SERVICE QUALITY ASYMMETRIC EFFECT ON PATIENT SATISFACTION FOR PRIMARY HEALTHCARE SERVICES

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ABSTRACT

Primary health care services delivery and its effects on patient satisfaction are very important for healthcare managers as it affects healthcare results and organizations operational expenses' management. Patient satisfaction is typically view it as a multidimensional construct. The purpose of this study is to exploit the theoretical frameworks of three-factor theory in order to identify the service delivery factors affecting patient satisfaction formation and to investigate whether there is an asymmetric service quality-satisfaction relationship. Regression analysis with dummy variables was used to analyze the responses of 407 primary healthcare services' users, which were collected via personal interviews using a properly designed questionnaire. The results showed empirical support to the three-factor theory in the context of primary health care services by confirming the asymmetric relationship between service delivery performance assessment and patient satisfaction. Implications for practice and directions for future research are then discussed.

Keywords: *Patient satisfaction, service quality, three-factor theory, service process evaluation, primary healthcare services*

INTRODUCTION

One of the major tasks of health care managers is to continuously improve the effectiveness of the health care services in order to increase users' satisfaction and loyalty, since this objective influences health care outcomes and contributes to institutions accountability's demonstration (Raposo et al., 2009). A satisfied patient is more inclined to follow doctor's prescription, which in turn will affect patients' satisfaction with the service outcome (e.g. symptoms relief) (MAcStravic, 1991), avoids complaining and lawsuits (Ahorony and Strasser, 1993) is more loyal to and provides positive referrals about the service provider (Mekoth et al., 2011; Chang et al., 2013). On the other side, there is a connection between patient satisfaction and staff satisfaction (Welch, 2010). The assessment of

satisfaction with healthcare services is dynamic and multidisciplinary process (Lovato et al., 2013) and is considered as the most important factor for healthcare systems' planning and effectiveness assessment (Dzomeku et al., 2011; Bhattacharyya et al., 2013).

Primary health care is a major element of any health care system (Raposo et al., 2009), since it brings healthcare closer to citizens' place of residence and work, operating as their first level of contact with health care system (Cueto, 2004, Souliotis and Lionis, 2003). According to Noula et al. (2007), primary health care in Greece is still underperforming. Despite the efforts that have been undertaken over the last decade, the effectiveness of the systems needs to be improved by upgrading the relevant services offered, especially at a regional revel. This pressure for improvement is further enhanced by the increase of primary health care services' demand as a result of the bad economic conditions of Greece during the last five years (Benos and Kondilis, 2012).

So in order for the state to plan and deliver better primary health care services, it is fundamental to identify and assess the service factors that their improvement will lead to patient satisfaction. The knowledge of these parameters will be valuable for managers in order to conduct the appropriate modifications that will positively affect system's effectiveness.

Many previous research efforts, regarding the relation between attribute-level performance and patient satisfaction, argue that service quality attributes have a symmetric influence on patient satisfaction, meaning that the effects of service quality deterioration on dissatisfaction will be the same with the relevant effect on satisfaction caused by an equal increase in service quality (Andaleeb, 2001; Choi et al., 2005; Raposo et al., 2011; Mekoth et al., 2011; Mehta, 2011). In this modeling framework, service improvements prioritization, based on the "voice of the customer", is performed with the use of "importance-performance analysis" IPA (Marttila and James, 1977). In a typical IPA, managerial decisions are based on the attributes' position on a two-dimensional grid in which the two axes depict the scores of attributes importance and performance as assessed by system users.

However, numerous studies on the determinants of customer satisfaction reveal that the relationship between attribute-level performance and customer satisfaction can be asymmetric, meaning that the importance of satisfaction determinants may vary, depending on their current level of attribute-performance (Mittal et al., 1998; Matzler and Renzl, 2007; Miculic and Prebezac, 2008). In such a case, many researchers have shown that the results of IPA may be misleading (Matzler and Renzl, 2007; Miculic and Prebežac, 2008; Tsirintani et al. 2010).

The purpose of this paper is to address this shortcoming of IPA, as a tool for primary health care systems improvement, by implementing the "penalty-reward-contrast analysis" (PRCA), a method for primary healthcare services attributes categorization, proposed by Matzler and Renzl (2007) and Miculic and Prebezac (2008), which is based on the nature of their relationship with patient

satisfaction. Moreover, the results of the two analyses are compared and discussion of findings is presented, followed by research and managerial implications, research limitations and directions for further research.

LITERATURE REVIEW

Patient satisfaction

There are several approaches in defining patient satisfaction. For some researchers patient's satisfaction is defined as the gap between expected and perceived characteristics of a service (Fitzpatrick and Hopkins 1983), while for others patient's satisfaction is a special form of attitude, reflecting the extent to which a patient liked or disliked the service after having experienced it (Woodside et al., 1989). For John (1991), patients' satisfaction concept includes both approaches. In this way, patients' satisfaction can be viewed as an attitude resulting from the confirmation or disconfirmation of expectations (result perspective) or as a process, resulting from the level of expectations the patient takes to the service experience (process perspective). Thus, it is not only important to know the result from the service experience, but also what are the causes and dimensions that give rise to satisfaction.

The most recent models of customer's satisfaction consider satisfaction as an enlarged process or an interaction system around purchase, use and repurchase acts. A working definition of patient satisfaction, proposed by Welch (2010) and Sun et al. (2001), includes the following: 1) overall satisfaction, and 2) behavioral intentions reflecting patients' likelihood to recommend their service provider and their willingness to return. Indeed, these 3 overall measures abound in the literature as practical indicators of patient satisfaction. This new perspective recognizes that the customer psychological reaction to a service cannot be represented as the result of one only episode, but as a series of activities and continuous reactions along time. In this way, the aggregation of individuals, occasions, stimuli and measurements is a good way to surpass some of the problems related to traditional analysis (Johnson 1995; Johnson et al., 1995).

Primary healthcare system service attributes

Researchers agree that perceived service quality is an attitude towards or a global judgment about the superiority or inferiority of a service (Grönroos, 1990; Cronin and Taylor, 1992; Parasuraman et al., 1988). Moreover, Berry et al. (1988) argue that service quality is a great differentiator and the most powerful competitive weapon of service organizations.

In health care services provision in particular, Donabedian (1980) argues that service quality assessment should include an analysis of the structure to achieve a given level of healthcare quality (the characteristics of doctors, hospitals and staff); of the process (interaction with the structure) and of the result (what happens to the patient after the medical act). Considering the combined effects of the structure and process elements of health care services, Carr-Hill (1992) found that patient's satisfaction is mainly affected by six dimensions including medical care and information, food and physical facilities, non-tangible environment, nursing care, quantity of food and appointment bookings.

With regards to the result dimension of healthcare services provisioning, though it is considered as the most important element for patients (Mummalaneni and Gopalakrishna (1995), it is not very well studied and this is attributed to its measurement difficulty caused by the very large period of time between the moment when service is provided and the results' revealing (Choi et al., 2005). Moreover, Boller et al. (2003) consider the result of healthcare services is a consequence of the service's quality and not one of its components, stressing the importance to focus on the structure and the process when analyzing service quality in health care services. Finally, Peyrot et al. (1993) argue that it is possible to improve patients' satisfaction through the improvement of aspects that are not related to the service's outcome quality, but, through aspects related to process quality.

For primary health care services Bryant et al. (1998) suggest that the main aspects of service quality assessment include socio-emotional variables, referring to the perceptions that patients have about the communication and interpersonal capacities of healthcare services (affection, empathy, politeness); system variables, referring to the physical or technical aspects of the local in which the service is provided, such as, the waiting time for the appointment, access to services, technical quality of services, costs, comfort of equipment and the appointment's duration; influential variables, such as, list of contacts (family and friends); and moderating variables, referring to socio-demographic variables and state of health.

On the nature of the relationship between service quality and patient satisfaction

The majority of empirical studies consistently suggest that service quality is an antecedent of satisfaction. The theoretical support is based on the attitudinal framework, developed by Bagozzi (1992), which suggests that customers first evaluate a service cognitively (service quality assessment), and then they react emotionally to this appraisal (satisfaction). Most previous studies consider that the relationship among service quality of health care and patient satisfaction is linear and symmetric (Andaleeb, 2001; Choi et al., 2005; Raposo et al., 2009; Mekoth et al., 2011; Zamil et al., 2012). The result of the relationship identification among service quality attributes and patient satisfaction is the importance of service attributes in determining patient satisfaction which along with service

attributes-performance are used for conducting the importance-performance analysis (IPA) (Martilla and James, 1977). IPA assumes that attribute's performance and importance are independent variables and the relationship between service-attributes' performance and patient satisfaction is linear (Deng, 2007). Kano et al. (1984) were the first who classified products/services attributes by considering their potentiality in creating customer satisfaction. The three-factor theory, proposed by Kano et al. (1984) presumes that the effect of a product/service attribute on customer satisfaction varies according to its performance. This fact signifies the existence of asymmetric relationships among service-attributes and overall satisfaction. In the customer satisfaction context, service attributes are characterized as being (Matzler et al., 2004):

Basic: they reflect the minimum requirements that service providers have to offer to the customers. They may cause dissatisfaction, if they are not offered, but do create high satisfaction, if they are not offered. When performance of the basic factors is low, their influence on satisfaction becomes very important, while when their performance is high, their influence on satisfaction decreases and become unimportant.

Performance: they produce high customer satisfaction when they are offered, but they may also produce dissatisfaction, if they are not offered. The effect on overall satisfaction is linear and symmetric.

Excitement: they reflected unexpected aspects of services offered given that their existence may produce high customer satisfaction, but their absence does not create dissatisfaction. The importance of the excitement factors increases when their performances are high, but they become unimportant when they underperform.

Penalty-rewards-contrast analysis (PRCA) is commonly used for service attributes classification as basic, performance and excitement factors according to their asymmetric influence on overall satisfaction (Busaca and Padula, 2005). In the context of primary health care services, the studies that use the three-factor theory of patient satisfaction are scarce. This study is trying to fill this gap in order to achieve its objective to provide an alternative for service improvement planning.

RESEARCH METHODOLOGY

Sample and data collection

The target population of this study was users of primary healthcare services who visited the outpatient departments of public hospitals in the district of Athens. Eight hospitals were selected for data collection. Four of them were specific disease hospitals and the others were general hospitals. A stratified random sampling was utilized with a sampling ratio of 1:5 meaning that for every five patients that got out of the clinics one was interviewed. 700 questionnaires were distributed (650 in

morning clinics and 150 in afternoon clinics). The fieldwork was conducted during April and May 2013. Contacts were made at different times of the day and days of the week in order for day and time related bias to be eliminated. The procedure resulted in 420 filled questionnaires of which 407 usable questionnaires were coded for data analysis, yielding a net response rate of about 58%. Using the Armstrong and Overton (1997) procedure, nonresponse bias was evaluated by comparing early respondents with late respondents for all constructs considered in this study. No significant differences were recorded at the 0.050 level of significance.

In relation to gender, 57.3 % of the respondents were female. In relation to age, 14% of respondents were in the 18-24 age-group; 19% in the 25-34 age-group; 19% in the 35-44 age-group; 20% in the 45-54 age-group; 13% in the 55-64 age-group; and 13% were above 65 years old. 3% of the respondents failed to report their age. 54% of the respondents were married and 29% were single. In terms of monthly income, 33% of the respondents' monthly salary is less than €1,000; 19% gets between €1,000 and €2,000; and 6% gets more than €2,000. 33% of the respondents failed to report their monthly income. In terms of educational background, 34% of respondents have a university degree. Finally, 56% of the respondents have visited primary health care services less than 6 time during the last twelve months; 13% between six and twenty times and 3% more than twenty times. 18% of the respondents failed to report services' usage frequency.

Measures and survey instrument design

Data were collected through a questionnaire developed to understand patients' perception about primary healthcare service quality. The questionnaire was divided in five sections: the first addressing general information about respondents' demographics and primary health care usage pattern (frequency and motives). The next four sections addressed specific questions about patients' perception on hospital's facilities condition, administrative processes, medical and nursing care. The scales used to measure the four primary healthcare service attributes were adopted from the studies of Dagger et al., (2007) and Raposo et al. (2009). The scale proposed by Oliver (1980) was used to measure patient satisfaction reflecting overall satisfaction, expectations disconfirmation and needs disconfirmation. All items were measured on 5-point Likert scales anchored at 1 (strongly disagree) and 5 (strongly agree).

Data analysis methods

Firstly, exploratory Factor Analysis (EFA) was conducted for the items of primary healthcare service attributes and patient satisfaction. The purpose of this analysis was to reduce all items to a smaller and

manageable set of variables (Malhotra, 2010). Secondly, IPA was employed to identify prior areas of recourse allocation aiming to increase patients' satisfaction by using the service attributes importance and performance means. Finally, PRCA was used to classify primary healthcare service attributes according to their asymmetric influences on patient satisfaction.

RESULTS

Exploratory factor analysis

Table 1 show EFA results (i.e. rotated components matrix) for items measuring primary healthcare service attributes and patient satisfaction. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. The value of KMO statistic for this study is 0.95 which shows that the factor analysis is appropriate. Based on the eigenvalue criterion the analysis revealed the existence of five factors, namely Nursing Care (NC); Facilities Condition (FC); Medical Care (MC); Administrative Services (AS); and Patient Satisfaction (PS). The percentages of total variance attributed to each factor are 46.34%, 10.35%, 5.92%, 5.08% and 3.23% respectively. The total variance explained is 70.93%, well above the proposed cut-off value of 50% (Malhotra, 2010). Internal consistency; convergent validity and discriminant validity estimations were used to test the strength of the proposed measures. All factor loadings are greater than 0.55 implying significant constructs' convergent validity. Constructs' discriminant validity is also confirmed, since there are no items strongly loading (> 0.4) on two or more factors. Finally, a reliability test was conducted for each component by calculating Cronbach's alpha. All relevant values range between 0.77 and 0.96 (> 0.7) which means that the internal consistency of the items in the new scales is very good (Tabachnick and Fidell, 2007).

Importance-Performance Analysis

For performing IPA, performance and importance means of each service quality dimension were calculated. The means were employed for positioning the attributes on the IP matrix. In the current study, the implicit importance of the four service attributes was calculated using a linear regression model expressing their symmetric impact on patient satisfaction. Performance means for each service attributes are provided in Table 1 and the implicit importance of the four service-attributes determining patient satisfaction are given in Table 2.

Items	F1	F2	F3	F4	F5	MV	SD
MC1 time spend with the patient	0,27	0,22	**0,68**	0,21	0,08	3.69	0.88
MC2 accurate info about illness	0,18	0,19	**0,78**	0,20	0,11	3.80	0.90
MC3 medication instructions given	0,19	0,17	**0,74**	0,14	0,09	3.87	0.91
MC4 lifestyle instructions given	0,25	0,18	**0,64**	0,15	0,22	3.77	1.01
MC5 kindness	0,25	0,17	**0,70**	0,29	0,14	3.89	0.93
MC6 communication	0,26	0,21	**0,68**	0,25	0,17	3.85	0.97
MC7 trustworthiness	0,33	0,19	**0,74**	0,24	0,08	3.76	1.04
MC8 interest	0,32	0,14	**0,73**	0,20	0,13	3.86	1.00
NC1 willingness to serve	**0,80**	0,16	0,28	0,17	0,07	3.49	0.98
NC2 family support given	**0,81**	0,16	0,25	0,17	0,09	3.52	1.00
NC3 kindness	**0,83**	0,17	0,24	0,15	0,13	3.48	1.03
NC4 communication	**0,86**	0,14	0,21	0,15	0,12	3.41	1.08
NC5 trustworthiness	**0,72**	0,18	0,28	0,20	0,15	3.34	1.08
NC6 personal support given	**0,85**	0,14	0,22	0,18	0,07	3.35	1.06
NC7 service speed	**0,83**	0,08	0,21	0,17	0,10	3.34	1.04
NC8 interest	**0,86**	0,12	0,20	0,16	0,11	3.37	1.04
AS1 admittance procedures	0,13	0,25	0,13	**0,78**	-0,03	3.28	1.02
AS2 discharge procedures	0,09	0,26	0,25	**0,73**	0,09	3.42	0.95
AS3 staff's service speed	0,22	0,26	0,17	**0,74**	0,14	3.25	1.01
AS4 staff's behavior	0,16	0,21	0,29	**0,75**	0,15	3.41	0.98
AS5 waiting time	0,22	0,29	0,21	**0,73**	0,08	2.98	1.10
AS6 consistency	0,26	0,23	0,28	**0,56**	0,27	3.17	1.09
AS7 interest	0,25	0,31	0,25	**0,65**	0,19	3.21	0.99
AS8 communication	0,25	0,30	0,21	**0,64**	0,20	3.30	0.98
FC1 premises cleanliness	0,21	**0,79**	0,17	0,17	0,23	3.46	1.10
FC2 toilet cleanliness	0,17	**0,78**	0,11	0,17	0,14	3.17	1.20
FC3 waiting areas' comfort	0,12	**0,84**	0,21	0,21	0,10	3.28	1.14
FC4 premises adequacy	0,09	**0,83**	0,18	0,21	0,04	3.31	1.12
FC5 room temperature	0,12	**0,77**	0,18	0,27	-0,02	3.55	1.00
FC6 access for people with disabilities	0,15	**0,71**	0,18	0,27	0,08	3.41	1.08
FC7 signing	0,13	**0,69**	0,13	0,28	0,16	3.67	1.08
FC8 operation time comfort	0,15	**0,55**	0,30	0,30	0,16	3.36	1.05
PS1 general satisfaction	0,24	0,30	0,30	0,22	**0,70**	3,37	1,10
PS2 expectations matching	0,31	0,32	0,31	0,18	**0,68**	3,35	1,16
PS3 needs fulfilment	0,11	0,10	0,15	0,18	**0,70**	2,77	1,41
Eigenvalues	16,22	3,62	2,07	1,78	1,13		
Variance explained (%)	46,34	10,35	5,92	5,08	3,23		
Cumulative variance (%)	46,34	56,69	62,62	67,70	70,93		
Cronbach's alpha	0,96	0,93	0,93	0,93	0,77		
Factor MV	3.41	3.40	3.81	3.25	3.55		

Notes: F1-Nursing Care; F2-Facilities Condition; F3-Medical Care; F4-Administrative Services; MV-mean value; SD-standard deviation

Table 1*: Factor analysis results for primary health care service attributes*

Regression analysis results revealed all service attributes significantly affect patient satisfaction, explaining 46.2% of variance in patient satisfaction and that Medical Care is the most important

service quality attribute, followed by Facilities Conditions, Nursing Care and Administrative Services. The grand means of implicit importance and service attributes performance separate the matrix into four quadrants as illustrated in Figure 1.IPA matrix shows that Medical Care is a "keep-up the good work" attribute, meaning that is highly important for the customers and performs highly. Nursing Care and Administrative Services are "low-priority" attributes. These attributes were not considered as important as other attributes by patients, while their performance were perceived relatively lower than others. Finally, Facilities Condition is characterized as "concentrate here" attribute. Service providers have to particularly focus on the improvement of this attribute in order to increase patient satisfaction.

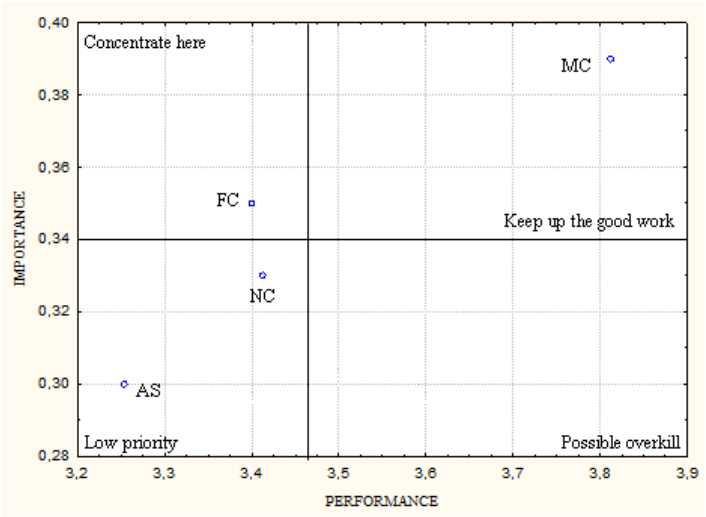

Figure 1: *Importance-performance analysis (IPA) for patient satisfaction*

Penalty-reward contrast analysis

PRCA uses dummy variables to test the asymmetric relationships among service quality attributes performance and patient satisfaction in order to classify the service attributes in categories provided by the three-factor theory (Matzler et al., 2006). Thus factor scores, obtained from the exploratory factor analysis, in the lower quartile were used to form one dummy variable to quantify the influence of the attributes when satisfaction is low. In the same way, the factor score in the upper quartile were used to quantify the impact of the attributes in case of high satisfaction. Based on this recoding, a multiple regression was conducted with these dummy variables. Thus for each attributes two regression coefficients are obtained: one indicating attributes' impact on patient satisfaction when its performance is high; and the other indicating attributes' impact on patient satisfaction when its performance is low. The results of PRCA are given in Table 2 and illustrated in Figure 2.

The dummy regression model was statistically significant ($F = 43.39$, $p = 0.00$), explaining 45.5% of variance in patient satisfaction. The analysis indicated that all dummy variables' coefficients have the

right sign and they are significantly affect patient satisfaction at the 0.05 level of significance. T-test was used to test the equality of penalty and reward indices for all service performance attributes. The results of t-tests indicated that the null hypothesis ($\beta_{j+} = \beta_{j-}$) can be rejected for Medical Care (p=0.000); Nursing Care (p=0.001); and Administrative Services (p=0.019) and can be accepted for Facilities Conditions (p=0.186), meaning that there was an asymmetric relationship among primary healthcare service performance and patient satisfaction for three out of four service attributes.

PHCSQ factors	Regression coefficients[a]	Dummy variable regression coefficients[b]			
		Reward indices	Penalty indices	Parameters equality test t-value	Factors classification
Nursing Care	0.33***	0.25***	-0.14***	3.17***	Excitement
Facilities	0.35***	0.18***	-0.23***	0.89(ns)	Performance
Medical Care	0.39***	0.31***	-0.15***	3.95***	Excitement
Administrative Services	0.30***	0.12**	-0.24***	2.08***	Basic
F	88.33***	43.39***			
R^2	0.462	0.455			

Notes: All regression coefficients are standardized coefficients

[a] symmetric influences of service quality attributes

[b] asymmetric influences of service quality attributes

* $p < 0.1$

** $p < 0.05$

*** $p < 0.001$

Table 2: *Relationship between service quality attributes and patient satisfaction*

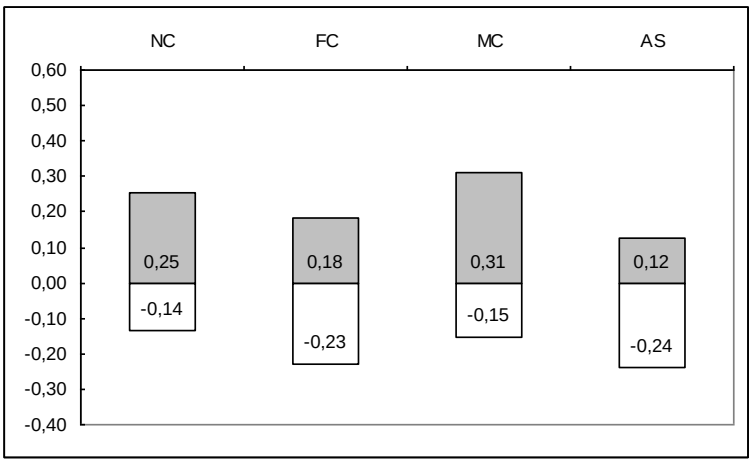

Figure 2: *Penalty-reward-contrast-analysis for patient satisfaction*

More specifically, Administrative Services are classified as basic factor, because its relevant penalty index is higher than its reward index. Thus, increasing their performance above expectations is not

going to increase patient satisfaction, since it establishes "a market entry threshold". Facilities Condition is classified as performance factor. That factor relates to patient satisfaction if its performance is high and may produce dissatisfaction when underperforms. Finally, Medical and Nursing Care are classified as excitement factors, because their penalty indices are much lower than their respective reward indices. Therefore, the way for primary healthcare services efficiency improvement is to increase patient satisfaction by improving the provided medical and nursing care.

DISCUSSION AND CONCLUSIONS

Knowing the primary healthcare service attributes' characteristics is very important for researchers and practitioners, since their importance can be used for actions prioritization towards patient satisfaction increase and system's effectiveness improvement. Therefore, in this research study, the symmetric and asymmetric effects of primary healthcare attributes on patient satisfaction, through PRCA, are investigated.

The IPA findings, resulted from the linear symmetric relationship among four service attribute performance and patient satisfaction, suggested that Administrative Services and Nursing Care are classified as "low priority" service attributes; Medical Care as a "keep up the good work" attribute and only Facilities Condition was identified as a "needs improvement" attribute.

As far as the Administrative Services and Facilities Condition performances are concerned, the results of IPA and PRCA coincide. More specifically, the Administrative Services is a basic factor and as such low priority should be given to them, since any improvement of its performance will not increase patient satisfaction, whereas the current performance level's retention is perceived as adequate by system's users. On the other side, Facilities' condition is a performance factor and as such the improvement of its performance will positively affect patient satisfaction while its performance reduction will deteriorate patient satisfaction. However, the results of IPA and PRCA with respect to Medical and Nursing Care diverge. These two attributes were found to be excitement factors and as such they have the power to affect patient satisfaction only in case of performing above patients' expectations.

In summary, the results of this study signal the importance of identifying the performance and excitement factors of primary healthcare services, because high patient satisfaction can be achieved by paying particular attention to these factors. Based on the results of the PRCA, the highest priority should be given to the improvement of Medical and Nursing Care and then to the improvement of Facilities condition. Finally the retention of Administrative Services' current level of performance should be the target of healthcare mangers since only its performance decrease will negatively affect patient satisfaction.

Many previous studies have confirmed the patient-physician relationship as the most important indicator of patient satisfaction. Patients feel more satisfied when they have confidence to the doctor and they have established a constant communication with him (Ali and Ndubisi, 2011). The new finding, that needs to be further investigated, is the role of nurses in the relationship between primary healthcare service's providers and patients. This study, in accordance with the findings of Scardina (1994), highlights the importance for service providers to invest in the nursing personnel's development, in order to take advantage of the fact that nurses are much closer to the patient, than other members of the staff, and they can easier establish relationships with them.

This study has some limitations that should be considered when interpreting its findings. First, the findings and the implications of this research were obtained using a cross-sectional study. This reduces the ability of the study to reflect the temporal changes in the research constructs. Second, the relationships among primary healthcare service attributes and patient satisfaction were validated with data from one country. Performing the study across different countries would provide evidence about the generalizability of the service quality dimensions and the robustness of the relationships among the constructs determining patient satisfaction.

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