot study in Greece. *Journal of Medical Marketing* 8 (4): 325-340.
- [12] Matis, G. K., Birbilis, T. A. and Chrysou, O. (2009). Patient satisfaction questionnaire and quality achievement in hospital care: the case of a Greek public university hospital. *Health Services Management Research* 22 (4): 191-196.
- [13] Aletras, V., Zacharakis, F. and Niakas, D. (2007). Questionnaire for the measurement of outpatient satisfaction in the ophthalmology clinic of a Greek public hospital. *Archives of Hellenic Medicine* 24 (1): 89-96.
- [14] Panteli, V. and Patistea, E. (2007). Assessing patients' satisfaction and intensity of pain as outcomes in the management of cancer-related pain. *European Journal of Oncology Nursing* 11 (5): 424-433.
- [15] Pini, A., Sarafis, P., Malliarou, M., Tsounis, A., Igoumenidis, M., Bamidis, P. and Niakas, D. (2014). Assessment of Patient Satisfaction of the Quality of Health Care Provided by Outpatient Services of an Oncology Hospital. *Global Journal of Health Science* 6 (5): 196-203.
- [16] Papanikolaou, V. and Ntani, S. (2008). Addressing the paradoxes of satisfaction with hospital care. *International Journal of Health Care Quality Assurance* 21 (6): 548-561.
- [17] Bamashmus, M. A., Hubaish, K., Alawad, M. and Alakhlee, H. (2015). Functional outcome and patient satisfaction after laser in situ keratomileusis for correction of myopia and myopic astigmatism. *Middle East African Journal of Ophthalmology* 22 (1): 108-114.
- [18] Joffe, S., Manocchia, M., Weeks, J. C. and Cleary, P. D. (2003). What do patients value in their hospital care? An empirical perspective on autonomy centred bioethics. *Journal of Medical Ethics* 29 (2): 103-108.
- [19] Goldstein, E., Farguhar, M., Crofton, C., Darby, C. and Garfinkel, S. (2005). Measuring hospital care from the patients' perspective: an overview of the CAHPS Hospital Survey development process. *Health Services Research* 40 (6): 1977-1995.
- [20] Linn, A. J., van Weert, J. C. M., van Dijk, L., Horne, R. and Smit, E. G. (2016). The value of nurses' tailored communication when discussing medicines: Exploring the relationship between satisfaction, beliefs and adherence. *Journal of Health Psychology* 21 (5): 798-807.
- [21] Horrocks, S., Anderson, E. and Salisbury, C. (2002). Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *British Medical Journal* 324 (7341): 819-823.
- [22] Kutney-Lee, A., McHugh, M. D., Sloane, D. M., Cimiotti, J. P., Flynn, L., Neff, D. F. and Aiken, L. H. (2009). Nursing: A Key to Patient Satisfaction. *Health Affairs* 28 (4): 669-677.
- [23] Dugdale, D. C., Epstein, R. and Pantilat, S. Z. (1999). Time and the Patient-Physician Relationship. *Journal of General Internal Medicine* 14 (1): 34-40.
- [24] Epstein, R. M., Franks, P., Fiscella, K., Shields, C. G., Meldrum, S. C., Kravitz, R. L. and Duberstein, P. R. (2005). Measuring patient-centered communication in Patient-Physician consultations: Theoretical and practical issues. *Social Science & Medicine* 61 (7): 1516-1528.
- [25] Mast, M. S., Hall, J. A., Klöckner, C. and Choi, E. (2008). Physician Gender Affects How Physician Nonverbal Behavior Is Related to Patient Satisfaction. *Medical Care* 46 (12): 1212-1218.
- [26] Hall, J. A., Horgan, T. G., Stein, T. S. and Roter, D. L. (2002). Liking in the physician-patient relationship. *Patient Education and Counseling* 48 (1): 69-77.
- [27] Beach, M. C., Roter, D. L., Wang, N. Y., Duggan, P. S. and Cooper, L. A. (2006). Are physicians' attitudes of respect accurately perceived by patients and associated with more positive communication behaviors? *Patient Education and Counseling* 62 (3): 347-354.
- [28] Krupat, E., Rosenkranz, S. L., Yeager, C. M., Barnard, K., Putnam, S. M. and Inui, T. S. (2000). The practice orientations of physicians and patients: the effect of doctor-patient congruence on satisfaction. *Patient Education and Counseling* 39 (1): 49-59.
- [29] Van Ryn, M. and Burke, J. (2000). The effect of patient race and socio-economic status on physicians' perceptions of patients. *Social Science & Medicine* 50 (6): 813-828.
- [30] Siminoff, L. A., Graham, G. C. and Gordon, N. H. (2006). Cancer communication patterns and the influence of patient characteristics: Disparities in information-giving and affective behaviors. *Patient Education and Counseling* 62 (3): 355-360.
- [31] Tarn, D. M., Heritage, J., Paterniti, D. A., Hays, R. D., Kravitz, R. L. and Wenger, N. S. (2006). Physician communication when prescribing new medications. *Archives of Internal Medicine* 166 (17): 1855-1862.
- [32] Street, R., Gordon, H. and Haidet, P. (2007). Physicians' communication and perceptions of patients: Is it how they look, how they talk, or is it just the doctor? *Social Science and Medicine* 65 (3): 586-598.
- [33] Hall, M. F., and I. Press (1995). Keys to patient satisfaction in the emergency department: results of a multiple facility study. *Hospital & health services administration* 41 (4): 515-532.
- [34] Lövgren, G., Engström, B. and Norberg, A. (1996). Patients' narratives concerning good and bad caring. *Scandinavian Journal of Caring Sciences* 10 (3): 151-156.
- [35] Johansson, P., Oléni, M. and Fridlund, B. (2002). Patient satisfaction with nursing care in the context of health care: a literature review. *Scandinavian Journal of Caring Sciences* 16 (4): 337-344.
- [36] Sitzia, J. and Wood, N. (1997). Patient satisfaction: A review of issues and concepts. *Social Science & Medicine* 45 (12): 1829-1843.
- [37] Urden, L. (2001). Patient Satisfaction Measurement: Current Issues and Implications. *Outcomes Management* 6 (3): 125-131.
- [38] Ong, L. M. L., Visser, M. R. M., Lammes, F. B. and de Haes, J. C. (2000). Doctor-Patient communication and cancer patients' quality of life and satisfaction. *Patient Education and Counseling* 41 (2): 145-156.
- [39] Chow, A., Mayer, E. K., Darzi, A. W. and Athanasiou, T. (2009). Patient-reported outcome measures: The importance of patient satisfaction in surgery. *Surgery* 146 (3): 435-443.
- [40] Blanchard, C. G., Labrecque, M. S., Ruckdeschel, J. C. and Blanchard, E. B. (1990). Physician behaviors, patient perceptions, and patient characteristics as predictors of satisfaction of hospitalized adult cancer patients. *Cancer* 65 (1): 186-192.

- [41] Ottosson, B., Hallberg, I. R., Axelsson, K. and Loven, L. (1997). Patients' satisfaction with surgical care impaired by cuts in expenditure and after interventions to improve nursing care at a surgical clinic. *International Journal for Quality in Health Care* 9 (1): 43-53.
- [42] Linn, A. J., van Weert, J. C. M., Schouten, B. C., Smit, E. G., van Bodegraven, A. A. and van Dijk, L. (2012). Words that make pills easier to swallow. A communication typology to address practical and perceptual barriers to medication intake behavior. *Patient Preference and Adherence* 6: 871-885.
- [43] Xesfingi, S. and Vozikis, A. (2016) Patient satisfaction with the healthcare system: Assessing the impact of socioeconomic and healthcare provision factors. *BMC Health Services Research* 16 (1): 94.
- [44] Willems, S., de Maesschalck, S., Deveugele, M., Derese, A. and de Maedeneer, J. C. J. (2005). Socio-economic status of the patient and doctor-patient communication: does it make a difference? *Patient Education and Counseling* 56 (2): 139-146.
- [45] Hanson, K., Ranson, K., Oliveira-Cruz, V. and Mills, A. (2003). Expanding access to priority health interventions: a framework for understanding the constraints to scaling-up. *Journal of International Development* 15 (1): 1-14.
- [46] Travis, P., Bennett, S., Haines, A., Pang, T., Bhutta, Z., Hyder, A. A., Pielemeier, N. R., Mills, A. and Evans, T. (2004). Overcoming health-systems constraints to achieve the Millennium Development Goals. *Lancet* 364 (9437): 900-906.