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Do Patient Experiences Have Mediating Roles on Patient Loyalty?

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Abstract

The study aimed to evaluate the mediating roles of patient experiences on patient loyalty. The data were collected through an electronic questionnaire regarding feedback from 5732 patients received outpatient clinics. Patient loyalty was evaluated using the Net Promoter Score (NPS_{11}) that patients were asked whether they would like to recommend the hospital to their relatives or friends. Patient experiences with physicians, nurses, and waiting times were also asked in the questionnaire. After preliminary analysis, mediation analyses were performed to evaluate direct and indirect causal effects among variables for NPS_{11}. While patient experiences are used as possible mediators, Branch Groups in the first and Admission Time in the second model are independent variables. In the analyses, *Surgical Medical Science* ($p = 0.019$) and *Day Shift* ($p = 0.000$) have a direct mediating effect on NPS_{11}. *Nursing care experiences* were found to be a mediator variable for NPS_{11} in both models ($p = 0.000$ for both). Patient loyalty was associated with *Surgical Medical Science and Day Shift* primarily whereas *Nursing care experience* had a mediating role.

Keywords

patient loyalty, patient experience, Net Promoter Score, mediation analysis, private hospital

Introduction

Healthcare providers are under a lot of pressure to survive and develop due to dramatic changes in the healthcare ecosystem.[1] In recent years, the rapid growth of private institutions in emerging countries and the freedom of patients to choose their healthcare institutions have made the healthcare ecosystem more competitive. Success in healthcare comes not only from having outstanding technical skills and supplying improved health care quality but also from creating patient loyalty and positive patient experiences.[2] The understanding of preferences, needs, values, and experiences of patients could improve the competitive capabilities and growth potentials of the healthcare institutions under these challenging situations.[3,4] The key point is to satisfy patients and to persuade them for sharing a positive word of mouth about the healthcare provider with others. Therefore, patient loyalty has been more essential for healthcare institutions in this competitive environment.[2]

An increase in patient loyalty is achieved by improving the quality of healthcare services and positive patient-provider relationships.[5] Patient loyalty is regarded as a critical business success element for sustainability[5] and generates patients' revisit and recommendation intention.[2] In this perspective, Net Promoter Score (NPS_{11}) is a commonly used tool to measure loyalty in market research metrics because NPS_{11} with a concise question reflects a willingness to recommend and loyalty. Nonetheless, the evaluation of patient loyalty in

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healthcare with NPS_{11} is a new concept.[6] Patients are asked the NPS_{11} question "how likely is it that you would recommend this hospital/clinic to family and friends?". It is a simple user-friendly and powerful metric to understand patients' opinions.[7–10] Responses scored between 0 and 10 points categorized as Detractors (≤6 points), Passives (7 and 8 points), and Promoters (9 and 10 points).[10,11] However, NPS_{11} as an 11-point scale (from 0 to10 points) without any categorization[6] is the other using method, especially at the patient level.[9,10]

Patient-reported experience measures as another critical point for healthcare institutions to evaluate patients' perception of their personal experience with the healthcare service providers.[12,13] As a process indicator, patient experience represents both the interpersonal components of the care received and their interactions with health institutions. These indicators include communication environment between patients and healthcare professionals, successful therapy, and waiting time to access healthcare in a hospital.[12,14] Patients' experiences are also thought as an indicator of measuring service quality in hospitals,[4] improving health outcomes,[12] and repurchasing their ability in the organization .[15] Since patients' experiences give clues about the success of healthcare providers, they are rigorously assessed by healthcare institutions as a concrete means to offer patient-centered treatment.[16]

As it is known, hospitals as complex organizations provide outpatient services in various shift periods (night and day shifts), and in many fields (internal and surgical medical sciences) for their patients. In surgical medical sciences, which constitute the pre/post-surgical interventional procedures of healthcare, the patient–physician relationship results in diagnosis and surgical procedure. In internal medical sciences, patients undergo long-term symptoms and have some expectations with regard to the treatment of potentially chronic diseases. Therefore, physicians and nurses play active roles in the patient experiences during the treatment process.[16–19] In this respect, physicians and nurses work together to give the best healthcare and to improve patient experiences by interacting with them.[16,20] Besides, waiting time is also an important element for both patient experiences and managerial processes.[5,20] The feedback related to these factors is utilized to identify necessary improvements, to monitor organizational strategies, and to benchmark the units,[1,12,13] especially for private healthcare institutions. These complex relationships could be examined in detail[20,21] by using a mediation analysis.[22,23] Mediation analysis examines whether an independent variable causes a change in a dependent variable and whether a mediator is present. If there is a role of the third variable in the relationship between two variables, it is called a mediator.[22] In the present study, we aimed to evaluate the mediating roles of patient experiences on patient loyalty reflecting the competitive power of health institutions.

Materials and Methods

This study was carried out in a private hospital of a medical group between October 2018 and March 2019. The private hospital located in Istanbul has a 250-bed capacity and 1100 employees. An electronic questionnaire (e-questionnaire) regarding both patient loyalty and patient experiences was used to get information for the managerial process by the medical group routinely. The data were collected through e-questionnaire regarding feedback of 5732 patients (female/male: 3223/2509) who received outpatient healthcare services and responded to the questions fully. Then, anonymous data including patient loyalty and patient experiences were extracted from the hospital information management system.

In the e-questionnaire, ***Patient loyalty*** was evaluated using the NPS_{11} at the patient level as the primary outcome. Patients were asked the question "how likely is it you would recommend this hospital to family and friends?". Responses were scored between 0 and 10 points (NPS_{11}, 0: not at all likely to 10: extremely likely) at the patient level,[10] and were used for the analysis.

Measurements regarding ***Patient experience*** are intended to report patients' perceptions of predefined care processes as well as the aggregate of all their interactions with the healthcare facilities.[12,14] Therefore, patient experiences are monitored by healthcare organizations in order to evaluate and enhance the quality of services.[24] In this study, interactions with physicians, nurses,[24,25] and waiting time[17,25,26] taking part as the key quality metrics in patient experience surveys were used. Therefore, following part of the e-questionnaire, patients rated their experiences with physicians, nursing care, and waiting time by using a 4-point scale (1: very unsatisfactory, 2: neutral, 3: good, 4: excellent) as the secondary outcomes. Patients were asked to rate their experiences with physicians and nurses in terms of giving sufficient knowledge, trust, and providing good health communication. Experience of waiting time was patients' opinions about waiting time before examinations in hospital.

Age, gender, admission time, and branch groups were obtained from the hospital information management system. The "branch groups" variable was classified into two groups as "Internal medical sciences" and "Surgical medical sciences". In addition, the "admission time" variable was grouped as "Night/evening shift" (06.00 pm to 08.00 am) and "Day Shift" (09.00 am to 05.00 pm).

The study was performed according to the principles of the Declaration of Helsinki and was approved by the Ethical Committee of Marmara University Institute of Health Science (26.10.2019-140).

Statistical Analysis

Data were analyzed using SPSS 26.0 statistic program (SPSS Inc, Chicago, IL, USA). Parametric analysis regarding the Pearson correlation test and unpaired-T test were applied owing to the normal distribution of data. In the study, $p \leq 0.05$ was accepted as statistically significant. Chronbach-alpha value for internal reliability was found as 0.750 for patients' experiences with physicians, nursing care, and waiting time that same scoring methods were used in these variables.

Mediation Analysis

This study was aimed to evaluate the mediating role of patient experiences on patient loyalty in a private hospital using a mediation model because complex relations were observed among them. Mediation analysis was used to evaluate both direct and indirect causal effects among variables for NPS_{11} using PROCESS macro adopted in SPSS for the analysis.[23] Branch groups (1: Internal medical science, 2: Surgical medical science) and admission time (1: Evening/Night shift, 2: Day shift) were used as independent variables in the first and second mediation analyses, respectively. NPS_{11} score was used as a dependent variable (continuous data) in both mediation models.

Experiences with physicians, nursing care, and waiting time were used as possible mediators for both multiple mediation analyses. Nursing care experience (continuous data) was found to be a significant mediator in both multiple mediation analyses. Then, simple mediation analyses were performed by using Nursing care experience.

Results

In this cross-sectional study, data of 5732 patients (female/male: 3223/2509, mean age: 33.97 ± 20.62) were included. The profile of the study group was shown in Table 1. In the group, 56.2% of the patients were female ($n = 3223$), 42.4% applied to Surgical Medical Science ($n = 2431$), and 13.5% ($n = 776$) were given healthcare service on the Night shift.

Table 1. Profile of the Research Group.

Gender	*N*	%
Female	3,223	56.23
Male	2,509	43.77
Total	5,732	100
Branch group	*n*	%
Internal medical science	3,301	57.59
Surgical medical science	2,431	42.41
Total	5,732	100
Admission time	n	%
Night shift (from 06.00 pm to 09.00 pm)	776	13.54
Day shift (from 09.00 a.m. to 06.00 p.m.)	4,956	86.46
Total	5,732	100
Number of patients giving feedback by months	*N*	%
October18	1,066	18.60
November 18	904	15.77
December 18	982	17.13
January 19	1,008	17.59
February 19	790	13.78
March 19	982	17.13
Total	5,732	100
	Mean	SD
Age	33.97	20.62
Patient-reported experience		
Net Promoter Score*	9.19	2.14
Nursing Care Experience Score**	3.60	0.70
Physician Experience Score**	3.80	0.59
Waiting Time Experience Score**	3.32	0.89

Note. SD: standard deviation; *0 to 10 points; **1 point: very unsatisfactory; 2 points: neutral, 3 points: good, 4 points: excellent.

The NPS_{11} score (9.19 ± 2.14), *Nursing care experience* (3.6 ± 0.70), *Physician experience* (3.8 ± 0.59), and *Waiting time experience* (3.32 ± 0.89) were found to be high in the study group (Table 1). The score of *Waiting time experience* was only high in male patients (male: 3.38 ± 0.86 vs. female: 3.28 ± 0.81) ($p = 0.000$) whereas the other scores were similar according to gender ($p > 0.05$).

It was observed that scores of the NPS_{11} and *Nursing care experience* of the patients who received healthcare from Surgical Medicine Sciences (9.30 ± 1.95; 3.63 ± 0.67, respectively) were higher than the patients who received service from Internal Medical Science (9.10 ± 2.26; 3.58 ± 0.72, respectively) ($p = 0.000$, $p = 0.004$, respectively, Table 2). No statistically significant differences were observed in scores of *Physician experience* and *Waiting time experience* according to branches ($p = 0.127$; $p = 0.996$, respectively) (Table 2). Then, *Nursing care experience* was selected as a possible mediator for the first mediation model.

Patients gave high scores for the NPS_{11}, *Physician experience,* and *Nursing care experience* (9.25 ± 2.03, 3.82 ± 0.55, 3.61 ± 0.68, respectively) in Day shift compared to those on the Night shift (8.77 ± 2.71, 3.64 ± 0.80, 3.54 ± 0.80 respectively) ($p = 0.000$; $p = 0.000$; $p = 0.013$, respectively, Table 2). The score of *Waiting time experience* did not significantly differ by admission time ($p = 0.906$, Table 2). *Physician experience* and *Nursing care experience* were thought of as possible mediators for the second mediation model.

When the relationships among the NPS_{11} score and the experience scores were examined, NPS_{11} was associated with the scores of *Nursing care*, *Physician*, and *Waiting time experience*s ($p < 0.05$). Similar relationships were seen when the analyses were repeated according to the branch groups and admission time ($p < 0.05$) (Supplementary Table 1).

Mediation Analysis

In the second mediation model, *Physician experience* and *Nursing care experience* were used as possible mediators in multiple mediation analyses. *Nursing care experience* was found a significant mediator in the multiple mediation analysis, then, a simple mediation analysis was performed with *Nursing care experience*.

In the analyses, the NPS_{11} was directly mediated by patients having healthcare in the Surgical Medical Science in the first model ($B = 0.1109$; $p = 0.019$) (Figure 1.a) and Day Shift in the second model ($B = 0.3498$, $p = 0.000$) (Figure 1.b). *Nursing care experience* indirectly mediated the NPS_{11} score in both mediation models ($b = 0.0920$; % 95 BCA CI [0.0304;0.1571] in the first model, $b = 0.1285$;

Table 2. Variables According to Branch Groups and Admission Time.

	Branch groups					Admission Time				
	Internal medical science		Surgical medical science			Evening/night Shift		Day Shift		
	Mean	SD	Mean	SD	*p*-value	Mean	SD	Mean	SD	*p*-value
Net Promoter Score	9.10	2.26	9.30	1.95	**0.000**	8.77	2,71	9,25	2,03	**0,000**
Nursing Care Experience Score	3.58	0.72	3.63	0.67	**0.004**	3.54	0,80	3,61	0,68	**0,013**
Physician Experience Score	3.79	0.61	3.81	0.58	0.127	3.64	0,80	3,82	0,55	**0,000**
Waiting Time Experience Score	3.32	0.90	3.32	0.89	0.996	3.33	0,89	3,32	0,90	0,906

Independent T-test was used in the analysis, confidence interval 95%, *SD: Standard deviation.

%95 BCA CI [0.0261;0.2335] in the second model) (Table 3).

After mediation analyses, a bootstrap analysis with 10,000 replications was applied to estimate mediation effects to generate a 95% confidence interval, and the score of nursing care experience was found to be an effective mediator (Table 3).

Discussion

The evaluations of patients' views enable health managers, health professionals, and policymakers to identify problems, and to improve healthcare service quality. Moreover, this feedback help to provide patient loyalty.[20,27] Patients' loyalty is directly affected by the positive experiences obtained throughout the healthcare services.[2,28,29] Since patient experience is the sum of interactions affecting patient perceptions,[30] different variables need to be examined from this perspective.[8,19,20] Complex relations between patient loyalty and patient experiences were analyzed through mediation analysis in this cross-sectional study.

Patients gave high NPS_{11} scores in the study group. This means that they were willing to recommend this hospital to families and friends.[6,7,9] Yet, the interesting point was that elevated NPS_{11} scores were observed in Surgical Medical Science in the study. The relation was also shown in the first mediation model. These results could be explained by both the success of the health professionals and the nature of the Surgical Medical Sciences. The NPS a new concept was used in limited studies for different outcomes in healthcare that the satisfaction levels of the patients who underwent surgery in the orthopedic clinic,[7] the effects of communication methods on patients in allergy and pulmonary outpatient clinics,[6] and the associations with health-related quality of life in hip arthroscopy.[31]

Statistically significant correlations were found among scores of the *Physician experience*, *Nursing care experience,* and NPS_{11}. These results were predicted because patient loyalty is closely associated with the performance of health professionals.[32] Increased trust in health professionals enhances the positive feedback to an institution.[19] Patients' health outcomes are also improved by collaborative teams regarding physicians and nurses.[33] Moreover, the score of *Waiting time experience* was also related to the NPS_{11}. Waiting time has a crucial role in patient experience and patient satisfaction[17] as well as anxiety levels of patients and their families in the hospital.[34] In a study, a 16-min improvement in waiting time increases the intent to be recommended of the institution and the level of satisfaction in the interventional radiology clinic.[34] Therefore, this result could be predicted because the management of this private hospital provides a standard protocol for the waiting time of patients in the hospital.

In the study, the score of *Physician experience* was almost excellent level in both Surgical Medical Science and Internal Medical Science of this private hospital. These results could be predicted because they aim to perform at their best practice for a positive patient experience.[6,10] From the patient's perspective, communication with health professionals and receiving enough information about their treatment plans appear to be important factors in the patient experience.[28,29]

The scores of NPS_{11}, both experiences of *Physician* and *Nursing care* were lower on the Night shift than on the Day shift. In the second mediation model, the positive relationship between NPS and Day shift was also shown. These could be associated with providing healthcare services in certain branches with a limited number of health professionals and consultations during the night shift.[19,35]

The score of the *Nursing care experience* from the Surgical Medical Science was higher than that of the Internal Medical Sciences. Moreover, the score of *Nursing care experience* indirectly mediated the NPS_{11} in both mediation analyses. Treatment processes in Surgical Medical Sciences were managed by the collaboration of physicians and nurses. Nurses spend more time with patients compared to other healthcare professionals[18] and nursing care is a part of healthcare quality.[16,36] Since the same nurses had active roles in preoperative and postoperative procedures of patients in the clinics of the hospital, nursing care could be at the forefront of Surgical Medical Science.[37] Besides communication skills as fundamental properties for patient-centered healthcare increase patient satisfaction[18,20,38] and the NPS_{11} to recommend the institution.[32,39]

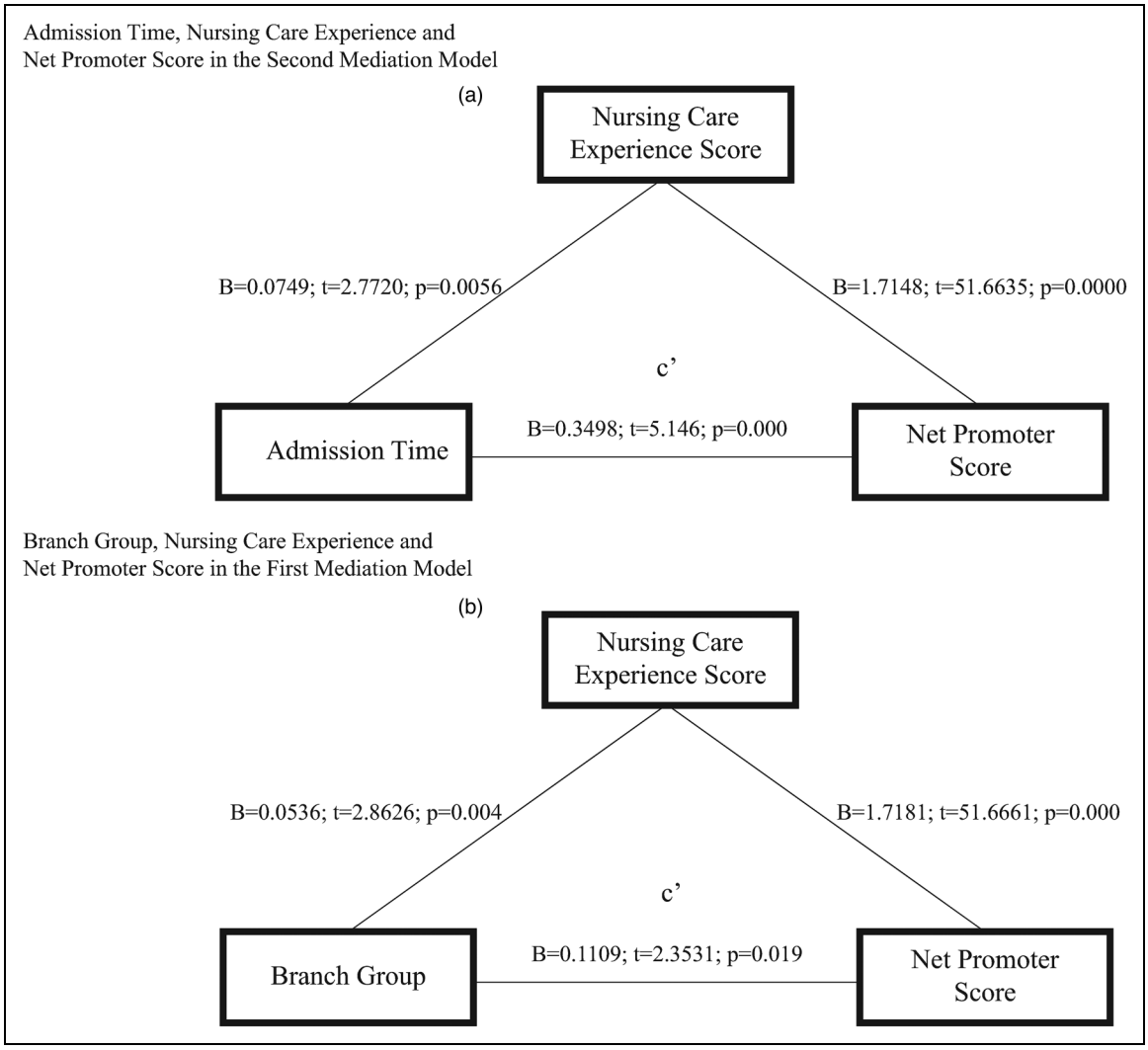

Figure 1. Mediation analysis. (a) Branch Group, Nursing Care Experience, and Net Promoter Score in the First Mediation Model. (b) Admission Time, Nursing Care Experience, and Net Promoter Score in the Second Mediation Model.

Table 3. The Mediation Analyses for Net Promoter Score in the Study.

Net Promoter Score	B	SE	t	*p*-value	LLCI	ULCI
First model						
Constant	2.8363	0.1371	20.6852	**0.000**	2.5675	3.1051
Branch group	0.1109	0.0471	2.3531	**0.019**	0.0185	0.2034
Nursing Care Experience Score	1.7181	0.0333	51.6661	**0.000**	1.6529	1.7833
Indirect effect(s)	0.0920[a]	0.0320[b]			0.0303[c]	0.1554[d]
Second model						
Constant	2.3539	0.1726	13.6359	**0.000**	2.0155	2.6923
Admission time	0.3498	0.0680	5.146	**0.000**	0.2165	0.4830
Nursing Care Experience Score	1.7148	0.0332	51.6635	**0.000**	1.6498	1.7799
Indirect effect(s)	0.1285[a]	0.0529[b]			0.0261[c]	0.2335[d]

B: unstandardized coefficient, confidence interval 95%, *p*-value<0.05 is bold; SE: standard error; t:t-statistic, LLCI&ULCI: lower and upper levels for confidence interval.

[a]Effect(s); [b]bootstrap standard error; [c]BLLCI: bootstrap lower levels for confidence interval; [d]BULCI: bootstrap upper levels for confidence interval; BCA CI 95% bias corrected bootstrap confidence interval.

In females, the NPS_{11} was affected by the *Waiting time experience*. At this point, suitable ways are needed to find to increase the positive experience of female patients because females tend to have lower satisfaction levels than male patients in healthcare.[7]

This study had some strengths. Firstly, the study group consisted of a large sample size. Secondly, the complex relationships among patients' loyalty, nursing care, branch groups, and admission time were evaluated by performing the mediation analysis. Since data were extracted from the hospital information management system, different tools regarding patient satisfaction or loyalty were not used in the study. This was the main limitation of the study. Further studies are necessary to evaluate relations between NPS_{11} and corporate factors by using multiple indices in healthcare.

Conclusion

Patient loyalty was associated with *Surgical Medical Science and Day Shift* primarily whereas *Nursing care experience* had a mediating role in the study. Furthermore, the NPS_{11} was found to be a user-friendly tool to understand patients' recommendation intentions in healthcare.

Authors' Note

TA, ZÖÇ, OCK, NSK, PKA, LK, SEA, and GM designed the project, TA collected the data, TA, PKA, LK, EÖÖ, MY, and GM analyzed the data, TA, ZÖÇ, OCK, NSK, PKA, LK, EÖÖ, MY, ŞEA, and GM prepared the manuscript.

This study was approved by Marmara University, Institute of Health Science Ethics Committees (26.10.2019-140). Written informed consent was obtained from a legally authorized representative(s) for anonymized patient information to be published in this article.

Declaration of Conflicting Interests

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Supplemental material

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