

Low Service Experiences Reduce Patient Satisfaction in Ambulatory Surgery

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Abstract

Since ambulatory surgery has significantly grown, attention for the impact of service quality on patient satisfaction in this specific setting is relevant. A survey was conducted including 291 patients in an ambulatory surgery center. Environmental quality ($p \leq 0.001$), technical quality ($p = 0.003$), administrative quality ($p \leq 0.001$) and waiting time ($p = 0.011$) have a significant effect on patient satisfaction. Patient satisfaction positively

influences patients' behavioral intentions ($p \leq 0.001$). Satisfied patients will intend to return to the hospital, so it is important to: provide enough tangible facilities such as physical equipment; streamline the administration procedure; prevent waiting times; and invest in skills of the health care providers.

Keywords: Service quality, patient satisfaction, behavioral intention, ambulatory surgery, waiting time.

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Introduction

Hospitals are moving away from a supply-driven view towards a more patient-centered view with a focus on patient outcomes [1]. Service quality and patient satisfaction are key metrics in these efforts [2]. Results about the patients' expectations concerning service quality and patient satisfaction are becoming more and more publicly available. These results are not only useful for the patient to make informed choices in healthcare provider, capturing the voice of patients is also valuable to provide managers with data required to make well-informed decisions [3]. As such, failure of understanding the importance of the two concepts, namely service quality and patient satisfaction, could result in a possible loss of patients [4]. Previous research in several hospital settings suggested a positive impact of service quality on patient satisfaction [5,6]. In turn, receiving high levels of patient satisfaction turns out to be desirable as patient satisfaction appears to have a positive impact on behavioral intentions (such as patients' loyalty and word of mouth) [4,7]. For example, a disgruntled patient often tells others, leading to a negative effect on the organization as a whole [8].

The relationships between service quality, patient satisfaction and behavioral intentions are often addressed in literature. However, the evidence in ambulatory surgery remains limited. Although interesting as day surgery has steadily and significantly grown in countries with established stable economies in the last decades [9]. Undoubtedly, this setting becomes more and more important.

In today's fast-paced society, time is a valuable aspect for everyone, including the patient. According to Lovelock and Gummesson (2004) time plays a central role in most service processes, as such they recommend more research on how customers perceive time [10]. Studies in the healthcare sector have shown a significant negative correlation between waiting time and satisfaction: the longer the waiting time, the lower the patient satisfaction [11, 12]. In particular, long waits for scheduled procedures can be both frustrating and agonizing for patients [11]. The length of waiting time is the most frequently mentioned complaint of patients in surgical day care, with potential to induce additional stress for those patients already nervous [13].

In this perspective, the purpose of this study is twofold: (1) to propose a model showing the functional relationships among patient satisfaction and related variables based on past research combined with time-related patients' experiences; (2) to test this in a growing health care market segment, namely ambulatory surgery where research on this topic is limited.

Methods

Conceptual framework

In what follows we give a construction of the framework with references to the most important and relevant literature. The conceptual model integrates the hypothetic relationships, this between the service quality dimensions (namely interpersonal quality, technical quality, environmental quality, administrative quality and subjective waiting time) and patients' behavioral intentions regarding ambulatory surgery, with patient satisfaction as a mediator (Figure 1). Quality of life, gender and age were conversely included as control variables.

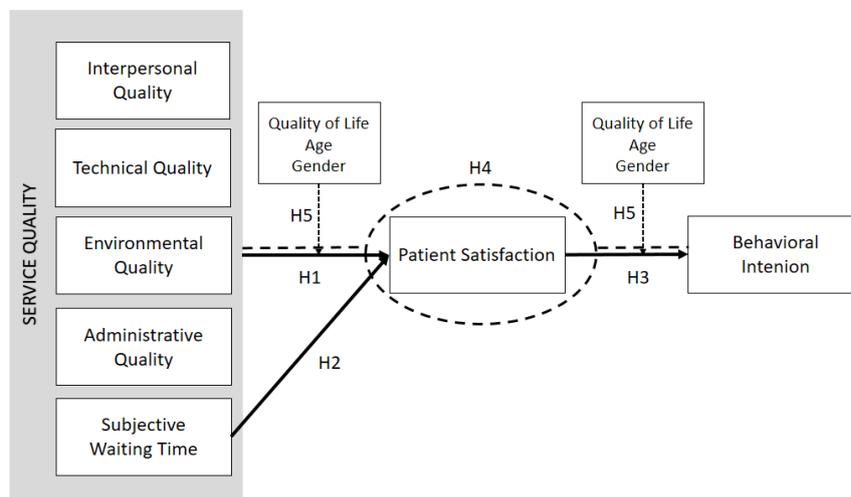
Service quality & patient satisfaction

Several studies have been carried out to gain insights in the relationship between service quality and patient satisfaction. A positive impact of service quality on patient satisfaction is suggested [5, 6]. As such, next hypothesis was consequently developed for ambulatory surgery:

Hypothesis 1: The main dimensions of service quality, being administrative quality, technical quality, interpersonal quality and environmental quality, influence patient satisfaction in ambulatory surgery.

Waiting time

Specific for the ambulatory surgery setting the waiting time considered in this study is the preoperative waiting time on the day of treatment in an ambulatory surgery unit, explicitly different from waiting time as the time between making the appointment for surgery



Hypothesis 1-5; full bold arrows show the main effects (H1-3), the dotted lines illustrate the mediation effect (H4), the dotted arrows show the moderating effects (H5)*, and change full bold arrows to the dotted arrows.

Figure 1 Conceptual framework with hypothesized relationships between the constructs.

and the actual date of operation. Patients perceive long waiting times as a barrier to actually obtaining services. Keeping patients waiting unnecessarily can be a cause of stress for both patient and physician [11], which leads to the following hypothesis.

Hypothesis 2: Waiting time influences patient satisfaction in ambulatory surgery.

Behavioral intentions

A significant impact of patient satisfaction on behavioral intentions is indicated in many studies [4, 7, 14]. In this research, the relationship between patient satisfaction and behavioral intentions will be reinvestigated in surgical day care with next hypothesis:

Hypothesis 3: Patient satisfaction affects patients' behavioral intentions in ambulatory surgery.

As previous healthcare research supports the hypothesis that service quality has a significant impact on satisfaction, and satisfaction on behavioral intentions, we follow the rational that patient satisfaction mediates the relationship between the service quality dimensions and behavioral intentions.

Hypothesis 4: Patient satisfaction mediates the relationship between the four main dimensions of service quality, being administrative quality, technical quality, interpersonal quality, environmental quality and waiting time, and behavioral intentions.

Quality of life, age and gender

Dagger et al. (2007) looked at the relationship between quality of life and both service quality and patient satisfaction, a positive relationship was found [15]. Also, several other studies were able to indicate a significant relationship between quality of life and patient satisfaction [16, 17].

Above that, previous research identified differences in patient satisfaction among several demographic variables [18]. Consequently, it is useful to determine if these relationships are also significant in ambulatory surgery and to explore if they strengthen the relationship between service quality and patient satisfaction or between patient satisfaction and behavioral intentions.

Hypothesis 5: The main relationships between will be influenced by quality of life, age and gender.

Procedure and participants

A cross-sectional study design was employed to investigate the predetermined hypotheses and patients were selected through convenience sampling. The paper version questionnaire was

distributed at the ambulatory surgery department of a large teaching hospital in the Flemish region of Belgium. The hospital has about 1,000 beds and more than 6,000 employees. Three hundred and seventeen patients filled out the questionnaire during February, March and April 2019 with a corresponding response rate of 91%. The 317 questionnaires were reduced to 291 valid responses due to the incompleteness of several surveys.

Several in- and exclusion criteria were applicable to participate in the study. A minimum age of 18 years was required. Participants had to be literate and they needed to master the Dutch language to complete the questionnaire. All kind of surgeries were accepted in the study. Patients who were not able to grant permission were excluded.

Measures

When not available in Dutch the original scales were translated using the forward and backward translation technique. Original scales were only translated in Dutch due to the location of the hospital in Flanders, Belgium. In addition to questions regarding demographics (age, gender, living status) the questionnaire involved six different constructs. Each construct was based upon previously validated instruments (see appendix). Construct validity and reliability were examined based on previous studies and were found to be adequate. Responses were provided using a seven-point Likert scale, with anchors ranging from 1 (strongly disagree) to 7 (strongly agree).

The measurement instrument was further tested to ensure that the items were relevant and representative of the target construct. Instrument re-validation was necessary, because its validity may not be persistent across different settings (such as ambulatory surgery). The instrument's reliability was evaluated using SPSS software (Version 24). The Cronbach's α values ranged from 0.83 to 0.95 indicating a satisfactory reliability level, exceeding the level commonly required for exploratory research [19] (see appendix).

Analytic approach

Structural Equation Modelling (SEM) with R Lavaan was used for parameter estimation and evaluation of the proposed model [20]. The choice of using SEM was adequate because of the exploratory nature of this study and because it allows for simultaneous estimation of the entire model. The P-values were reported as two-tailed with a significance level (α) of 0.05.

Ethical consideration

The study protocol was approved by a university-affiliated ethical institution (n B70201838168). Patients were free to participate and were informed before the informed consent was signed.

Results

Of the 291 patients, 43% (n= 124) were male and 57% (n=167) were female. Mean age was 49.3 (stdv 17.20). A summary of the demographics of the patients has been included. An overview of these descriptive statistics and correlations can be found in Table 1. We notice that in the service quality dimensions technical (mean 6.46) and interpersonal quality (mean 6.37) obtain the highest scores, followed by administrative (mean 6.05) and environmental quality (mean 5.62). The lowest score is of waiting time with 5.04. Patient satisfaction (mean 6.08) and behavioral intentions (5.95) achieve similar scores. Tests for multicollinearity indicated that a very low level of multicollinearity was present (VIF < 2 and tolerance > 0.2) [19].

Model fit

The model presented a satisfactory fit as shown by the goodness-of-fit statistics ($\chi^2/df = 1.94$) (criteria < 3), RMSEA = 0.062 (criteria < 0.1), SRMR = 0.049 (criteria < 0.08), CFI = 0.941 (criteria > 0.9) and TLI = 0.933 (criteria > 0.9) [19, 20].

Mediation analysis

The first analysis was performed on the basic model, which is the model that excluded all key moderators (age, gender and quality of life). This model was used to test hypotheses 1, 2, 3 and 4 and analysed the relationships between the major variables. To determine whether the variable 'patient satisfaction' was a full mediator (i.e., accounting for the entire effect between the variables preceding and succeeding the mediator) or a partial mediator (i.e., accounting for only a part of the effect between the preceding and succeeding variables) mediation analysis following the guidelines developed by Zhao et al. (2010) [21], was performed. The results of the SEM analysis and mediation analysis are shown in Table 2. The results found support for all the hypotheses using the basic model (i.e., H1, H2, H3, and H4), except for the relationship between 'interpersonal quality' and 'patient satisfaction'. Strong relationships were noticed between the following constructs: 'environmental quality', 'administrative quality' and 'patient satisfaction', and between 'patient satisfaction' and 'behavioral intentions'. The link between the constructs 'technical quality', 'waiting time' and the construct 'patient satisfaction' was less strong but was still highly significant. With regards to the mediators in the basic model, we observed that 'patient satisfaction' acted as a full

mediator for the link between the constructs 'administrative quality', 'waiting time', and partial for the construct 'environmental quality' and the 'behavioral intentions' as dependent variable.

Moderation analysis and covariates

In the second analysis, the covariates were added to the model. These variables are tested as moderators between (1) the link between service quality and patient satisfaction and (2) between patient satisfaction and behavioural intentions. This analysis tested the remaining hypothesis 5.

The moderation analysis was conducted by adding each variable to the model as well as an interaction term which consists of the product between this variable and the main variable. The results of the moderation analysis are presented in Table 3. (Near here) The results found partial support for the hypothesis 5. For example higher perceived quality of life has a positive effect on the relationship between technical quality, waiting time and patient satisfaction.

Discussion

The aim of this study was to propose a model based on established relationships among four key constructs (service quality, patient satisfaction and behavioral intention), and to test this in ambulatory surgery. New in this study is the integration of waiting time as a dimension of service quality, as reduction of preoperative waiting times is a considerable challenge for improvement of quality of healthcare services.

The negative impact of waiting time and its effect on the overall satisfaction is related to patient's expectations [22]. However, waiting time, despite its importance to satisfaction, has largely been neglected as a stand-alone concept of service quality. As such, in our research, waiting time was disconnected from the administrative quality component within service quality. Thirteen years after the design of the four dimensional service quality framework by Dagger et al. (2007) -where timeliness is considered as a part of administrative quality- this is logical as health care has undergone many changes, such as outpatient care and ambulatory surgery [15]. Above that, patients are evolved with a shift in the concept of 'time'. The current patient takes a great deal of interest in his time, after which (s)he

Table 1 Overview of descriptive statistics and correlations.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Age	49.31	17.20	-	-	-	-	-	-	-	-	-
2. Gender	0.57	0.49	-0.48	-	-	-	-	-	-	-	-
3. Interpersonal Quality	6.37	0.77	-0.06	0.11	-	-	-	-	-	-	-
4. Technical Quality	6.46	0.67	-0.01	0.11	0.71**	-	-	-	-	-	-
5. Environmental Quality	5.62	0.91	0.17**	0.02	0.34**	0.37**	-	-	-	-	-
6. Administrative Quality	6.05	0.94	0.10	-0.02	0.24**	0.23**	0.48**	-	-	-	-
7. Waiting time	5.04	1.65	0.08	-0.01	0.18**	0.22**	0.13	0.23**	-	-	-
8. Patient satisfaction	6.08	0.79	0.06	0.01	0.39**	0.46**	0.41**	0.54**	0.29**	-	-
9. Behavioral intentions	5.95	0.92	0.08	-0.02	0.35**	0.24**	0.38**	0.52**	0.29**	0.66**	-
10. Quality of Life	5.38	1.20	-0.13*	-0.05	0.10	0.13*	0.10	0.28**	0.14*	0.25**	0.09

N= 291, *P ≤ .05, **P ≤ 0.001

Table 2 SEM and mediation analysis.

Moderators Variable	Direct effect		Interaction effect		Acceptance
	β	p	β	p	
Service quality => Patient satisfaction					
Interpersonal Quality					
Age	0.004	0.145	-0.002	0.335	None
Gender	-0.063	0.455	0.079	0.349	None
Quality of Life	0.131	≤ 0.001	-0.174	≤ 0.001	Covariate and moderator
Environmental quality					
Age	0.003	0.310	0.005	0.057	None
Gender	0.034	0.701	0.313	≤ 0.001	Moderator
Quality of life	0.161	≤ 0.001	-0.104	0.017	Covariate and moderator
Administrative quality					
Age	0.001	0.927	0.006	0.045	Moderator
Gender	0.001	0.999	0.018	0.874	None
Quality of life	0.073	0.103	-0.098	0.072	None
Technical Quality					
Age	0.003	0.159	-0.002	0.500	None
Gender	-0.037	0.654	0.249	0.007	Moderator
Quality of life	0.138	0.001	-0.038	0.211	Covariate
Waiting time					
Age	0.004	0.133	0.002	0.504	None
Gender	0.008	0.933	-0.128	0.192	None
Quality of life	0.122	0.002	-0.044	0.296	Covariate
Patient satisfaction => Behavioral attitudes					
Age	0.001	0.831	-0.003	0.353	None
Gender	-0.043	0.625	0.124	0.186	None
Quality of life	-0.033	0.371	0.036	0.369	None

doesn't want to spend it on waiting in the hospital. We demonstrate that waiting time influences patient satisfaction. However, waiting time is often hard to control in the ambulatory surgery unit due to the possibilities of changes in the surgery schedule; a surgeon can be delayed to start the day surgery program by emergencies, a surgery can last longer than planned, or several other external causes may lead to an increase in waiting times. Freestanding ambulatory surgery units (with operating rooms exclusively for day surgery) are less vulnerable for changes than hospitals with operating theatres where ambulatory patients are mixed with inpatients. The ambulatory surgery unit in this study makes use of mixed operating rooms, even on two campuses.

The proposed model was strongly supported by the collected data in the present context of ambulatory surgery. Interpersonal quality appeared to be the only quality dimension without a significant impact on patient satisfaction. This finding was not in line with previous research conducted in the healthcare literature, where a significant influence of distinct personnel dimensions was detected [23, 24]. A possible explanation could be that these studies did not always make a distinction between the interpersonal and technical

quality of the personnel and aggregated these dimensions into one dimension. However, the nonsignificant impact of interpersonal quality does not imply the unimportance of the staff in ambulatory surgery. This follows from the significant impact of the technical quality dimension on patient satisfaction. This finding indicates that good education, competence and qualification of the staff do significantly influence patient satisfaction positively. This implies for specific nurse training in ambulatory surgery.

Not only technical, but also environment quality and administrative quality were positive predictors of patient satisfaction. Bitner (1992) performed an investigation on the servicescapes in which the impact of physical surroundings on customers and employers was already emphasized in service processes [25]. This was confirmed by other authors for healthcare setting [26, 27]. This is now confirmed for specific the ambulatory surgery unit as well and explains the importance of the physical surroundings in this setting. For example, a high incidence of light, a large waiting room, spaces with few angles, walls covered by pictures of nature, attention to the comfort of the seats.

Table 3 Moderation analysis.

Moderators Variable	Direct effect		Interaction effect		Acceptance
	β	p	β	p	
Service quality => Patient satisfaction					
Interpersonal Quality					
Age	0.004	0.145	-0.002	0.335	None
Gender	-0.063	0.455	0.079	0.349	None
Quality of Life	0.131	≤ 0.001	-0.174	≤ 0.001	Covariate and moderator
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Age	0.001	0.927	0.006	0.045	Moderator
Gender	0.001	0.999	0.018	0.874	None
Quality of life	0.073	0.103	-0.098	0.072	None
Technical Quality					
Age	0.003	0.159	-0.002	0.500	None
Gender	-0.037	0.654	0.249	0.007	Moderator
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Age	0.004	0.133	0.002	0.504	None
Gender	0.008	0.933	-0.128	0.192	None
Quality of life	0.122	0.002	-0.044	0.296	Covariate
Patient satisfaction => Behavioral attitudes					
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Gender	-0.043	0.625	0.124	0.186	None
Quality of life	-0.033	0.371	0.036	0.369	None

The 3 covariates (Age, Gender, Quality of Life) are tested to be moderators of two relationships:
The relationship between service quality and patient satisfaction (first part of the table) and the relationship between patient satisfaction and behavioral intentions (second part of the table)

The administrative processes in the hospital involves both the processes and procedures during admission, residence and dismissal. Curry and Sinclair (2002) found that patients feel less bothered by their treatment when the care is easily accessible [28]. This emphasizes the need to pay attention to the flow in the administrative procedures.

The research findings displayed a significant and positive predictive value of patient satisfaction to predict behavioral intentions. Several investigations have already shown similar results [e.g. 4, 7]. Satisfied patients appeared to be more likely to continue using health services, comply with medical treatment and recommend the health services to others [29].

The relationship among service quality, patient satisfaction and behavioral intentions are multifaceted [30]. The mediating relationship indicates that the degree of satisfaction/ dissatisfaction with the service experience would change the extent to which previously observed service quality remains a good predictor of patient intentions [31].

Gender, age and quality of life were included as influencing variables in this empirical investigation as a majority of the studies in the health literature expose differences in demographic variables. Differences in patient satisfaction for age, education level, race, health status, marital status and monthly income were often identified in these studies [15, 32]. Nevertheless, this was not the case for all variables included in this investigation. A possible explanation might lay in the differences between the distinct research settings. The current research was the only one performed in the ambulatory surgical unit, other articles included inpatients as well [30] or were performed in countries other than the Western countries [18].

Although we included all surgical disciplines of the day surgery clinic, the study has some limitations. For example, the survey was conducted face to face as such patients might be biased toward answering better responses, despite the reassurance about the blinding of their responses. Also, the data collection was carried

out in a single general hospital. This could lead to one sighted data, future studies could focus on multiple organizations. Above that, the findings of the study cannot be generalized as there is not a sufficiently representation of the different sections of the population, e.g. vulnerable groups and non-natives Dutch speaking patients were not included in the study.

Conclusion

Our study confirms the importance of service quality and patient satisfaction on behavioral intentions in the ambulatory surgery setting. These findings can help health care providers and managers understand how perceived service quality can affect behavioral intentions. As our results show, satisfied patients will intent to return to the hospital, so it is important to provide enough tangible facilities such as physical equipment, to streamline the administration procedure, avoid waiting times and to invest in the skills of the health care providers. This will prevent patients to go to other hospitals.

Disclosure statement

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