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In- and Out-patient satisfaction assessment: the case of a greek General Hospital

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Abstract

Aim: The purpose of this research is to investigate in- and out-patients' satisfaction as revealed by their intention to recommend the Konstantopouleio General Hospital of Athens to friends and family.

Material/Methodology/Approach: The final 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 allowing the analysis of the satisfaction's response categories.

Results: Findings demonstrate that the attention provided by medical and nursery staff along with the hospital environment, are positively correlated with patients' satisfaction for both groups of in- and out-patients. Among the demographic factors, the positive age effect is present in both groups, while the perceived health status plays a positive and significant role in shaping in-patient satisfaction, and education and insurance associate with out-patient satisfaction.

Conclusions: Our study confirms the important role of all measures with respect to hospital performance. In general, hospitals and healthcare systems that invest in citizens' evaluation evolvment programmes, will acquire valuable information to perform important transformational changes in healthcare services.

Key words: healthcare, health system performance, in- and out-patient satisfaction, Greece, ordered logit.

JEL:I10, I18, I19, I38

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1. Background

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.* (1996) 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.* (2009), higher perceived quality and lower expectations lead to higher customer satisfaction. Choi *et al.* (2004) 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 (Kleefstra *et al.*, 2015). Several studies has shown that significant improvement may be achieved if organizations adopt a more strategic approach and give focus to the patients (Barr *et al.*, 2006; Luxford *et al.*, 2011). Nevertheless, the measurement of patient's satisfaction has proven to be a difficult task.

According to Pascoe (1983)¹, 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 (Pascoe, 1983). Macro-level economic processes have an overwhelming impact up to 89% on variations in patient satisfaction (Frank *et al.*, 2009); therefore improvement programs should also consider these external factors when using patient satisfaction surveys to evaluate the effects of managerial decisions (Lee and Yom, 2007).

For the case of Greece, a number of studies have been carried out, focusing on examining patients' satisfaction from services provided both from general hospitals (Niakas *et al.*, 2004; Gnardellis and Niakas, 2005; Priporas *et al.*, 2008; Matis *et al.*, 2009) and specialized hospitals/clinics (Aletras *et al.*, 2007; Panteli and Patistea, 2007;

¹Pascoe provided an explicit literature review with respect to patient satisfaction.

Pini *et al.*, 2014). In general, as Papanikolaou and Ntani (2008) underline, results emerge a higher level of patient satisfaction for medical and nursing services than from those of accommodation and administration.

While the recent studies regarding patient satisfaction explore the relationship between factors that contribute to higher levels of satisfaction and a very specific procedure, such as the study of Bamashmus *et al.* (2015), this research documents the factors that correlate positively and negatively with the level of in- and out-patients' satisfaction with respect to the performance of the Konstantopouleio General Hospital of Athens.

This paper purports to evaluate the degree of patients' satisfaction, as is revealed by patients' intention to recommend a hospital and its services to a relative or friend, and further assess the role of socio-demographic and health care provision factors in shaping the patients' satisfaction. To further enhance our understanding, we interview in-patient (i.e. a patient that has been hospitalized/admitted to the hospital) and out-patient (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 perform 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 the few which has complied with the Ministry of Health guidelines², 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 patients' 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 patients' satisfaction for

²Greek Law 3868/2010.

both groups of in- and out-patients. The latter holds for the age effect in both groups, while 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. Methods

This section discusses the data used and presents the research methodology.

2.1 Data

Since 2011, every hospital in Greece with more than 400 hospital beds was obligated to run a Quality Office. One of its responsibilities was 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. Although more than 3,000 questionnaires were collected, our survey relies on a convenient sample³ of 745 in-patients and 420 out-patients in Greece from June 2011 till October 2012. Each patient when discharging the hospital was asked to fill the corresponding questionnaire. The research 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 and then grade these experiences on a 11-grade scale of patient satisfaction. In order to capture the patient's satisfaction level, we choose not to rely on the grade from 0 to 10 given to the hospital, but to the question "Would you recommend our hospital to friends and family", a satisfaction-measuring instrument that has been used in respective studies (Joffe *et al.*, 2003; Goldstein *et al.*, 2005).

The questionnaire of in-patients consists of almost 30 questions, excluding the ones

³Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher; therefore, the subjects are selected just because they are easiest to recruit for the study.

referring to the demographic characteristics of the participant, while the questionnaire of out-patients consists of 25 questions. Several questions of the initial questionnaires were not used in our analysis, since no significant information was provided. Furthermore, we constructed four new variables, namely “doctors’ attention”, “nurses’ attention”, “hospital environment” and “hospital administration” using the total score of several questions and then dividing it by the number of questions participating in each new variable. Finally, we employed logit estimation techniques to study the effect of demographic and health care provision factors, namely above, in shaping patients’ satisfaction.

Tables 1 and 2, below, present the demographic characteristics of our two groups of patients, in- and out-patients respectively.

Table 1: Descriptive statistics of in-patients

Variables	Obs.	Mean	Std. Dev.	Min	Max
<i>Recommend</i>	745	3.719	0.571	1	4
<i>Gender</i>	745	1.546	0.478	1	2
<i>Age</i>	745	5.003	1.884	1	7
<i>Education</i>	745	2.647	1.159	1	4
<i>Health Status</i>	745	2.863	0.986	1	5
<i>Insurance</i>	745	1.009	0.965	1	2
<i>Nationality</i>	745	1.042	0.200	1	2
<i>Doctors’ attention</i>	745	3.795	0.449	1	4
<i>Nurses’ attention</i>	745	3.685	0.532	1.333	4
<i>Environment</i>	745	3.519	0.550	1.5	4
<i>Pain related procedures</i>	745	1.849	0.660	1	2.5

Table 2: Descriptive statistics of out-patients

Variables	Obs.	Mean	Std. Dev.	Min	Max
<i>Recommend</i>	420	3.357	0.815	1	4
<i>Gender</i>	420	1.583	0.493	1	2
<i>Age</i>	420	4.007	1.900	1	7
<i>Education</i>	420	2.962	0.862	1	4
<i>Insurance</i>	420	1.031	0.173	1	2
<i>Nationality</i>	420	1.043	0.203	1	2
<i>Doctors’ attention</i>	420	4.280	0.908	1	5
<i>Nurses’ attention</i>	420	4.094	1.013	1	5
<i>Environment</i>	420	3.838	0.789	1	5
<i>Administration’s attention</i>	420	3.675	1.045	1	5

Although it appears that both patient groups are willing to recommend the hospital to a friend and family, there are several characteristics that shape their differences with respect to this recommendation.

Figure 1, below, shows the distribution of our dependent variable (recommendation of the hospital to friends and family).

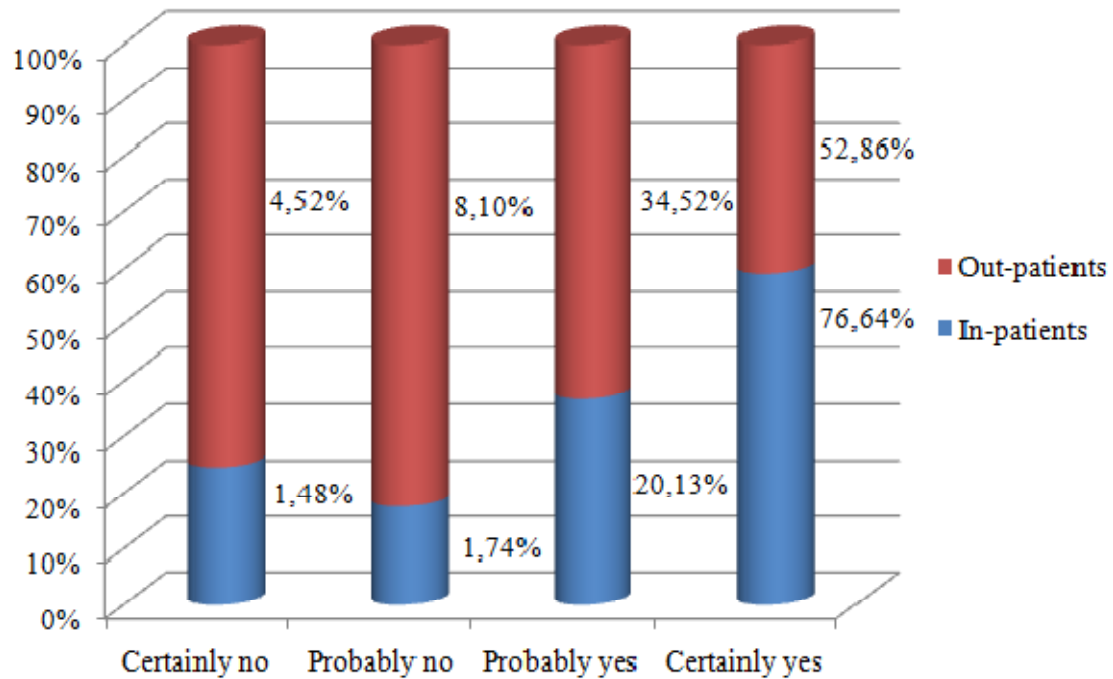


Figure 1: Different in- and out-patient intention to recommend the hospital

From the figure above, we observe that the in-patients are, on average, more satisfied than the out-patients.

2.2 Model

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 defined for the in-patients as follows:

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

and for the out-patients as follows:

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

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 is a dummy that 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* is a dummy variable that 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 dummy corresponding to the health status of the participant ranging from terrible health status (1) to excellent (5); *Doctors_Attention*, *Nurses_Attention*, *Environment* and *Administation_Attention* are dummy variables that take the values of 1 to 4 along with the grades given from the patients with respect to the doctors' attendance, nurses' attendance, hospital's environment and administrative staff, respectively.

The selection of our variables can be justified by various studies, such as Linn *et al.* (2014) 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.* (2002) and Kutney-Lee *et al.* (2009). Several studies have examined the importance of the attention received by the medical staff, such as the ones of Dugdale *et al.* (1999), Epstein *et al.* (2005) and Mast *et al.* (2008). Hall *et al.* (2002) and Beach *et al.* (2006) investigated in particular the importance of doctors' behavior, while Krupat *et*

al.(2000) 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 (2000), Siminoff *et al.* (2006), Tarn *et al.* (2006), Street *et al.* (2007). Hall and Press (1995) identified the key elements for patient satisfaction in the emergency department. The importance of the hospital's environment is mentioned in the study of and Lövgren *et al.* (1996) and Johansson *et al.* (2002). Finally, a review with respect to issues and concepts regarding patient satisfaction (Sitzia and Wood, 1997) examined all the demographic and psychological variables as determinants of satisfaction.

3. Results

Tables 3 and 4, below, present 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 ($a < 1$).

Column (1) presents estimates of the model, 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 (X) is included.

Table 3: Logit estimates (odds ratios) of different specifications for in-patients (the probability of recommend the hospital to others is the dependent variable)

Odds ratios	Demographic (D)	Hospital (H)	Full set (X)
	(1)	(2)	(3)
<i>Gender</i>	0.862 (0.159)		0.997 (0.208)
<i>Age</i>	1.208*** (0.062)		1.157*** (0.064)
<i>Education</i>	0.882 (0.077)		0.987 (0.097)
<i>Perceived Health Status</i>	1.403*** (0.148)		1.207* (0.136)

<i>Insurance</i>	0.485 (0.406)		0.807 (1.174)
<i>Nationality</i>	0.587 (0.241)		0.726 (0.289)
<i>Doctors' Attention</i>		1.363*** (0.219)	4.192*** (1.025)
<i>Nurses' Attention</i>		1.121*** (0.190)	3.161*** (0.611)
<i>Environment</i>		0.441** (0.177)	1.520*** (0.277)
<i>Pain Related Procedures</i>		0.405** (0.162)	1.346*** (0.204)
Pseudo-R ²	0.0321	0.2162	0.2219
Wald	29.49	153.79	164.36
Obs.	745	745	745

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

As Table 3 shows, among the demographic factors (Column 1) 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, 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 patients' satisfaction level and statistically significant.

Table 4: Logit estimations (odds ratios) of different specifications for out-patients (the probability of recommend the hospital to others is the dependent variable)

Odds ratios	Demographic (D)	Hospital (H)	Full set (X)
	(1)	(2)	(3)
<i>Gender</i>	1.002 (0.201)		1.601** (0.382)
<i>Age</i>	1.180*** (0.068)		1.120* (0.073)
<i>Education</i>	0.817* (0.096)		0.939 (0.130)
<i>Insurance</i>	0.735 (0.409)		4.911*** (3.013)
<i>Nationality</i>	4.263*** (2.555)		1.720 (1.281)
<i>Doctors' Attention</i>		2.139*** (0.502)	2.020*** (0.503)

<i>Nurses' Attention</i>		1.570*** (0.264)	1.645*** (0.288)
<i>Environment</i>		3.664*** (0.760)	3.843*** (0.800)
<i>Administration's Attention</i>		1.294 (0.221)	1.338* (0.226)
Pseudo-R ²	0.0256	0.3274	0.3426
Wald	19.59	212.07	215.03
Obs.	420	420	420

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

The same findings hold for the out-patients as Table 4 demonstrates. All the variables referring to the hospital performance are statistically significant and associate positively with out-patients' satisfaction level. Among the demographic factors, the age effect pertains statistically significant at a borderline level of significance (10%), and the gender of the patient along with whether he/she has an insurance also play an important role.

More specifically, if the attention to a patient by the medical staff increases, the patient's 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 Tables 5 and Table 6 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 analysis is performed for the last column of Tables 3 and 4, which is the fully-fledged specification and only for the statistical significant demographic variables.

Table 5: Marginal Effect Analysis for in-patients
(maximum level of *Recommendation* is the dependent variable)

Variables	Marginal Effect	Heteroscedasticity Robust Std. Err.
<i>Age</i>		
≤ 24 years old	0.707	0.648
25-34 years old	0.707	0.047
35-44 years old	0.730	0.047
45-54 years old	0.723	0.041
55-64 years old	0.769	0.032
65-74 years old	0.771	0.031
≥ 75 years old	0.814	0.022
<i>Perceived Health</i>		
Terrible	0.675	0.099
Bad	0.767	0.027
Moderate	0.828	0.029
Good	0.841	0.033
Excellent	0.776	0.069

Holding all the variables at their mean value, the probability of an in-patient 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.3, i.e. the positive age effect on patients' 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-patients' 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.

Table 6: Marginal Effect Analysis for the out-patients
(maximum level of *Recommendation* is the dependent variable)

Variables	Marginal Effect	Heteroscedasticity Robust Std. Err
<i>Gender</i>		
Male	0.425	0.046
Female	0.542	0.043
<i>Age</i>		
≤ 24 years old	0.383	0.078
25-34 years old	0.321	0.066
35-44 years old	0.654	0.088
45-54 years old	0.558	0.094
55-64 years old	0.548	0.072
65-74 years old	0.428	0.063
≥ 75 years old	0.608	0.092
<i>Insurance</i>		
No	0.480	0.034
Yes	0.819	0.090

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% 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 4 that the age effect on recommendation increases as participants becomes older. The positive insurance effect on patients' satisfaction is also consistent with findings from Table 4 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 2, below, shows the probabilities of the average in- and out-patient to recommend the hospital, given that all variables are at their mean value.

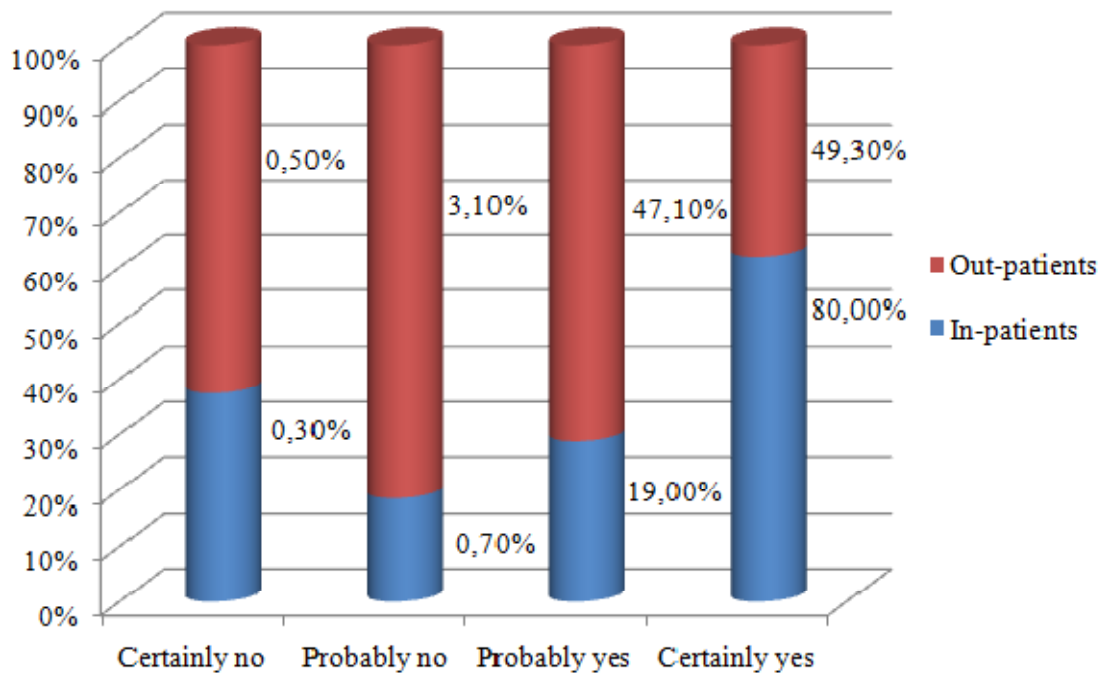


Figure 2: Probabilities of recommending the hospital

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 (Urden, 2002). 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.* (1999) 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 (Epstein *et al.*, 2005) but to patients' quality of life (Ong *et al.*, 2000). More recent studies (Mast *et al.*, 2008) 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 (Horrocks *et al.*, 2002) and therefore increase levels of patients' satisfaction. The importance of nursery is demonstrated in the study of Kutney-Lee *et al.* (2009), where the patients' satisfaction with respect to the services received by the nursery staff is related with the probability of recommend 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 (Johansson *et al.*, 2002). Nevertheless, clean clothes and beds, and tasty food sometimes are considered to be tokens of good nursing care (Lövgren *et al.*, 1996), 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.* (2002) 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 (Beach *et al.*, 2006), 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 (Chow *et al.*, 2009). Finally, age is the most constant socio-demographic determinant of patient satisfaction. According to Blanchard *et al.* (1990), 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 (Chow *et al.*, 2009). In addition to age, gender and education, and previous experience of nursing care have a primary influence on expectations, therefore, on satisfaction (Johansson *et al.*, 2002). It has been shown that men receive information more spontaneously from the nursing staff compared with women (Ottoosson *et al.*, 1997).

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 (Street *et al.*, 2007). Consequently, educational level may play an important role for the patients, since

some physicians associate more negative attributes to minority and less educated patients (van Ryn and Burke, 2000). Physicians generally are more responsive to the actively involved patient in part because they have a better understanding of his/her needs (Street *et al.*, 2007), while college educated patients are often more assertive and inquisitive than patients with a high school education or less (Siminoff *et al.*, 2006). 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 (Tarn *et al.*, 2006; Linn *et al.*, 2012).

Although many studies have shown the importance of income with respect to patient's satisfaction, such as the study of Willems *et al.* (2005), 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.

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 nursery staff and the hospital's environment, they greatly correlate and positively affect patients' satisfaction.

Our study aligns with this vein of literature and demonstrates the important role of the aforementioned variables, along with the positive age effect, that holds for both in- and out-patients. Importance should also be given in the perceived health status of patients.

Hospitals and healthcare systems that invest in programmes to determine how patients evaluate their experiences will have valuable information to make transformational changes in care delivery and services. Further research is required in order to examine the impact of economic crisis on patient satisfaction and their willingness to pay for services of better quality.

References

- Aletras, V., Zacharakis, F., Niakas, D. (2007). Questionnaire for the measurement of outpatient satisfaction in the ophthalmology clinic of a Greek public hospital. *Arch Hellen Med*; vol. 24(1), 89-96.
- Bamashmus M.A., Hubaish K., Alawad M. Alakhlee H. (2015). Functional outcome and patient satisfaction after laser in situ keratomileusis for correction of myopia and myopic astigmatism, *Middle East Afr J Ophthalmol*; vol. 22(1), pp. 108-114.
- Barr J.K., Giannotti T.E., Sofaer S., Duquette C.E., Waters W.J., Petrillo M.K. (2006). Using public reports of patient satisfaction for hospital quality improvement. *Health Serv Res*; vol. 41, pp. 663–682.
- Beach M.C., Roter D.L., Wang N.Y., Duggan P.S., Cooper L.A. (2006). Are physicians' attitudes of respect accurately perceived by patients and associated with more positive communication behaviors? *Patient Education and Counseling*; vol. 62(3), pp. 347-354.
- Blanchard C.G., Labrecque M.S., Ruckdeschel J.C., Blanchard E.B. (1990). Physician behaviors, patient perceptions, and patient characteristics as predictors of satisfaction of hospitalized adult cancer patients. *Cancer*; vol. 65, pp. 186–192.
- 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.
- Chow A., Mayer E.K., Darzi A.W., Athanasiou T. (2009). Patient-reported outcome measures: The importance of patient satisfaction in surgery. *Surgery*; vol. 146(3), pp. 435-443.
- Dugdale D.C., Epstein R., Pantilat S.Z. (1999). Time and the Patient-Physician Relationship. *JCIM*; vol. 14(1), pp. 34-40.
- Epstein R.M., Franks P., Fiscella K., Shields C.G., Meldrum S.C., Kravitz R.L., Duberstein P.R. (2005). Measuring patient-centered communication in Patient-Physician consultations: Theoretical and practical issues. *Social Science & Medicine*;

vol. 61(7), pp. 1516-1528.

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*; vol. 60(4), pp. 7-18.

Frank B, Sudo S, Enkawa T. (2009). Interpreting time series of patient satisfaction: macro vs. micro components. *J Hosp Mark Public Relations*; vol. 19, pp. 15–39.

Gnardellis, C. and Niakas, D. (2005). Factors influencing impatient satisfaction. An analysis based on the Greek National System, *International Journal of Healthcare Technology and Management*; vol. 6(3), pp. 307-320.

Goldstein E., Farguhar M., Crofton C., Darby C., Garfinkel S. (2005) Measuring hospital care from the patients' perspective: an overview of the CAHPS Hospital Survey development process. *Health Services Research*; vol. 40(6), pp.1977-95.

Hall J.A., Horgan T.G., Stein T.S., Roter D.L. (2002). Liking in the physician-patient relationship. *Patient Education and Counseling*; vol. 48(1), pp. 69-77.

Hall M.F. and Press I. (1995). Keys to patient satisfaction in the emergency department: results of a multiple facility study. *Hospital & health services administration*; vol. 41(4), pp. 515-532.

Horrocks S., Anderson E., Salisbury C. (2002). Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ*; vol. 324, pp. 819-823.

Johansson P., Oléni M., Fridlund B. (2002). Patient satisfaction with nursing care in the context of health care: a literature review. *Scand J Caring Sci*; vol. 16, pp. 337-344.

Joffe S., Manocchia M., Weeks J.C., Cleary P.D. (2003). What do patients value in their hospital care? An empirical perspective on autonomy centred bioethics. *Journal of Medical Ethics*; vol. 29, pp. 103-108.

Kleefstra S.M., Zandbelt L.C., de haus H.J., Kool R.B. (2015). Trends in patient satisfaction in Dutch university medical centers: room for improvement for all. *BMC Health Serv Res*; vol. 15(1), pp. 112.

Krupat E. Rosekranz S.L., Yeager C.M., Barnard K. Putnam S.M., Inui T.S. (2000). The practice orientations of physicians and patients: the effect of doctor-patient congruence on satisfaction. *Patient Education and Counseling*; vol. 39(1), pp. 49-59.

Kutney-Lee A., McHugh M.D., Sloane D.M., Cimiotti J.P., Flynn L., Felber Neff D. and Aiken L.H. (2009). Nursing: A Key To Patient Satisfaction. *Health Affairs*; vol. 28(4), pp. 669-677.

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*; vol. 44(4), pp. 545-555.

Linn A.J., van Weert J.C.M., van Dijk L., Horne R. and Smit E.G. (2014). The value of nurses' tailored communication when discussing medicines: Exploring the relationship between satisfaction, beliefs and adherence. *Journal of Health Psychology*; pp. 1-10.

Linn A.J., van Weert J.C.M., Schouten B.C., Smit E.G., van Bodegraven A.A., 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*; vol. 6, pp. 871-885.

Lövgren G., Engström B, Norberg A. (1996). Patients' narratives concerning good and bad caring. *Scand J Caring Sci*; vol. 10, pp. 151-156.

Luxford K., Safran D.G., 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. *Int J Qual Health Care*; vol. 23, pp. 510-515.

Mast M.S., Hall J.A., Klöckner C., Choi E. (2008). Physician Gender Affects How Physician Nonverbal Behavior Is Related to Patient Satisfaction. *Medical Care*; vol.

46(12), pp. 1212-1218.

Matis G.K, Birbilis T.A., Chrysou O., (2009). Patient satisfaction questionnaire and quality achievement in hospital care: the case of a Greek public university hospital. *Health ServManag Res*; vol. 22(4), pp. 191-196.

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*; vol. 17(1), pp. 62-69.

Ong L.M.L., Visser M.R.M., Lammes F.B., de Haes J.C.J.M. (2000). Doctor-Patient communication and cancer patients' quality of life and satisfaction. *Patient Education and Counseling*; vol. 41(2), pp. 145-156.

Ottosson B., Hallberg I.R., Axelsson K., Loven L. (1997). Patients' satisfaction with surgical care impaired by cuts in expenditure and after interventions to improve nursing care at a surgical clinic. *Int J Qual Health Care*; vol. 9, pp. 43-53.

Panteli V., Patistea E. (2007). Assessing patients' satisfaction and intensity of pain as outcomes in the management of cancer-related pain. *European Journal of Oncology Nursing*; vol.11,pp. 424-433

Papanikolaou V., Ntani S., (2008). Addressing the paradoxes of satisfaction with hospital care. *International Journal of Health Care Quality Assurance*; vol. 21(6), pp. 548-561.

Pascoe G.C. (1983). Patient satisfaction in primary health care: A Literature Review and Analysis. *Evaluation and Program Planning*; vol. 6(3-4), pp. 185-210.

Pini A., Sarafis P., Malliarou M., Tsounis A., Igoumenidis M., Bamidis P., 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*; vol. 6(5), pp. 196-203.

Priporas C.V, Laspa C, Kamenidou I. (2008), Patient satisfaction measurement for in-hospital services: a pilot study in Greece, *Journal of Medical Marketing*; vol. 8(4). pp. 325-340.

Siminoff L.A., Graham G.C., Gordon N.H. (2006). Cancer communication patterns and the influence of patient characteristics: Disparities in information-giving and affective behaviors. *Patient Education and Counseling*; vol. 62(3), pp. 355-360.

Sitzia J. and Wood N. (1997). Patient satisfaction: A review of issues and concepts. *Social Science and Medicine*; vol. 45(12), pp. 1829-1843.

Street R., Gordon H., 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*; vol. 65(3), pp. 586-598.

Tarn D.M., Heritage J., Paterniti D.A., Hays R.D., Kravitz R.L., Wenger N.S. (2006). Physician communication when prescribing new medications. *Archives of Internal Medicine*; vol. 166(17), pp. 1855-1862.

Urden L. (2002). Patient Satisfaction Measurement: Current Issues and Implications. *Outcomes Manag*; vol. 6(3), pp. 125-131.

Van Ryn M. and Burke J. (2000). The effect of patient race and socio-economic status on physicians' perceptions of patients. *Social Science & Medicine*; vol. 50(6), pp. 813-828.

Willems S., de Maesschalck S., Deveugele M., Derese A., de Maedeneer J. (2005). Socio-economic status of the patient and doctor-patient communication: does it make a difference? *Patient Education and Counseling*; vol. 56(2), pp. 139-146.