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Development of Patient Satisfaction Model in Gastrointestinal Endoscopic Procedures in Indonesia

Khaira Utia Yusrie[1,2*] and Ferdi Antonio[1]

[1]Department of Hospital Administration, Faculty of Economics and Business, Pelita Harapan University, Indonesia

[2]Gastroenterology Division, Internal Medicine Department, Muhammadiyah Hospital, Jakarta, Indonesia

ABSTRACT

Background: Patient satisfaction is an indicator of quality and success of medical service. Improvement on the valuation model has been applied in some countries.

Aim: This study aimed to test and analyse the effects of the patient satisfaction on revisit intention in patients who undergo gastrointestinal endoscopy in Indonesia.

Method: A quantitative survey was conducted through a purposive sampling technique to collect data from XYZ.

Results: The survey resulted in 147 responses, which were analysed through partial least squares-structural equation modelling (PLS-SEM). The direct influence on patient satisfaction was found to be the strongest from Skill and Hospital Facility. It was found that patient satisfaction positively and significantly predicted revisit intention. This study has implications for policymakers and hospital management in improving skill and hospital facility and information before endoscopy in optimizing revisit intention through patient satisfaction.

***Corresponding author**

Khaira Utia Yusrie, Department of Hospital Administration, Faculty of Economics and Business, Pelita Harapan University, Indonesia.

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Keywords: Patient Satisfaction, Revisit Intention, Gastrointestinal Endoscopy, PLS-SEM

Introduction

Higher expectation on service quality in the health industry has been confronted by the health provider and calls for continuous improvement on service quality so that patient satisfaction can be experienced by the service user and resulted in better patient experience. Patient satisfaction has currently been used as one of the service quality indicators which is measured by user's satisfaction not only experienced and also shared by the ultimate user, therefore, quality or service level is a prime factor in gaining customer loyalty which is followed by revisit intention or repeated visit of the patient to the hospital [1]. Patient satisfaction which is followed by revisit intention eventually becomes the key success indicator of the health service for a health provider. As governed in the Decree of Health Ministry of Indonesia numbered 30 Year 2022 about the National indicator of health service quality applied in independent medical doctor office and dentist office, clinic office, Social health centre, hospital, health laboratory office and blood transfusion centre, under the section 3 of therewith, it is stated that patient satisfaction has been the Nation's quality indicator nationwide applicable to the entire health service and office [2]. As a result, patient satisfaction has become key factor for continued evaluation by the management in regular basis in accordance to the National Health Service.

Patient satisfaction being proposed by Linder-Pelz encompasses multi dimension concept which was then implemented in numerous empirical studies that confirmed the virtue of patient hopes to the patient satisfaction. Therefore, it is recognized that patient satisfaction does not only involve cognitive valuation but also involves affective dimensions [3].

Private hospitals as a health service provider are expected to repeatedly evaluate its performance so that the patient satisfaction which serves as Nastional quality indicator could always be the indicator for improvement of health care service of the community. Higher expectation of the community on health service in the hospital and stiffer competition among the providers in the health industry have made the stake holder of the hospital to continuosly improve their service to become the people's choice, hence, the hospital reputation shall be valued and measured in regular basis.

How the hospital reputation would be measured by the patient's point of view can be gathered through Patient Satisfaction Survey [4]. The theories of patient satisfaction measurement had been introduced in or around 1980s, Since then have the concepts been further developed [5]. The Patient Satisfaction Survey is expected to unveil about the things of patient experience of which they have actually experienced health service rendered by the hospital. Some of the experience involve such things as medical treatment quality,

communication quality exchanged with the hospital employee during the treatment as well as the overall satisfaction of the patient [6]. Competition in the health industry has also put pressures to the private hospitals so as to be able to develop a program or champion unit which is well desired by the people.

In the last 20 years, various models of the Patient Satisfaction Measurements have been implemented in a number of countries. Basically, there are two approach in evaluating patient satisfaction i.e.: qualitative and quantitative. Quantitative approach offers more accurate measurement of Patient Satisfaction. A standardized questionnaire (through either direct interview or phone interview) has been implemented by some researchers in the past so as to serve as assessment tools in measuring Patient Satisfaction [7]. During the time of Covid-19 pandemic, there have been various research attempting to measure Patient Satisfaction. Satpathy conducted systematic reviews upon 39 research of the Patient Satisfaction gathered from the Covid-19 patients of whom were under medical care [8]. Boissy A in his article with title of Getting to Patient-Centered Care in a Post–Covid19 Digital World: A Proposal for Novel Surveys, Methodology, and Patient Experience Maturity Assessment, had written a number of rationales relating to the paradigm of the changes in the medical treatment after Covid-19 era in which safety and empathy were the primary focus in the patient care followed by the better communication in providing information services from the health provider to the patient and the patient's family [9].

Growth increase of the hospital is measured by a variable called revisit intention. Revisit intention is described as the patient's intention to visit again and agree to receive medical care in the same hospital when needed [10]. The patient's intention served as an indicator that the patient had been entertained with opportunity to choose which hospital that the patient would like to have medical treatment. Therefore, in hospital management, revisit intention could provide a better way which is beneficial to initiate measures and service improvement.

Patient Satisfaction measurement itself had commenced for more than 20 years ago, it was in 1970 when Ware JE carried out literature study on measuring patient satisfaction, one of which study applied patient satisfaction questionnaire (PSQ) with 80 indicators [11]. This measurement method has been utilized until now and has become a primary bench mark for most researchers in developing the valuation model of patient satisfaction measurement in every field of health care. It is hoped that evaluation on the survey of patient satisfaction will allow further study about various aspects of patient experience gained by the patient during their stay in hospital, among which are related to care quality, communication with the care service provider as well as overall satisfaction [6].

The measurement of the patient satisfaction in endoscopic procedures at the hospital in Indonesia is still using the general questionnaire which is used to measure patient satisfaction since the beginning of the service until the ending of endoscopy treatment. There were no specific domain nor indicator applied to evaluate the current domain in order to achieve the result of patient satisfaction in more accurate manner. Various module of patient satisfaction evaluation has been developed in a number of countries to measure patient satisfaction in endoscopy treatment in each respective country. Indeed, some differences occur in the instrument used to measure patient satisfaction that is utilized in some countries, an example of which is the evaluation model of gastrointestinal endoscopy satisfaction questionnaire (GESQ). Hutchings in UK in the year of 2015 has begun to develop and to validate upon the instrument of this GESQ to gain the patient satisfaction on the people who underwent endoscopy treatment. This model has 4 variables with 21 items of questionnaire to measure 4 independent variables that are: skill and hospital, pain and discomfort during and after endoscopy, information before endoscopy and information after endoscopy [12]. A study conducted by Burtea 2019 performed development and validation on the patient satisfaction of a patient who were undergoing endoscopy treatment and then applying GSS with 5 satisfaction. A study conducted by Burtea in Y2019 sought to develop and to validate patient satisfaction of those outpatients who had taken endoscopy treatment by applying GESQ with 5 satisfaction scale [13]. The evaluation model eventually had been developed further and validated by numerous countries in Europe and Asia.

This research conducted evaluation and analysis upon the patient satisfaction valuation model for the patient taking endoscopy treatment in Muhammadiyah hospital and applied the Gastrointestinal Endoscopy Satisfaction Questionnaire (GESQ). This instrument is selected based on the reason that it contains 4 specific domains and relatively simple to measure by some indicators. The four specific domains are referred to as independent variables encompassing Skill and Hospital Facility that evaluates the capability of the health giver and hospital facility in rendering its health service, Pain and Discomfort Tolerance that evaluates patient complaints during and after endoscopy treatment, Information Before Endoscopy that evaluates information given to the patient before endoscopy treatment, and Information After Endoscopy that evaluates the information given to the patient after the endoscopy treatment resumes.

This research proposes a research model able to predict revisit intention in XYZ Hospital – a privately owned hospital, with a condition that the patient had already experienced endoscopy treatment previously. Revisit intention would become dependent variable which is getting predicted directly by patient satisfaction, whereas patient satisfaction would be predicted by 4 independent variables. The research model would undertake empirical test by applying data from the patient who are eligible for research model.

It is with great expectation that this model would be beneficial and be used as benchmark for the stake holders in endoscopy gastrointestinal in Indonesia, so that they could evaluate service quality pertaining to the aspect of patient comforts. By developing this model, it is also expected to become the baseline in assessment of the trainee in endoscopy gastrointestinal field who are taking in-site learning in the centres of endoscopy unit.

Research Framework

Figure 1 illustrates the framework's assumptions and the relationships between the variables. The objects in this study are all variables included in this research model. The dependent variable is Revisit Intention (RI), while Skill and Hospital Facility (SKHF), Pain and Discomfort Tolerance (PDC), Information Before Endoscopy (IBEN), and Information After Endoscopy (IAEN) are the independent variables. There is one variable of concern to this model, namely mediating variable is Patient Satisfaction (PS), and one moderating variable which in this case is Emergency Case (EC).

Methods

This quantitative analysis employed cross-sectional data. Targeted population are patients who underwent gastrointestinal endoscopy in Muhammadiyah Hospital. This study used purposive sampling to collect data from present objectives or groups [14]. Structured

questionnaire indicators examined the conceptual framework's aspects. This study used a questionnaire modified from previous research from Hutching HA, (2015). Respondents used the Likert scale to rate their agreement.

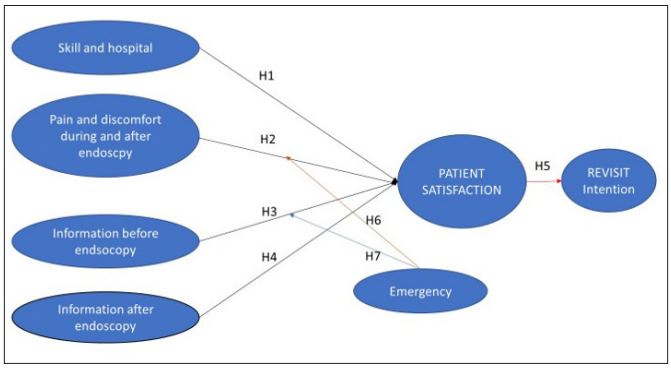


Figure 1: Research Framework

Ethical Considerations

The Research Ethical Committee of Universitas Pelita Harapan assessed the survey questionnaire (No 026/M/EC-Nov/XI/2023). This essay followed research ethics without human or animal subjects.

Results

The study had 147 eligible participants. Table 1 shows the study patient characteristics.

Female respondents predominate

Table 1: Patient Characteristics

Description	Sample (n)	Percentage (%)
Sex		
Male	66	45
Female	81	55
Age		
18 – <40 years old	70	48
40 – < 60 years old	75	51
>60 years old	2	1
Emergency		
Yes	83	56
No	64	44

Analysing the outer model is the first step in the PLS-SEM model analysis process [15]. All indicators in this model are reliable in measuring their respective constructs according to the model. The construct validity test was applied by analysing the average variance extracted (AVE). It can be deduced from the result that all indicators in this study model are considered valid to measure their respective constructs collectively [15]. Heterotrait-monotrait (HT-MT) ratio is then applied to evaluate the discriminant validity. This method was chosen because it is reputed to provide a more accurate value [15]. By applying HT/MT ratio, the discriminant score received is deemed to be more precise to evaluate discriminant test compared to the value generated from Fornell Larcker method which the latter had been well known and used earlier [16]. As all of the HTMT values in Table 3 fall considerably below the 0.9 cutoff, it can be said that all of the indicators in this study model have achieved sufficient discrimination in measuring their respective constructs [15]. As a result, it can be concluded that every indicator in this study model is valid and dependable for measuring each construct explicitly.

Table 2: Construct Reliability

Variable	Cronbach's Alpha	Composite Reliability	Results
Skill and Hospital Facility	0,807	0,823	Reliabel
Pain and Discomfort Tolerance	0,804	0,812	Reliabel
Information Before Endoscopy	0,829	0,841	Reliabel
Information After Endoscopy	0,902	0,903	Reliabel
Patient Satisfaction	0,804	0,812	Reliabel
Revisit Intention	0,881	0,881	Reliabel

Table 3: Heterotrait/Monotrait Ratio

Variable	SKHF	PDC	IBEN	IAEN	PS	RI
Skill and Hospital Facility						
Pain and Discomfort Tolerance	0,881 CI (0,782-0,974)					
Information Before Endoscopy	0,807 CI (0,734-0,871)	0,726 CI (0,603-0,832)				
Information After Endoscopy	0,818 CI (0,735-0,893)	0,820 CI (0,730-0,894)	0,888 CI (0,819-0,944)			
Patient Satisfaction	0,929 CI (0,866-0,987	0,859 CI(0,780-0,928)	0,862 CI (0,795-0,914)	0,877. CI (0,801-0,942)		
Revisit Intention	0,747 CI (0,649-0,844)	0,690 CI (0,554-0,799)	0,672 CI (0,556-0,771)	0,729 CI (0,595-0,840)	0,807 CI (0,708-0,900)	

SKHF: Skill and Hospital Facility; **PDC:** Pain and Discomfort Tolerance; **IBEN:** Information Before Endoscopy; **IAEN:** Information After Endoscopy; **PS:** Patient Satisfaction; **RI:** Revisit Intention

The significance and coefficients of the variables in the structural model were evaluated to see whether or not the hypothesis could be supported. Based on the results shown in Table 4, all of the supported hypotheses with p-value equal to or less than 0.05 and confidence interval (CI) 5% and CI 95% follow the direction of the hypotheses and there is no zero value between the ranges of CI 5% and CI 95%. As a result, we conclude that the analysis of the empirical data supports the 7 hypotheses that were created in this study.

Table 4: Hypotheses Test Results

	Hypothesis	Standardized Coefficient	p-value	CI 5,0%	CI 95,0%	Result
H1	Skill and Hospital Facility Patient Satisfaction	0,389	0,000	0,280	0,493	Hypothesis supported
H2	Pain and Discomfort_Tolerance Patient Satisfaction	0,158	0,007	0,059	0,269	Hypothesis supported
H3	Information Before Endoscopy Patient Satisfaction	0,234	0.001	0,108	0,354	Hypothesis supported
H4	Information After Endoscopy Patient Satisfaction	0,173	0.015	0,043	0,303	Hypothesis supported
H5	Patient Satisfaction Revisit Intention	0,683	0,000	0,604	0,762	Hypothesis supported
H6	Emergency case Pain and Discomfort Tolerance Patient Satisfaction	-0,172	0.000	-0,248	-0,100	Hypothesis supported
H7	Emergency case Information Before Endoscopy Patient Satisfaction	0,140	0.006	0,053	0,233	Hypothesis supported

Analysis methods with PLS-SEM have also experienced significant developments, including in the approach and data processing algorithms. The latest approach is with Cross-Validated Predictive Ability (CVPAT) as recommended [17]. This method is considered more accurate in assessing the overall capability of the model and not only on the target construct or dependent variables [17]. This method can be run with newer versions of software such as SmartPLS4.

Table 5: Cross-Validated Predictive Ability (CVPAT)

Variable	PLS-SEM vs. Indicator average (IA)		PLS-SEM vs. Linear model (LM)	
	Average loss difference	p-value	Average loss difference	p-value
Patient satisfaction	-0,222	0,000	-0,004	0,733
Revisit Intention	-0,128	0,000	-0,023	0,204
Overall	-0,175	0,000	-0,013	0,207

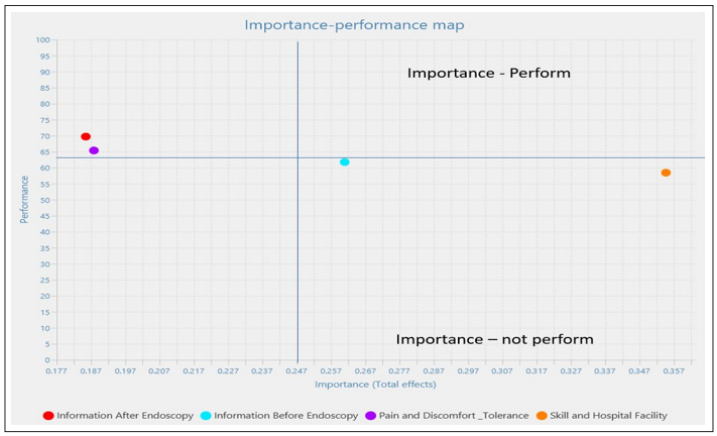
Interpretation with the CVPAT method in this research model is carried out by comparing the output of PLS-SEM with the Average Indicator (IA) data that has been changed or out-sampled. The results of the comparison are shown in Table 5. The findings show that the average loss difference is negative, thus it can be said that this model has predictive capabilities. Likewise, at the following stage, when PLS-SEM is compared with the Linear Model (LM), the average loss difference value is obtained.

These findings indicate the degree of likelihood or relevance that when this model is applied to other studies with different populations, it is likely that the results will tend to be similar. The results of the assessment with the CVPAT method which is of predictive value, confirm that this research model has been adequate enough to predict Revisit Intention from the perspective of patients undergoing gastrointestinal endoscopy.

The Importance Performance Map Analysis (IPMA) method is a calculation used to obtain variables and indicators that can be quantified for importance and that have performance or performance that is also quantified [9]. Therefore, it can be determined together in these two dimensions its influence on the dependent variable or selected as the target construct in a research model. IPMA analysis on SmartPLS® is carried out using a combination of descriptive analysis (mean) with inferential analysis (total effect). The results of the total effect coefficient value are combined with the value of the average (mean) results of respondents' answers on latent variables displayed in a map or mapping [18]. From this IPMA analysis, it can be known what factors have shown good performance and need to be maintained, as well as what factors still need to be improved.

Table 6: Importance-Performance Variables

Variable	Importance	Performance
Skill and Hospital Facility	0,355	58,455
Pain and Discomfort_Tolerance Tolerance	0,188	65,393
Information Before Endoscopy	0,261	61,772
Information After Endoscopy	0,185	69,725
Mean	**0,247**	**63,836**



The results of this study are illustrated in the IPMA mapping which can be seen in figure 2. Dividing into four quadrants is a concern for management. The variables that must be maintained and continuously improved are Skill and Hospital Facility and Information Before Endoscopy. Furthermore, the variables that are further a concern for management to improve and strive for are Pain and Discomfort Tolerance and Information After Endoscopy.

Table 7: Importance Performance Indicators

Variables	Indicators	Importance	Performance
SKHF	Communication skills of the endoscopist	0,078	65,760
	Technical skills of the endoscopist	0,100	50,680
	Endoscopist has empathy to the symptoms	0,103	47,959
	Communication skills of the nurse	0,114	63,492
	Recovery room has comfort enough	0,074	72,789
PDC	Pain during endoscopy	0,066	57,143
	Discomfort after endoscopy	0,078	69,388
	Pain after endoscopy	0,077	69,161
IBEN	Amount of information sent before endoscopy	0,055	63,265
	Information sent before endoscopy easy to understand	0,055	67,687
	Amount of explanation about the procedure before endoscopy	0,055	58,844
	Opportunity to ask questions before endoscopy	0,052	57,143
	Endoscopist explained procedure	0,050	68,707
	Explanation of endoscopist easy to understand	0,051	55,782
IAEN	Opportunity to ask about the findings	0,059	77,551
	Amount of explanation of findings received	0,058	68,027
	Endoscopist explained findings	0,059	63,946
	Explanation after endoscopy easy to understand	0,050	70,408
	Mean	0,068	63,763

SKHF: Skill and Hospital Facility
PDC: Pain and Discomfort Tolerance
IBEN: Information Before Endoscopy
IAEN: Information After Endoscopy

Figure 4 divided by four quadrans with the results that indicators that need to maintain are SKHF4 (communication skills of the nurse), SKHF2 (technical skills of the endoscopist), SKHF5 (recovery room has comfort enough), and SKHF1(communication skill of the endoscopist) dan PDC3 (pain after endoscopy). After that, indicators who met requirement to prioritize to be improving dan increasing are SKHF3 (endoscopist has empathy to the symptoms), and PDC2 (discomfort after endoscopy).

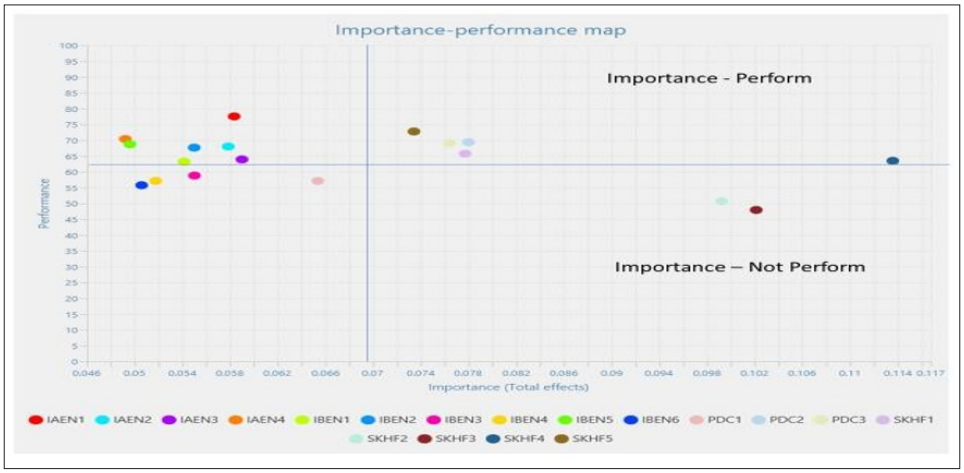


Figure 3: IPMA Patient Satisfaction Indicator

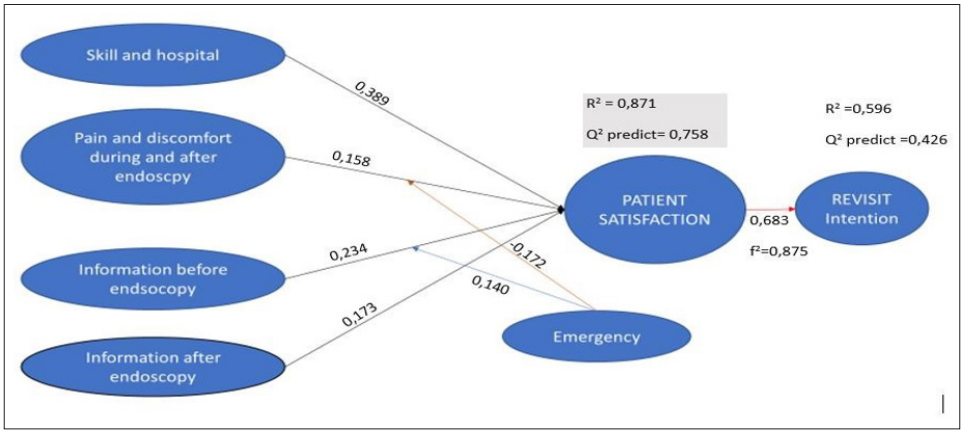


Figure 4: Research Model

Discussion

This study examined how patient satisfaction impacts behaviour in revisit intention. Research study in this research was drawn to illustrate the significance of the structural relation-ship depicted in Figure 4. The R2 value for patient satisfaction in the research model assessment is found to be 0.871. This value represents that percentage of patient satisfaction is 87.1% estimated by Skill and Hospital Facility, Pain and Discomfort Tolerance, Information Before Endoscopy and Information After Endoscopy. Brotons's study also stated that information before endoscopy were the strongest impact indicator on predicting the patient satisfaction [19]. Another study conducted by Chang et al. suggested that patient's perception and trust to the interpersonal relationship developed during health treatment between the patient with the service provider would positively impact to the Care Quality and patient satisfaction [20]. Particularly Skill and Hospital Facility serves as the construct with the most prominent ability to estimate the patient satisfaction. The Donabedian theory also explains that the structure would impact the process and hence impacting the outcome of the Health Care [21]. This theory is known as the continuum of S-P-O (structure, process, and outcome) in health care service provider. Refer to Donabedian Theory, Hospital Resources is the most important in the structure. Based on research of Senić & Marinković, it mentions that the management shall encourage the doctors who are serving health services to allocate more of their time for their patients and to express their honest attention in order to increase patient satisfaction arising from better health care [22].

This research model identified R2 value during the analysis of empirical data, which is classified as medium predictive accuracy, despite when viewed from f2 it categorised has a large effect size (f 2 > 0.35) to RI respectively. When using outofsample examination from Q2 predict value, that is considered more advanced in assessing predictive power [16]. This research model classified has a medium predictive relevance. Therefore, this research model can be considered adequate to predict RI as a consequence of patient experience at the aesthetic clinic. Likewise, the R2 values for both experience dimensions were classified as moderate. Thus, the antecedents in this study can be considered satisfactory in predicting patient experience [23].

Conclusion

The identified independent variables of this study, skill and hospital facility, pain and discomfort tolerance, information before endoscopy, and information after endoscopy are likely to affect patient satisfaction. This study improves patient satisfaction multidimensional assessment for academics and managers. The

experiential marketing theory showed that patient satisfaction might predict gastroenterology clinic revisit intention. The model's predictive power makes it suitable for a similar healthcare industry. This empirical study can help managers design a patient-centric company plan to ensure that existing customers will return to the hospital.

Limitations and Future Research

This study has some limitations such that the data are based on patients from a single hospital in one country, although it was done at private hospital, which has many patients yet may have diverse resources that impact service. Thus, random sample studies of patients in the homogenous criteria are needed to increase this study's generalisability.

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