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Evaluating the Relationships between Perceived Patient Value, Patient Satisfaction and Loyalty by Inpatients at a Tertiary Public Hospital in China

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Economics

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Technology and Operations Management

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Abstract

Recent literature on patient satisfaction demands tertiary public hospitals to evaluate their performance of healthcare service delivery. With the rapid rise in admission rates in tertiary hospitals in China, Patient value is receiving increasing attention in addressing current challenges on the healthcare market and to retain patient satisfaction and loyalty.

The objective of this study is to identify patient value definition and its dimensions in healthcare and to examine their relationships with patient satisfaction and loyalty. This research will shed new light on healthcare management in inpatient settings.

A survey was undertaken to gather data, wherein a total of 740 questionnaires were collected from inpatients at the tertiary public hospital located in Shenzhen, China. Four dimensions of patient value are identified: interacting value, shared decision-making value, health-outcome value, and economic value. The quantitative study employs structural equation modelling to examine the relationships between patient value, patient satisfaction and loyalty and explores the results based on profiling variables.

The results indicate that: (1) interacting value positively affects shared decision-making and health-outcome value; (2) shared decision-making value has a strong impact on health-outcome and economic value; (3) health-outcome value improves economic value and satisfaction; (4) economic value enhances patient satisfaction; (5) patient value is a precursor to patient satisfaction; and (6) patient satisfaction is an antecedent of loyalty.

The findings provide healthcare personnel and hospital managers with managerial insights, such as strengthening effective communication, building privacy-protected environments, constructing collaborative decision-making, recruiting highly skilled medical personnel, and providing access to medical insurance, in particular taking measures to improve patient value, in order to maximise patient satisfaction and loyalty.

Key words: Patient Value; Patient Satisfaction; Loyalty; Inpatient Settings; Structural Equation Modelling

JEL Classification: I10 General; Y40

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List of Acronyms

AVE – Average Variance Extracted

CFA – Confirmatory Factor Analysis

CFI – Comparative Fit Index

CR – Composite Reliability

EV – Economic Value

HOV – Health-Outcome Value

IV – Interacting Value

L – Loyalty

PS – Patient Satisfaction

PV – Patient Value

RMSEA – Root Mean Square Error of Approximation

SD – Standard Deviation

SDMV – Shared Decision-Making Value

SEM – Structural Equation Modelling

SMC – Squared Multiple Correlation

SPSS – Statistical Package for Social Sciences

SRMR – Standardized Root Mean Square Residual

TLI – Tucker-Lewis index

1. Introduction

The first chapter aims to present the challenges to be addressed within the scope of this dissertation, along with a description of the problem context. The main purpose of this dissertation, the general and specific objectives, research questions, research methodology, scope, as well as global structure of the dissertation are afterwards presented.

1.1. Contextualisation

Tertiary healthcare refers to the advanced and highly complex medical and related services and treatments provided in medical college hospitals, specialised centres, and regional or central hospitals (World Health Organization and Health Action International, 2008). Tertiary healthcare service plays a vital role in shaping the overall structure of the healthcare system and should be properly integrated within it, even though only 1% of patients need tertiary treatment (Zachariah, 2012). Following completion of their tertiary care treatment, patients should ideally be referred to primary and secondary care. Since tertiary healthcare services cover all medicines available in primary or secondary healthcare settings and there are no constraints on patients with mild ailments seeking treatment at tertiary healthcare facilities, however, illness severity, advanced equipment and better medicine availability have led to an increase in the number of patients from tertiary hospitals (Liu et al., 2018; World Health Organization, 2015; World Health Organization and Health Action International, 2008). As the demand for tertiary healthcare services rises, the quality of care at overburdened tertiary hospitals may decline (Hasan et al., 2020). Zachariah (2012) argued that tertiary healthcare services contribute to the high cost of healthcare in most of the global healthcare system.

Most developing countries rely heavily on out-of-pocket payments to finance healthcare. In Malaysia, an upper middle-income country was confronted with high levels of out-of-pocket payment making up 40.7% of total health expenditure, mostly spent on secondary and tertiary private service (Patel et al., 2015). Xu et al. (2003) proposed that catastrophic payments brought on by rapidly rising healthcare-service usage could be avoided in many middle-income counties by reducing out-of-pocket spending to less than 15% of overall health expenditures. They recommended looking into social insurance as a means of relieving this stress. This viewpoint is supported by World Health Organization (2015), which argued that for services to be cost-effective, efficient and quality, universal health coverage is essential. Since 1996, hospitals in France have been mandated to conduct customer satisfaction surveys (Boyer et al., 2006). Tertiary healthcare managers who take patient perception into account strive to develop care-quality enhancement strategies and transform patient satisfaction surveys into a quality improvement instrument for overall organisational performance (Marley et al., 2004).

The current context in the China's healthcare market shows that tertiary public hospitals are under a current pressure due to its increasing demand of their services (Zhao et al., 2021). In fact, according to Yip et al. (2019), the percentage of hospital admissions in China at tertiary hospitals in 2018 had reached nearly 50%, surpassing those at secondary (44%) and primary hospitals (6%). Yip et al. (2019) also stated that about 58% of health resources were allocated to Chinese tertiary hospitals in 2017 and that the annual volume of outpatient and inpatient visits at tertiary hospitals grew by 12.12% and 15.33%, compared to 3.43% and 7.83% at secondary hospitals between 2008 and 2017. And when considering the particular case of public hospitals, these take control of the majority of hospital beds and medical personnel in China's healthcare system, which accounted for 85.3% of all inpatient admissions nationally in 2015 (Wang et al., 2019). According to the data published by the National Health Commission of the People's Republic of China, there were 5.86 billion visits to medical and health institutions nationwide during the period of January to November in 2022 (the number of patients discharged from tertiary hospitals was the highest, reaching 104.973 million, while secondary hospitals discharged 61.451 million (National Health Commission of the People's Republic of China, 2023)).

Such an increasing demand has been mostly affecting inpatient care, and a key reason for it has been the rapid expansion in health insurance coverage in the country (Meng et al., 2012). China launched a major healthcare reform in 2009 with the purpose of providing all citizens access to affordable and reasonable-quality healthcare services, as well as protecting them from financial risk, and this considering the year 2020 as a target. Measures such as insurance expansion, zero profit for drug sales and adjusting payments were part of this initiative (Yip et al., 2019). As a result of this reform, China has established the world's largest social security system, with the basic medical insurance scheme providing coverage to a staggering 1.36 billion people in 2020 and maintaining such coverage after 2020 (The State Council of the People's Republic of China, 2021). Nevertheless, the developed insurance reimbursement policies have been mainly focused on inpatient care (Barber et al., 2014), thus justifying part of the increasing hospital admission rates (Meng et al., 2012).

Furthermore, combined with the increasing insurance coverage in the country, there is also an expected growing for the middle-aged and elderly population in China, often suffering from chronic and often disabling diseases, that also foster the increasing use of public inpatient tertiary healthcare services. This is expected to result in a continued rising demand for healthcare services that impose severe challenges on the future healthcare supply in China (Wen et al., 2020). Key challenges to be addressed include ensuring the highest possible levels of patient satisfaction and loyalty (Zhao et al., 2021).

On the one hand, tertiary hospitals need to identify the factors that foster patient loyalty in order to establish a long-term relationship with patients (Özer et al., 2017). Despite the fact that most tertiary public hospitals are government-owned, hospitals have to implement measures to enhance their service

quality to remain competitive on the market and retain patient loyalty (Anabila et al., 2019). Besides, public hospitals should respond to the challenge posed by private hospitals that are regarded as newer market entrants. (Eggleston et al., 2010). By establishing an evaluation system to monitor service quality, patient satisfaction, and patient loyalty that rewards productivity and punishes non-performance in order to combat the pervasive apathy that frequently characterises public healthcare hospitals, clients, particularly low-income patients, who are the primary clients of public hospitals, will benefit from the government's investment in healthcare services, thereby increasing the rate of healthcare service utilisation and prescription adherence, decreasing the incidence of self-medication, and resulting in long-term economic benefits for hospitals and the nation (Anabila et al., 2019). On the other hand, it is key to ensure that services are delivered while ensuring patient satisfaction (Yip et al., 2019). Literature shows that patient satisfaction is affected by several factors, such as waiting time (Lee et al., 2020), inpatient expenditures (Ke et al., 2018; Li et al., 2016), hospital environment, health insurance (Chen et al., 2016), catering service (Messina et al., 2013), responsiveness and delivery timeliness (Gupta et al., 2013), to name a few. Accordingly, considering the expected increasing demand and utilization of tertiary healthcare services in China in coming years, these should be key concerns to address. For instance, according to Hesketh et al. (2012), possible sources of unsatisfaction might be related to the limited coverage of health insurance (health insurance only covers a part of high expenditures, leaving the remainder still unaffordable for many), or event with the excessive costs of inpatient stays and inadequate prescriptions (some patients feel abused since doctors may profit from unnecessary tests and treatments, and the average inpatient stay costs more than three to four months' wages of a manual worker). The same authors also argue that physicians often carry heavy workloads in tertiary hospitals because patients prefer obtaining high-level treatment, even for mild ailments, and this might also deteriorate doctor-patient relationships, thus affecting patient satisfaction with the Chinese healthcare delivery (Wu et al., 2014). However, if the physician focuses on the process of communication with the patient, it might help mitigate patient dissatisfaction (Ong et al., 1995; Wu et al., 2014).

There are also additional reasons justifying the relevance of improving patient satisfaction and loyalty. Previous research has shown that patient satisfaction and loyalty brings benefits in terms of patient adherence, which implies that patients with high satisfaction and loyalty intended to stick to prescriptions, take medications, eat healthy food, and get treatment (Kessler and Mylod, 2011; Zhang et al., 2019). This will improve the healthcare condition of the population, thus reducing the pressure at the healthcare provision level.

But patient satisfaction and loyalty can also be affected by other dimensions. Miao et al. (2020) stated that patient value (which can be measured in different ways, such as through the economic value, health value, fair value and supplemental value), also influences patient satisfaction as well as loyalty in the Chinese healthcare context.

Within this setting, there is clearly the need to explore how to improve patient satisfaction, patient loyalty and patient value at the public tertiary healthcare services in China. Miao et al. (2020) defined the concept of patient value and also explored the connection between each patient value's dimension and patient satisfaction and loyalty in the outpatient sector of the Chinese healthcare sector. They argued, however, that other types of patients, such as inpatients, may have distinct value dimensions and primary concerns. In addition, they advocate that the methodology and findings may be generalised to other healthcare contexts in various geographic regions. Based on this recommendation, this research examines the population of admission patients from a tertiary hospital in a distinct geographic region and attempts to determine the relationship between different aspects of patient value.

1.2. General Objective

Considering the context presented above, the main objective of this dissertation is to evaluate the patient value, from the perception of patients, and to examine its association with patient satisfaction and loyalty in tertiary inpatient settings of the Shenzhen Hospital of Southern Medical University. This evaluation will then guide the proposal of recommendations of future improvements in the hospital.

1.3. Specific Objective

Considering the main purpose of this dissertation, the following partial objectives are defined:

O1. Evaluate patient value, according to patients' perception, in tertiary inpatient settings at the Shenzhen Hospital of Southern Medical University;

O2. Evaluate patient satisfaction, according to patients' perception, in tertiary inpatient settings at the Shenzhen Hospital of Southern Medical University;

O3. Evaluate patient loyalty, according to patients' perception, in tertiary inpatient settings at the Shenzhen Hospital of Southern Medical University;

O4. Analyse the strength of the association between patient value, patient satisfaction and loyalty in tertiary inpatient settings at the Shenzhen Hospital of Southern Medical University;

O5. Propose managerial recommendations for healthcare service delivery in tertiary inpatient settings at the Shenzhen Hospital of Southern Medical University focused on improving patient value, patient satisfaction and loyalty.

1.4. Research Questions

According to the objectives previously defined, the following research questions are formulated:

Q1. What is the patients' perception of patient value, patient satisfaction and loyalty after receiving inpatient tertiary healthcare services at the Shenzhen Hospital of Southern Medical University?

Q2. Is there any association between patient value, patient satisfaction and loyalty at the Shenzhen Hospital of Southern Medical University?

Q3. Which managerial recommendations for the delivery of inpatient tertiary healthcare services delivered at the Shenzhen Hospital of Southern Medical University can enhance the perceived patient value, patient satisfaction and loyalty?

1.5. Research Methodology

In accordance with the established objectives and research questions, the appropriate methodology should be determined for answering the research questions. Consequently, the data collection instrument, sampling frame, and data analysis methods will be defined.

According to the conceptual model presented in the Literature Review, this study will conduct a qualitative study – semi-structured interviews and a quantitative study – survey and a pilot test interview to confirm questionnaire. Furthermore, a confirmatory factor analysis will be conducted to examine construct reliability and validity with an algorithm model by Excel. Statistical description will be performed using the IBM Statistical Package for Social Sciences 25.0. A structural equation modelling will be used to test hypotheses by MPlus 8.0.

Data analysed by the selected instruments will yield findings about the correlation between patient value, patient satisfaction, and loyalty among patients receiving tertiary inpatient care at the Shenzhen Hospital of Southern Medical University. Consequently, this investigation will offer valuable insight into the Chinese healthcare inpatient service reality.

1.6. Scope

This dissertation evaluates the perception of patient value, patient satisfaction and loyalty by patients admitted in inpatient settings at the Shenzhen Hospital of Southern Medical University. The study will be restricted to adult patients who are also the payers and are aware of the payment process and details. If the patient is not able to respond to the questionnaire, his/her relatives can help, but all the answers should be given on behalf of the patient. The questionnaires will be applied face-to-face.

1.7. Structure of the thesis

In accordance with the previously outlined objectives, this study will be organised into five major chapters:

1. Introduction: this chapter will illustrate the explanation of the healthcare market context and the primary objective for conducting this study. The general and specific objectives, the research questions, the research methodology, and the scope of the study are disclosed.
2. Literature Review: this chapter elaborates on the theoretical background of existing literature that supports the topic of the current research and self-made questionnaire. It defines the concepts of patient value, patient satisfaction and patient loyalty. The section will then present the research hypotheses and the conceptual model to be tested.
3. Methodology: this chapter will identify the process of data analysis and the statistical instruments to be used.
4. Results: this one presents the results of collected data through the use of different statistical tools such as descriptive analysis, confirmatory factor analysis, and structural equation modelling.
5. Conclusion: this final chapter discloses the conclusion of the theoretical and managerial implications of this study and provides answers to the research questions. The study's limitations and recommendations for further research are then discussed.

2. Literature review

This chapter provides the theoretical foundation of the concepts that are adjacent to and supportive of the topic under research, as well as an overview of the existing empirical studies in the area, with the intention of answering the objectives and research questions of this dissertation.

Firstly, concepts as service and healthcare services will be discussed. Secondly, the dimensions of patient value, patient satisfaction and loyalty in the healthcare context will be defined. Lastly, the discussion of the relationship between patient value, patient satisfaction and loyalty will be conducted. Based on the conclusions taken from existing studies, this literature review ends by presenting the conceptual model proposed for analysis in this thesis.

2.1. Service

Service is a complex occurrence and used in multiple meanings ranging from personal service to a service as a commodity, characterised by the following four main traits: (1) intangibility, (2) activities rather than things, (3) perishability (generated and consumed concurrently), (4) consumer participation (Gronroos, 1988). Lau et al. (2011) proposed the definition of service as following: “A service is a process by which the provider fulfils a mission for a client so that value is created for each of the two stakeholders.” Quality control and marketing activities occur during the phase of its production and consumption (Gronroos, 1988). As a holistic management approach, service management prioritises customer perception of the quality of a company’s overall performance ahead of internal efficiency, economies of scale and cost reduction (Grönroos, 1994). Levitt (1972) argued that services businesses in which service outcomes and delivery procedures could be highly standardised, may approach to economies of scale via the use of a production-line. Storbacka (1993) argued that productivity and profitability concerns might be jeopardised if service management overemphasises the significance of customer satisfaction and attempts to increase customer perceived quality.

2.2. Healthcare service

A healthcare organization in terms of a hospital is a Professional Service Organization. It heavily relies on other front-line professionals, such as physicians, whose individual qualities and technical skill levels considerably influence the value of services. Patients are often willing to pay a premium for a close provider-patient relationship (Fitzsimmons and Sullivan, 1982). Healthcare service is intangible and cannot be physically touched, felt, viewed, counted or measured like manufactured goods (Woodside et al., 1989). The service is generated and used virtually instantly by each patient and cannot be kept for subsequent consumption (Mosadeghrad, 2013). The patient is an integral part or co-producer

of what is given - for example, while in a physical examination or drafting of a will (Bowen and Benjamin Schneider, 1988, p. 49). Healthcare service is comprised of two essential ingredients which are service outcomes and patient experience. When the patient has an experience that exceeds their anticipations, it is possible that they will rate the service they received higher than they would have otherwise (Johnston and Clark, 2008).

2.3. Patient value, satisfaction, and loyalty in healthcare service

Patient perceived value, emotions, and intention are a set of outcomes produced by patient experience. Having direct experience of the service process and the manner in which a patient is treated by the service provider through personal interaction with the organisation's customer-facing staff, technology and facilities, patient experience is formed and is possibly to be influenced by word-of-mouth from existing patients prior to the point of interaction within the healthcare setting (Johnston and Clark, 2008). Patient assessment supports service providers in being able to manage and influence results in the desirable direction, however, as healthcare services are frequently regarded subjectively, making evaluation difficult for patients (Gronroos, 1988). Hence, Gronroos (1988) argued that a healthcare setting is needed to develop a model for measuring how a patient perceives the service quality. Miao et al. (2020) studied a model that evaluates healthcare service performance based on patient value and provides managers with actionable insights to address operational and strategic issues.

Sitzia and Wood (1997) argued that the majority of patient satisfaction research evaluates the perceived value of a medical treatment at a single encounter, which is useful for assessing and improving the service performance of an individual healthcare provider. From the perspective of service operations management, healthcare providers must concentrate on key services delivery elements that attributes to augmenting patient-perceived value and encouraging them to purchase (Roth and Menor, 2003). Miao et al. (2020) provided evidence that the link between patient value, patient satisfaction, and loyalty functions as a strategic chain for healthcare providers to gauge the success of their service.

2.4. Patient value in the healthcare sector

The concept of value is receiving increasing attention in health care. Yet, a unanimous agreement on patient value's meaning is still lacking (Marzorati and Pravettoni, 2017). Value reflects individual needs, wishes, preferences and ethics, but varies between persons, cultures and historical periods (Fulford, 2011). Prior research stated that patient value (PV) primarily focuses on the improvement of health outcomes accompanied by the cost to obtain that improvement over the full cycle of care, often achieving those outcomes by lowering costs (Porter and Teisberg, 2006; Teisberg et al., 2020). PV is a result of the tradeoff between perceived benefits and costs of healthcare service (Miao et al., 2020;

Porter, 2010). Multiple specialties are normally involved in value creation (Pantaleon, 2019). Yong et al. (2010) argued that outcomes and costs are the practical results of the value in terms of the relationship between patients and their doctors, which get supported by an accessible information system and payment structures.

Marzorati and Pravettoni (2017) argued that patients' values do not always match those of physicians; for instance, economic disincentives were barriers for providers to improve health outcomes, whereas patients advocated cost reduction with an emphasis on outcomes (Yong et al., 2010). Patients might not always agree with the health professional's advice, but this issue could be resolved by informing patients about the treatment details and their advantages (Altamirano-Bustamante et al., 2013). Marzorati and Pravettoni (2017) proposed a similar idea that patient empowerment and PV could be seen as complementary, since PV would be completely embodied only when patients were fully empowered. When patients are capable of interacting with medical workers and making informed decisions, for instance, they may be able to recognise how those decisions benefit them.

Grönroos (1984), Parasuraman et al. (1985) and Parasuraman et al. (1988) attempted to evaluate the performance of the healthcare service process by using patients' perceptions of service quality. However, Porter (2010) argued that process measurement rather than outcomes assessment, which is in the basis of PV, would restrict development in any complex system to incremental improvement. Teisberg et al. (2020) argued that quality improvement efforts are not fully equivalent to patient value because they may place too much emphasis on process compliance instead of enhancing the health outcomes for patients, which is the primary objective of value-based healthcare. Anderson et al. (2014) argued that care with a high PV contributes to positive outcomes and safe healthcare delivery at a reasonable and affordable cost. Romley et al. (2019) agreed with it and concluded that high-value inpatient care typically fulfilled both the need for better inpatient service quality with positive outcomes and more cost savings. Miao et al. (2020) stated that PV which includes economic value, health value, fair value, and supplemental value, influenced patient satisfaction as well as loyalty in the Chinese healthcare context.

2.4.1. The dimensions of patient value in the healthcare context

Caruana and Fenech (2005) investigated the perceived value of dental patients, the clients of private dental clinics in Malta, and conceptualised PV as a unidimensional variable with direct and indirect effects on loyalty via satisfaction, whereas the development of multidimensional scales to measure PV and examine the relationship between PV, patient satisfaction and loyalty in healthcare service has come to identify as a dominate approach supported by substantial empirical evidence (Cengiz and Kirkbir, 2007; Chahal and Kumari, 2011; Miao et al., 2020; Moliner, 2006; Özer et al., 2017). Cengiz and Kirkbir (2007) surveyed private hospitals in Turkey and found that value of control (secure area to

safeguard consumer privacy, communicate and cooperate freely with employees) plays a significant role in the evaluation procedure. Chahal and Kumari (2011) offered tertiary hospital managers in North India with an understanding of the dimensions of PV, including self-gratification value (elimination of pain, alleviation of depression, amelioration of negative emotions, and personalised care), social interaction value (conducive interaction with doctors and nurses), transaction value (staff responsiveness and effective medical advice) and acquisition value (service at a reasonable price). Porter (2010) argued that PV is the health outcomes in relation to healthcare expenses. Miao et al. (2020) proposed a model with four-dimension scales of PV measurement and suggested testing it in inpatient settings at public tertiary hospitals in different regions of China. They argued that an acceptable healthcare service cost is part of the economic value, that skilled medical personnel and curative treatment belong to the health value, and that hygienic conditions and attentive staff are part of the added value. There is evidence that patients are able to perceive value in a shared decision-making process as it fully respects patients' rights to be involved in decision-making, thereby influencing their health-outcome values and increasing patient satisfaction with service as well as their motivation to adhere to regimens of treatment (Hughes et al., 2018; Ortendahl, 2008).

Interacting value dimension

Interacting value (IV) refers to the interaction between patients and the physical environment and between patients and healthcare professionals. The physical environment relates to the comfort of inpatient wards and the physical facilities equipped (Mahdavi et al., 2018; Miao et al., 2020; Qian et al., 2021) such as the cleanliness, quietness and noise-free during night hours (Kaur et al., 2020), and the privacy of communication in inpatient wards (Aga et al., 2021). When interacting with patients, healthcare professionals usually employ effective communication strategies, such as responsiveness, timeliness, empathy, emotional caring and communication skills (Mahdavi et al., 2018; Qian et al., 2021), and duration of consultation at clinical visit (Raja Lexshimi et al., 2009). These strategies influenced patients' perception of their hospitalisation experience (Mahdavi et al., 2018).

Miao et al. (2020) stated that the interaction between patients and the physical environment may have a substantial impact on patients' overall experiences, even though they might not directly influence health outcomes or costs. However, Aga et al. (2021) disagreed and argued that the lack of private facilities was prone to misdiagnosis and inefficient therapies since patients might be reluctant to tell the whole truth when mentioning sensitive issues. Several prior studies found a linear connection between personal privacy protection and patient trust and satisfaction (Aga et al., 2021; Li et al., 2021; Zhang et al., 2020).

According to the findings of Park et al. (2014), physicians held with a friendly and caring attitude and demeanour during a conversation with their patients was a critical component in determining the

patient's experience and satisfaction with the healthcare service supply. Warren et al. (2017) indicated that healthcare practitioners communicating in a clear and open way may help alleviate patients' emotional difficulties such as depression and anxiety and result in long-term advantages for patients. Given the importance of communication skills, numerous retrospective studies supported the view that high-quality medical service interaction between patients and medical personnel should be just as important as the quality of medical treatment techniques. The former was typically less visible and easily ignored such as a well-established patient-staff relationship and optimistic communication and interaction between patient and medical staff, whereas the latter was relatively visible and costly which was frequently prioritised solely in the development of Chinese hospitals (Miao et al., 2020; Qian et al., 2021; Sang et al., 2020; Shan et al., 2016). Sang et al. (2020)'s surveys revealed that over 95% of people thought that since the healthcare sector was a service industry, the service attitude of medical employees should take precedence over professional skills.

It is very common that patients felt anxious on the day before surgery (Ke et al., 2018). Physicians and nurses are accountable to adopt verbal or nonverbal communication to alleviate their psychological stress (McAlinden, 2014). Ke et al. (2018) found that the frequency of ward rounds was better to be conducted at least two times daily instead of once according to Chinese third-level general hospital accreditation standards, which might be not enough. Also, ward rounds provide doctors and patients with important opportunities for communication since doctors would amend previous orders and give updated and more effective treatment according to the patient's evolving health status, and the patients want to hear news of their progress during ward rounds. Many patients are concerned about the prompt responsiveness of their needs if hospital staff can answer the call button as soon as they want (Sofaer et al., 2005; Zhang et al., 2020). Patients would be in a good mood if they were treated friendly (Park et al., 2014), and if physicians were aware of their particular needs and feelings (Celik, 2017). Shan et al. (2016) claimed that patients were pleased with staying in a ward with a good environment. Within this domain, Kaur et al. (2020) reported that cleanliness of rooms and quietness at night are two characteristics that should be satisfied, and also, food services were very important for inpatients (Rani and Phougat, 2021). Patients and healthcare professionals found it simpler to communicate in privacy-assured wards, mainly when discussing sensitive issues (Aga et al., 2021).

Shared decision-making value dimension

Shared decision-making value (SDMV) is related to the value gained from a collaborative partnership between patients and physicians to reach a consensus on an optimal medical decision by trade-off the available medical evidence against the patient's preferences and values using a variety of methods such as mutual information sharing and supporting patient autonomy and self-efficacy (Huang et al., 2015). For most medical decisions, many viable pathways ahead exist, and each option has a unique mix of

beneficial consequences and side effects. Therefore, when a patient reaches a crossroads of medical options and momentous healthcare decisions must be made, for instance, choices on major surgery and life-long drugs, the shared decision-making process occurs, which involves at least two parties, a clinician and the patient, or invites friends, family members, and other members to participate (Barry and Edgman-Levitan, 2012). Luo et al. (2021) explained that helping patients engage in and fully comprehend the pros and drawbacks of each treatment alternative was the basis of patient involvement in treatment decisions; thus, the aim of shared decision-making was to maximize patient autonomy. However, Kountz (2009) argued that patients who had difficulties understanding or had limited knowledge of their illnesses and self-management skills in daily life are more prone to make therapeutic errors. This issue might be resolved by implementing interventions in physician-patient communication techniques such as speaking in simple language, using images to clarify concepts, and checking patient comprehension through the “teach-back” approach.

Kinnersley et al. (2013) illustrated that the information offered by healthcare professionals is sometimes vague or inadequate and easily gets confused about the therapy, alternatives, risks and benefits. Patients may feel hard to determine if the therapy recommended by their doctors is the best option or the most beneficial for them without engaging in discussing treatment alternatives and processes in detail (Luo et al., 2021). Apart from signing informed consent for surgery, using printed pamphlets and showing videos and information on websites are useful interventions that could enhance SDMV (Kinnersley et al., 2013).

Economic value dimension

Economic value refers to an acceptable amount of total inpatient expenditure for patients incurred in the entire cycle of inpatient stay, mainly including medicine fee, physical examination spending, treatment fee, nursing-care spending and accommodation fee, divided into patient out-of-pocket payment and government reimbursement spending (Zhang et al., 2017). The out-of-pocket expenses could include registration costs, co-pays, prescription fees, and premium service spending, to name a few (Miao et al., 2020). Shan et al. (2016) indicated that the degree of patient satisfaction with hospitalisation care was influenced by the amount of out-of-pocket and insurance reimbursement expenditures, which implied that patients who spent high out-of-pocket costs were more likely to be dissatisfied with hospital inpatient care. Therefore, they advocated for more government investment to enhance the benefits of medical insurance schemes in order to reduce out-of-pocket costs in future health reform. Similarly, Li et al. (2016) stated that heavy medical expenditure was one of the primary causes of outpatient and inpatient dissatisfaction in tertiary level hospitals. Li et al. (2020) argued that with the hospital level increased, medical expenditures declined. Additionally, they revealed that the reimbursement ratio varies by each patient with different situations such as ages, disease types and

medical insurance schemes. Despite health insurance coverage rates continuing to rise, patients were still under significant budgetary strain because medical insurance schemes could not cover all hospitalisation expenses (Chen et al., 2017). Furthermore, Yang et al. (2017) discovered that the trend of hospitalisation expense and hospitalisation spending after reimbursement still continued to rise. The post-purchase perceived value should be interpreted as the patients' recall of the price paid, not at the moment of purchase choice (Cengiz and Kirkbir, 2007).

Health-outcome value dimension

Health-outcome value (HOV) refers to the overall health-related outcomes or benefits gained from medical treatment perceived by patients (Miao et al., 2020). In value-based practice, the outcomes are the most important and regarded as the only measure that matter to patients (Pantaleon, 2019). Health-outcome measurements are often utilized as a way to evaluate the quality of health care and the effects of care or treatment on the health state of patients who receive them (Donabedian, 1988; Zoëga et al., 2014). The fundamental value of health care for patients, according to Porter (2010), is to obtain favourable health outcomes or positive results of care on their health. Outcomes as the result of care in relation to the patient's health over time are needed to be assessed from the patient's viewpoint (Porter, 2010). Improving patients' health outcomes should be the ultimate objective of hospital care (Pantaleon, 2019).

The full range of health outcomes that matter to patients with any specific medical condition can be classified into 3 tiers (Pantaleon, 2019; Porter, 2010; Porter and Lee, 2013). Tier 1, namely patient health status achieved, encompasses two levels: survival and the degree of health or recovery. For instance, for a patient with oesophagus cancer after surgical therapy, his disease was cured and basic functions such as the ability to eat and speak got recovered. Tier 2 considers the time spent on completing all stages of care and treatment and the disutility of the care process, such as failed treatment and errors, which often impact the timeline of care. Therefore, concentrating on error reduction has been a goal of outcome enhancement. Some scholars stated that elements such as medical personnel's expertise and the precision of diagnosis and treatment procedures that fell within the functional value dimension affected customer perceived value (Cengiz and Kirkbir, 2007; Qian et al., 2011; Sweeney and Soutar, 2001). Joint Commission on Accreditation of Healthcare Organizations (2003) and Zoëga et al. (2014) suggested that pain management in conjunction with pain severity measurement should be one approach for assessing patients' status and health outcomes. Lin et al. (2021) argued that the provision of appropriate pain management for inpatients had been a critical step that could not be ignored because the pain was a prevalent issue in hospitalised treatment experiences. Zoëga et al. (2014) agreed that the degree of outcomes or the effect of care reflects the performance of pain management. Yet, Sipsma et al. (2013) argued that there was no statistically significant relationship between pain

management and the overall rating of patients' experience with inpatient services. As shown by Qian et al. (2011)'s research, the professional skill levels of physicians and the accuracy of diagnosis served as critical and strong indicators and played an important role in the core patient value of the medical service. Due to the complexity of the healthcare nature, multiple departments affect outcomes for each patient (Zonneveld et al., 2020). The lack of control over "external" participants in treatment, according to Porter (2010), might be the reason why physicians are unwilling to accept shared responsibility for outcomes. However, outcome measurement should concentrate on the full cycle of care, which entails analysing outcomes in conjunction with other providers on occasion (Porter and Teisberg, 2006).

2.4.2. Association between patient value's dimensions

The physical environment may have a range of direct and indirect effects (Andrade et al., 2012). On the one hand, as for the direct physiological effects, for example, given that certain viruses can survive weeks to months on unclean surfaces, such pathogens would spread and cause infections either directly or indirectly. Maintaining a clean environment is essential for patients' wound healing and avoiding healthcare-acquired infection, particularly in COVID-19 pandemic situations, which may jeopardise patient safety and extend the length of stay (Yang et al., 2021). In addition, the absence of patient privacy protection in a ward, which makes communication between patients and healthcare professionals more difficult, particularly when discussing sensitive or private issues, results in misdiagnosis and inefficient treatments (Aga et al., 2021). On the other hand, the environment may behave psychologically in response to sensory impressions (Andrade et al., 2012). Patients who were hospitalised in appealing, well-decorated, and hotel-like rooms were more likely to have a favourable opinion of the hospitalisation service, their attending physician, and nurses (Swan et al., 2003). Apart from the physical environment, attention should be paid to the food service, since patients' nutritional status is heavily dependent on the food intake during hospitalisation (Rasmussen et al., 2010). Patients might suffer from malnutrition or worsen further from their initial undernourished state if the quality of hospital food is not ensured (Chen et al., 2016). Patient-provider communication was linked to health outcomes by influencing patient behaviour (e.g., medication adherence, diet, exercise) (White et al., 2016). Patient mistrust was compounded by the poor service attitudes of health staff and jeopardised treatment outcomes (Shan et al., 2016). Thus, the first hypothesis is:

H1: Interacting value has a positive influence on health-outcome value.

Alexander et al. (2012) showed that physicians with high communication skills were more likely to activate their patients to engage in joint decision-making with them. Patients who are activated typically believe their role in health care is critical, possess the knowledge and confidence necessary to perform this role, and are capable of taking action to maintain and enhance their health (Hibbard et al., 2004).

In the case of patients who reported high activation ratings, their physicians were often well-versed in interpersonal communication skills and were adept at building positive relationships with patients (Alexander et al., 2012). Thereby, physicians who are proficient in communication may maximise patient activation and thus facilitate collaborative decision-making. Research also stated that a negative professional attitude would be a major barrier to patient engagement in shared decision-making (Luo et al., 2021; Sihota and Lennard, 2004). Covinsky et al. (2000) questioned the importance of communication in decision-making, arguing that surrogates, like doctors, often misreport patients' preferences owing to the rarity of patient-surrogate discussing care preferences. However, many patients responded that it is acceptable for the surrogate to make choices inconsistent with their declared preferences. Huang et al. (2015) argued that shared decision-making plays a significant role in a Chinese healthcare context, with 93% of respondents wanting to engage in clinical decision-making and 89%-95% of them expressing a desire for physicians to solicit their input when making healthcare choices. Thus, the second hypothesis is:

H2: Interacting value has a positive influence on shared decision-making value.

It has also been shown that there was a positive result between physician-patient participation in decision-making and health outcomes (Dahl et al., 2018; Greene and Hibbard, 2012). Gallan et al. (2013) claimed that encouraging patients to participate in the shared decision-making process and cultivating patients' participatory behaviours forming would be helpful to increase their perceptions of medical workers' expertise and skill and directly affect the results of treatment and medical treatment quality. Share decision-making empowers patients to become more active in decision-making participation (Hoffmann et al., 2022). Highly activated patients in health care than those with lower levels are more likely to avoid health-damaging behaviour (e.g., smoking), adhere to treatment (e.g., taking diabetes medication) and engage in healthy behaviour (e.g., eating a healthy diet and getting regular exercise) (Greene and Hibbard, 2012; Hibbard et al., 2007; Hibbard and Greene, 2013). Starfield et al. (1981) concluded that patient-practitioner agreement on problem solutions would result in greater expectations for improvement and perceived better health outcomes by patients. However, Fulford (2011) pointed out that respecting autonomy in shared decision-making in some cases shall be compromised when it is in conflict with seeking the best interest of patients. Thus, the third hypothesis is:

H3: Shared decision-making value has a positive influence on health-outcome value.

Shared decision-making is a process that involves both patients and physicians in determining and agreeing on a preferred medical option; as a result, patients may benefit in a number of ways, including better health outcomes, cost savings from unwarranted and unplanned variation in expenses, less anxiety over the treatment process, and enhanced care experience (Lee and Emanuel, 2013; Wu et al., 2019). Decision aids are often used as part of shared decision-making processes, which enable patients to comprehend the probability of benefits and risks of each treatment option and balance sources of

information which matter most to them (Weinstein et al., 2007). Arterburn et al. (2012) observed in their findings that incorporating decision aids into shared decision-making, which is frequently required when treatment decisions are highly sensitive to both patients' and physicians' preferences, was related to a 12%-21% reduction in costs for hip and knee osteoarthritis over a six-month period. Through information sharing from doctors, patients were able to realise the cost-effective alternative and tended to report higher satisfaction scores once they had an effective postoperative result aligned with the information they attained before surgery (Yoong et al., 2016). Thus, the fourth hypothesis is:

H4: Shared decision-making value has a positive influence on economic value.

Poor health outcomes were linked to longer, more costly hospital stays, and increased medical treatment (Edmonds et al., 2021; Lam and Fresco, 2015). Harris et al. (2005) argued that patients were willing to spend twice as much to be treated at home as in a hospital, though there were no significant differences in health outcomes. Sierocka et al. (2021) stressed the importance of preventing nosocomial infection of *C. difficile* in hospitalised patients. When these infections developed, hospitalisation was complicated hospitalisation by increased costs and an average of 3.6-day length of stay. These sequences of nosocomial infection were unforeseeable, resulting in a decline in a patient's health outcomes and economic value. Minimally invasive cardiac valve surgery served as an example of how innovation may improve health outcomes, reduce costs, and boost patient satisfaction (Cohn et al., 1997). Thus, the fifth hypothesis is:

H5: Health-outcome value has a positive influence on economic value.

2.5. Patient satisfaction in the healthcare sector

Patient satisfaction is a result of the trade-off between patients' perceptions of their healthcare experience and their expectations for hospitalisation (Sun et al., 2001; Woldeyohanes et al., 2015). Prior studies revealed that patient satisfaction is affected by waiting time (Lee et al., 2020), inpatient expenditures (Ke et al., 2018; Li et al., 2016), hospital environment, health insurance (Chen et al., 2016), catering service (Messina et al., 2013), responsiveness, and delivery timeliness (Gupta et al., 2013) to name a few. Patients and their relatives were able to complete ratings on patient satisfaction surveys which had been used as a tool to measure the overall quality of medical services provided, after comparing their feelings with their prior expectations (Fang et al., 2019; Tsai et al., 2015). Nonetheless, Bleich et al. (2009) argued that patient experience accounted for only about 10% of the variation in the degree of patient satisfaction and that the majority of factors such as age, education background, health status, and personality were unrelated to patient experience of health care services. Altamirano-Bustamante et al. (2013) argued that the missing courtesy, warmth, understanding, care and communication in patients' experiences are more likely to lead to patient complaints. However,

Teisberg et al. (2020) argued that the concepts of value and patient satisfaction sometimes get confused but indeed are distinct - value is asking patients “How are you?”, whereas satisfaction surveys ask patients “How were we?”. Patient satisfaction with care processes that are designed to achieve the results in terms of health is a process measure while patient satisfaction with health is an outcome measure, depending on the objects being assessed (Porter, 2010). Expectations appear repeatedly as the most important of these, though the demographic variables of age, educational attainment, and to a lesser extent gender and ethnicity have all been shown to influence measured satisfaction ratings (Sitzia and Wood, 1997).

Association between patient value and patient satisfaction

Leddy and Wolosin (2005) analysed over 3 million survey data from 240 hospitals across the US and concluded that healthcare workers were needed to closely monitor the patient’s pain levels and assist patients in managing pain since pain management influenced patient satisfaction with hospitalisation. Evidence had been gathered that patient-perceived value in health outcomes served as antecedents to patient satisfaction and there were substantial linkages between them (Choi et al., 2004). Miao et al. (2020) argued that a strong and positive association exists between health value and patient satisfaction. Thus, the sixth hypothesis is proposed:

H6: Health-outcome value has a positive influence on patient satisfaction.

Makarem et al. (2016) stated that one of the main reasons for patient dissatisfaction was unacceptable hospital charges. Miao et al. (2020) supported that there was a positive association between economic value and patient satisfaction. Nguyen et al. (2020) found that patients with health insurance had limited concerns about treatment costs so they perceived a strong satisfaction with their experiences in hospitalisation than those paying higher amounts of fees without it. Past studies suggested that if treatment costs took a low proportion, <10%, of patient income, patients were more satisfied than those who cost a high proportion (Fujiwara et al., 2022; Hong-Bin et al., 2020). Thus, the proposed seventh hypothesis is:

H7: Economic value has a positive influence on patient satisfaction.

2.6. Loyalty in the healthcare sector

By comparing healthcare facilities or services, patients may stay loyal to the finest healthcare provider who got through remaining a competitive edge and retaining their consumers by inventing and innovating value generation and superior service delivery to their clients (Chen, 2015). Empirical studies claimed that customers show their loyalty falling into three main categories: the behavioural

approach, the attitudinal approach and the integrational approach (Chang et al., 2009; Oh, 1998). The behavioural approach analyses the customer's continuity of purchasing behaviour in terms of rate, frequency, and possibility of purchase. In the attitude approach, customers become loyal to a product or service because of psychological engagement, favouritism, and a feeling of goodwill, resulting in producing positive word of mouth. The integrated approach takes both behavioural and attitudinal variables into account. Oliver (1997, 1999) argued that satisfaction and loyalty were two distinct concepts. Satisfaction is a transitory post-use state that indicates how well a product or service has performed its purpose following delivery to the customer. Loyalty, on the other hand, is an acquired attitude of steadfast choice. Previous research argued that patient satisfaction and loyalty benefited patient adherence, which implied that patients with high satisfaction and loyalty intended to stick to prescriptions, take medications, eat healthy food, and get treatment (Kessler and Mylod, 2011; Zhang et al., 2019).

Association between patient satisfaction and loyalty

Many studies have shown that patients' perceived value is closely related to and serves as an antecedent of patient satisfaction, which is subsequently linked to patient loyalty as the final consequence (Gallarza and Gil Saura, 2006; Gounaris et al., 2007; Patterson and Spreng, 1997). Özer et al. (2017) supported this idea and stated that patient loyalty was directly and indirectly affected by perceived value through customer satisfaction. Nguyen et al. (2021) disagreed and argued that customer perceived value did not significantly influence customer satisfaction through the quantitative results. Sun et al. (2001) found that patient satisfaction was a strong predictor of their willingness to return to the hospital. However, Kessler and Mylod (2011) argued that there was less relationship between satisfaction and loyalty in high-satisfaction hospitals. Empirical research found that patients who do not participate in negative word-of-mouth cannot be certain that they were unsatisfied with their encounter; rather, they probably only engaged in negative word-of-mouth when they are dissatisfied (Anderson, 1998; Bowman and Narayandas, 2001; Godes and Mayzlin, 2004). Nguyen et al. (2021) supported this view that patient-perceived value and patient satisfaction strongly increased loyalty, as evidenced by a high intention to revisit and a propensity to engage in positive word-of-mouth. Thus, the eighth hypothesis is:

H8: Patient satisfaction has a positive influence on loyalty.

2.7. Conclusions

Figure 1 summarizes the conceptual model arising based on the previous studies. The proposed conceptual model exhibits the relationship between patient value (interacting value, shared decision-making value, economic value and health-outcome value), patient satisfaction and loyalty, a basis for this research.

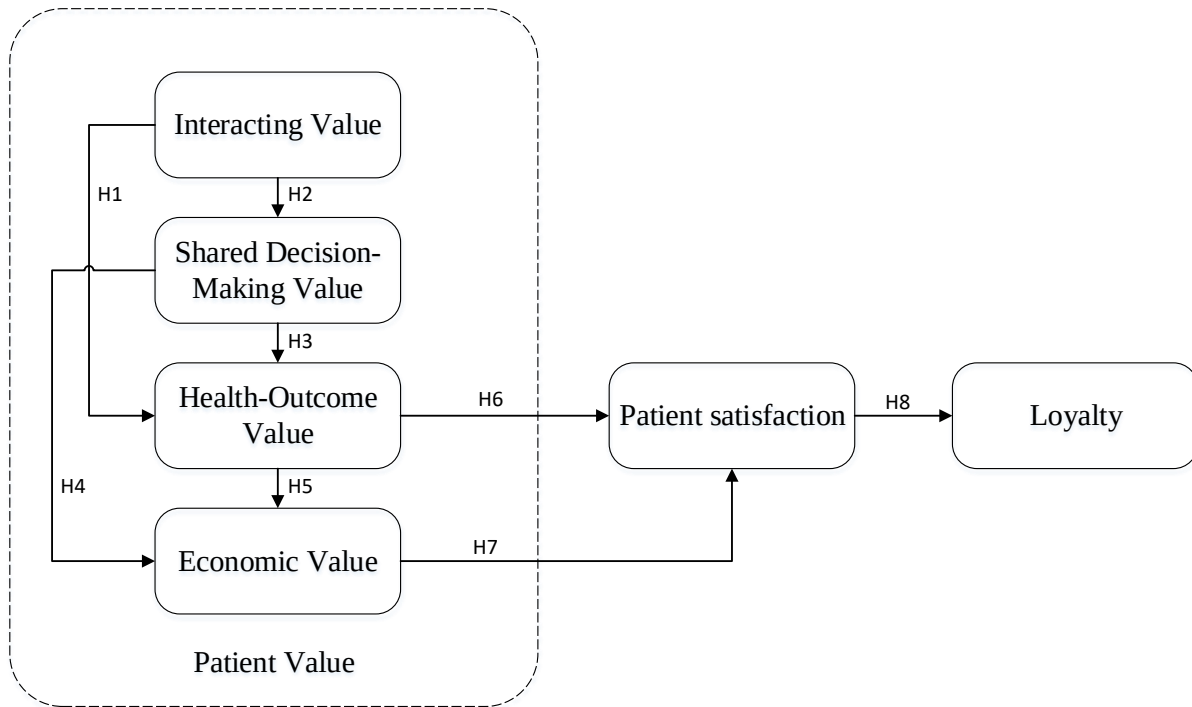


Figure 1 Conceptual model

Earlier literature reviews the concept of PV and its relationship with customer satisfaction and loyalty perceived by outpatients in Chinese hospitals (Miao et al., 2020; Porter and Teisberg, 2006; Teisberg et al., 2020; Yong et al., 2010). However, no agreement exists regarding the definition of and the dimensions of PV. For the sake of this research, the authors refer to PV as a trade-off result of patient perceived benefits and costs (Miao et al., 2020; Porter, 2010). Based on the available literature, there are no studies so far that jointly analyse the concepts, dimensions, and relationships of PV, PS, and L from the perspective of admission patients in a Chinese tertiary hospital. Using the study by Miao et al. (2020) as its foundation, this research investigated the prior literature and verified four dimensions of PV that may be the primary concerns of tertiary hospital inpatients. Health-outcome value, economic value (Miao et al., 2020; Porter, 2010), interacting value (interaction with physicians, nurses, and environment) and shared decision-making value (respecting individual beliefs), were extracted from the existing literature (Cengiz and Kirkbir, 2007; Chahal and Kumari, 2011; Hughes et al., 2018; Miao et al., 2020; Ortendahl, 2008). Although a lot of research have demonstrated that PV is the antecedent of PS (Choi et al., 2004; Makarem et al., 2016; Miao et al., 2020; Nguyen et al., 2020) and PS is the

antecedent of L (Gallarza and Gil Saura, 2006; Gounaris et al., 2007; Özer et al., 2017; Patterson and Spreng, 1997; Sun et al., 2001), these relationships may not necessarily hold true in the Chinese reality under the construction of the new conceptual model. To sum up, this study was evidence-based, presenting the dimensions of PV (SDMV, IV, HOV, and EV) and the relationship between PV, PS, and L, as well as attempting to build an entire novel conceptual model to fill the gap in research on the perception of inpatients admitted to a Chinese tertiary hospital towards PV, PS and L.

3. Methodology

This chapter presents the questionnaire proposed for the data gathering stage, as well as defines the representative population and presents data collection and data analysis instruments.

3.1. Data collection instruments

The tools used to collect data and to measure PV, PS and L include both qualitative and quantitative data collection instruments. Firstly, a qualitative data collection takes place, recurring to semi-structured interviews. Then, a survey is developed and applied.

3.1.1. Qualitative study – semi-structured interviews

For the qualitative data collection phase, semi-structured interviews with healthcare professionals and patients from the Shenzhen Hospital of Southern Medical University were performed. These interviews aim at developing better suited research tools to be used in the quantitative stage of this research. Particularly, these interviews were prepared using as a starting point previous surveys used in the literature to measure PV, PS and L in the Chinese context, thus allowing to further validate the indicators extracted from these studies (Chen et al., 2017; Ende et al., 1989; Kaur et al., 2020; Kinnersley et al., 2013; Miao et al., 2020; Qian et al., 2011; Zhang et al., 2020). The participant profiles are summarised in Table 1: three medical professionals, one administrative staff member, and two patients from Shenzhen Hospital of Southern Medical University. The protocol followed in these interviews can be found in Appendix 1 and one single protocol for all.

Table 1 – Profiles of interviewees

Interviewee	Title/Position	Department
A	Nurse	Maxillofacial Surgery
B	Nurse-in-charge	Cardiovascular Medicine
C	Attending doctor	Hematology
D	Accounting manager	Accounting
E	Patient	General Surgery
F	Patient	Orthopedics

3.1.2. Quantitative study – survey and pilot test

Survey

The survey used to measure PV, PS and L is developed by adjusting instruments already proposed and validated in previous studies using insights from the interviews performed in the qualitative stage of this research. According to the literature review presented in Chapter 2:

- i. PV should be measured along 4 main dimensions and 24 items – health-outcome value, economic value, interacting value and shared decision-making value (Cengiz and Kirkbir, 2007; Porter, 2010; Chahal and Kumari, 2011; Hughes et al., 2018; Miao et al., 2020; Ortendahl, 2008);
- ii. PS and L should be measured based on 2 items each, as recently proposed by (Miao et al., 2020).

These 28 items are measured using a seven-point Likert scale, ranging from 1 = completely disagree to 7 = completely agree to represent patient opinion towards those constructs being measured.

In addition to the 28 items, additional variables were included to collect personal information from patients (independent variables) such as age, gender, marital status, education level, monthly income level, visit frequency, medical insurance situation and the length of stay.

Based on the result of the interviews, several adjustments were made in the original items. The sensitivity of monthly income level justified that the query about income is adjusted to be an optional question instead of a mandatory. The length of stay is also adjusted to include more options, with a large range of practices.

Pre-test

Three physicians, two nurses and five patients were afterwards randomly selected in the same hospital for further testing and verification of the developed survey to detect possible flaws and to consider recommended improvements to the final version. To guarantee the dimensions and questionnaire setting is appropriate for the population under research, four respondents were between the ages of 18 and 44, two respondents were between the ages of 45 and 59, and four respondents were above the age of 59.

Such a pre-test was done face-to-face, and participants were required to respond to all questions, as well as to elicit their opinions on the following: (i) if the questions of all dimensions reflect the interests of inpatients towards healthcare services; (ii) if they can properly comprehend the meaning of the question; and (iii) if they have any suggestions for improving the questionnaire. Based on the comments received, most participants expressed agreement with the questionnaire, and therefore, the final survey was constructed in line with Table 2 (and in Appendix 2)

Table 2 – Items of PV, PS and L

Dimensions	Items	Sources
HOV (4 items)	HOV1: The surgery you received was effective.	Qian et al. (2021)
	HOV2: Your pain was well-controlled during hospitalisation.	Lin et al. (2021), Sipsma et al. (2013), and Zoëga et al. (2014)
	HOV3: Nurses were skilful in taking care of you during hospitalisation.	Qian et al. (2011)
	HOV4: Physicians were skilful in your treatment during hospitalisation.	
SDMV (5 items)	SDMV1: Physicians provided you with detailed information about the disease(s) that you had.	Ende et al. (1989), Kinnersley et al. (2013), Lerman et al. (1990), Luo et al. (2021), Scholl et al. (2012), and Wu et al. (2019)
	SDMV2: Physicians explained to you the diagnostic and therapeutic decisions that you needed to make.	
	SDMV3: Physicians informed you of different treatment alternatives.	
	SDMV4: Physicians asked you which treatment alternative you preferred.	
	SDMV5: Physicians and you reached a consensus on the subsequent treatment process.	
IV (10 items)	IV1: Nurses helped to ease your anxieties and put your mind at rest in time.	Ke et al. (2018) and McAlinden (2014)
	IV2: Physicians conducted ward rounds for you at a sufficient frequency.	Ke et al. (2018)
	IV3: Physicians communicated with you well during ward rounds.	
	IV4: Nurses responded to your call promptly.	Zhang et al. (2020)
	IV5: Physicians responded to your need promptly.	Sofaer et al. (2005)
	IV6: The attitude of the medical workers who treated you was good.	Celik (2017) and Park et al. (2014)
	IV7: Your ward was clean and comfortable.	Kaur et al. (2020) and Shan et al. (2016)
	IV8: Your ward was quiet and noise-free during night hours.	Kaur et al. (2020)
	IV9: Your privacy was safely protected inside your ward.	Aga et al. (2021)
	IV10: You received good food catering services during hospitalisation.	Rani and Phougat (2021)

EV (5 items)	EV1: Your examination expenditure was acceptable.	Chen et al. (2017), Department of Finance of Guangdong Province (2018), Li et al. (2020), and Zhang et al. (2017)
	EV2: Your drug expenditure was acceptable.	
	EV3: Your treatment expenditure was acceptable.	
	EV4: Your total inpatient expenditure was acceptable.	
	EV5: You had a preliminary knowledge of the overall expense before your hospitalisation.	Limbacher (2016)
PS (2 items)	PS1: You were satisfied with the overall experience of inpatient treatment.	Miao et al. (2020)
	PS2: The overall experience of your inpatient treatment was better than you expected.	
L (2 items)	L1: You are likely to choose this hospital for future healthcare services.	Anderson (1998), Bowman and Narayandas (2001), Godes and Mayzlin (2004), Miao et al. (2020), and Nguyen et al. (2021)
	L2: You would like to recommend this hospital to others.	

(Source: Prepared by the author)

3.2. Population and Sample

The population of this research consisted of patients receiving inpatient healthcare services in hospital settings in China throughout the year 2018 (National Health Commission of the People's Republic of China, 2021). According to China Health Statistical Yearbook in 2020, the percentages of the representative group age were divided into 6 groups, 15 to 24 years old (5.85%), 25 to 34 years old (14.85%), 35 to 44 years old (10.11%), 45 to 54 years old (11.53%), 55 to 64 years old (21.01%), and 65 years old and more (36.65%). The proportion of males was 45.45% and one of the females was 54.55%. The division of the sample age and the percentage of age and gender will conform to the representative group. On this basis, it is possible to check sample representativeness for the purpose of ensuring that the sample is appropriate for the research. To clarify, the hospital being investigated will be representative of third-level hospitals in China, rather than being limited to any one domain.

The fieldwork took place at tertiary public hospital in Shenzhen city of Guangdong province in China: Shenzhen Hospital of Southern Medical University in April and May 2022. Shenzhen Hospital of Southern Medical University has around 1000 beds, 1650 daily outpatient visits and 600 daily inpatient visits. As it would not be possible to study the total population of patients, only a sample will be considered. The sample should be composed of patients over 18 years old¹ and receiving surgery and

¹ Once patients select their age within the group of below or equal aged 17, they were excluded from our sample and stop filling the questionnaire.

healthcare services in inpatient settings in Shenzhen Hospital of Southern Medical University. The questionnaire should be filled out by the patient who is also the payer and is aware of the payment process and details. If the patient is not able to respond to the questionnaire, his/her relatives can help, but all the answers should be given on behalf of the patient. The patient should be able to read Chinese.

A total of 742 questionnaires were collected. This study included any patient at the age of 18 or more who completed the hospitalisation experience survey. One patient at the age of 17 or less had his results disregarded. One questionnaire that was not filled out completely by the patient was excluded. The analysis of this study utilised the responses from 740 questionnaires, with no missing data. The 50 percentiles of the patients' ages fell between the ages of 45 and 54. The biggest age group was made up of 229 patients who were 65 years old and more. Female respondents accounted for 378 people (51.1%), while male respondents accounted for 362 people (48.9%) (Table 3).

Table 3 - Frequency distribution of age and gender

Variable	Frequency	Percentage (%)
Age		
18– 24 years old	29	3.9
25 – 34 years old	112	15.1
35 – 44 years old	108	14.6
45 – 54 years old	133	18.0
55 – 64 years old	129	17.5
65 years old and more	229	31.0
Gender		
Male	362	48.9
Female	378	51.1

3.3. Data Analysis

Data treatment and analysis are performed using a variety of statistical methods, namely:

(1) Construct reliability and validity were examined using an algorithm model with the Excel tool. To verify the validity of the measurement scales, a confirmatory factor analysis (CFA) was conducted, which ought to be employed as a prerequisite for developing structural equation modelling (SEM) (Correia et al., 2022; Moore, 2012). The estimates of convergent and discriminant validity that come out of CFA approaches to construct validation are adjusted for measurement error. This is one of the main strengths of these methods (Moore, 2012). Certain items that have low factor loadings would be removed from the analysis. Model identification requires a minimum of three indicators for a CFA model with a one-factor solution (Wang and Wang, 2019). Thus, four aspects of patient value were conducted CFA separately. Cronbach's alpha, composite reliability (CR), and average variance

extracted (AVE) will be calculated for each of the aspects based on their respective estimated measurement models (Correia et al., 2022).

(2) Descriptive statistics are used to describe the basic features of the data in the study. Data were analysed with SPSS 25.0.

(3) For testing hypotheses, a structural equation modelling (SEM) is estimated using MPlus 8.0. The structural model depicts the connections between latent variables.

3.4. Conclusions

In this chapter, the methodological procedures were analysed and discussed to achieve the previously established general and specific objectives. To confirm the PV, PS, and L items in the questionnaire, the targeted interview and pilot test were performed after the hypotheses of this study were formulated in the literature review. After identifying the data collection instrument and sample, the acquired data will be analysed using Mplus 8 and SPSS 25 for construct reliability and validity, descriptive analysis, and structural equation modelling. Data from the chosen analysis instruments will provide information that will be used to determine if there is an association between perceived PV, PS and L, based on the context of the Shenzhen Hospital of Southern Medical University, contributing to the development of brand-new knowledge in healthcare service in the Chinese healthcare reality.

In summary, Table 4 facilitates the comprehension of the research structure and internal coherence to meet the objectives of analysing the relationship among PV, PS and L in the inpatient setting.

Table 4 – Summary of Specific Objectives, Research Questions and Route

Specific Objectives	Research Questions	Analysis
O1. Evaluate patient value, according to patients' perception, at the Shenzhen Hospital of Southern Medical University.	Q1. What is the patients' perception of patient value, patient satisfaction and loyalty after receiving inpatient tertiary healthcare services at the Shenzhen Hospital of Southern Medical University?	Descriptive Analysis+ Structural equation modelling (H1, H2, H3, H4, H5)
O2. Evaluate patient satisfaction, according to patients' perception, at the Shenzhen Hospital of Southern Medical University		Descriptive Analysis
O3. Evaluate patient loyalty, according to patients' perception, at the Shenzhen Hospital of Southern Medical University.		Descriptive Analysis
O4. Analyse the strength of the association between patient value and patient satisfaction and loyalty at the Shenzhen Hospital of Southern Medical University.	Q2. Is there any association between patient value and patient satisfaction and loyalty at the Shenzhen Hospital of Southern Medical University?	Descriptive Analysis + Structural equation modelling (H6, H7, H8)
O5. Propose managerial recommendations for healthcare service delivery at the Shenzhen Hospital of Southern Medical University focused on improving patient value, patient satisfaction and loyalty.	Q3. Which managerial recommendations for the delivery of inpatient tertiary healthcare services delivered at the Shenzhen Hospital of Southern Medical University can enhance the perceived patient value, patient satisfaction and loyalty?	-

(Source: Prepared by the author)

4. Results

4.1. Confirmatory factor analysis

Confirmatory factor analysis (CFA) verifies the validity of the measurement scales. Specific items with low factor loadings or greater than minimum modification index where 10 was set were excluded – leaving 3 items in the HOV aspect (HOV1, HOV2, HOV3), 3 items in the SDMV aspect (SDMV3, SDMV4, SDMV5), 6 items in the IV aspect (IV1, IV2, IV3, IV4, IV7, IV9), 3 items in the EV aspect (EV1, EV2, EV3). Nine questions were removed from the initial questionnaire, as shown in Appendix 1. The comparative fit index (CFI) = 0.97, the Tucker-Lewis fit index (TLI) = 0.96, the RMSEA = 0.08. Those values suggest a good fit between the observed data and the model. Figure 2 in Appendix 3 provides standardized parameter estimates. The values of squared multiple correlation (SMC) indicate the reliability of the measure; SDMV3 (0.98) and IV9 (0.78) have the highest and lowest values, respectively. As a further illustration, the construct HOV accounts for 88% of the variance in HOV3 – nurses were skilled in their care of patients during hospitalisation – the highest proportion among the remaining independent variables of HOV. Due to the good fit indices, no post-hoc modifications were advised by the analysis (Schreiber et al., 2006).

Table 5 reports Cronbach's alpha, CR and AVE for all latent variables/constructs. Constructs are reliable when Cronbach's alpha is larger than 0.80, acceptable reliability is between 0.60 and 0.80, and low reliability is below 0.60 (Hair et al., 2014). CR of each variable was greater than the benchmark of 0.70 and all AVE exceeded the criterion of 0.50 (Li and Zhou, 2010). The results indicate that each variable has a high level of internal consistency and measures the same notion and explains their construct respectively.

Table 5 - Reliability and validity of the constructs

Variable	Items	Cronbach's alpha	CR	AVE
HOV	3	0.93	0.90	0.76
SDMV	3	0.98	0.98	0.93
IV	6	0.96	0.89	0.59
EV	3	0.99	0.99	0.98

4.2. Sample descriptives

Table 6 provides additional patient characteristics, excluding age and gender. Among patients who completed the questionnaire (n=740), 8.8% were single, 80.9% were married or living together, and 10.3% were divorced and widowed. 299 respondents (39.6 per cent) had junior high school education or below. 109 patients (14.7 per cent) completed high school or secondary education. 89 participants (12.0 per cent) completed junior college courses, 133 (18.0%) finished undergraduate, and 116 (15.7%) finished master's and above educational levels. Most respondents (37.7%) had a monthly income of

less than or equal to 5,000 yuan per month. 12.3% of all patients earned between 5,001 and 10,000 yuan. The smallest proportion of patients earned between 20,001 and 25,000 yuan (9.3%). For 407 respondents (55.0%), this was their first time visiting this hospital. There were 176 respondents (23.8%) who had visited this hospital twice or three times. 21.2% of patients attended this hospital more than 4 times. Most respondents were first-time visitors to this inpatient setting. 609 respondents (82.3%) had received reimbursement for their inpatient expenditure from medical insurance. Only 131 (17.7%) of all respondents did not have reimbursed. 596 patients (80.5% of those who received reimbursement) completed their reimbursement procedure at the hospital, while 13 patients completed their reimbursement procedure outside of the hospital. The number of patients who were reimbursed outside the hospital was the lowest because they would receive a lower reimbursement rate compared to the rate of reimbursement at the hospital. 22 patients (3.0%) completed their surgery within 1 day and were discharged from the hospital. 346 patients (46.8%) stayed in the hospital between 2 and 5 days, and most patients were hospitalised for this length of time. Between 6 and 10 days, 210 patients (28.4%) finished their hospitalisation. 73 patients (9.9%) took between 11 and 15 days to be discharged from the hospital. 52 patients (7.1% of the total) required between 16 and 25 days to complete their inpatient care. 37 patients (5.0%) needed 26 days and more to finish their hospitalisation.

Table 6 - Frequency distribution of marital status, education level, monthly income level, visit frequency, reimbursement situation, and length of stay

Variable	Frequency	Percentage (%)
Marital status		
Single	65	8.8
Married/living together	599	80.9
Other	76	10.3
Education level		
Junior high school and below	293	39.6
High school or secondary school	109	14.7
Junior college	89	12.0
Undergraduate	133	18.0
Master and above	116	15.7
Monthly income level (yuan)		
5,000 and below	279	37.7
5,001-10,000	91	12.3
10,001-15,000	116	15.7
15,001-20,000	93	12.6
20,001-25,000	69	9.3
25,001 and more	92	12.4
Visit frequency		
The first time	407	55.0
2-3 times	176	23.8
More than 4 times	157	21.2
Reimbursement		
Yes	609	82.3
No	131	17.7
Reimbursement at the hospital		
Skip	131	17.7
Yes	596	80.5
No	13	1.8
Length of stay		
Within 1 day	22	3.0
2-5 days	346	46.8
6-10 days	210	28.4
11-15 days	73	9.9
16-25 days	52	7.1
26 days and more	37	5.0

(Source: prepared by the author)

4.3. Variables description

For these 19 items, the scale to be used is a seven-item Likert-type instrument, ranging from 1 = completely disagree to 7 = completely agree, to represent patient opinions towards the survey questions. The maximum and minimum scores and the mean and standard deviation that patients in the sample attributed to each item are presented (Table 7).

The item with the highest perceived patient value is the IV7 - “Your ward was clean and comfortable” and right followed by the SMDV5 - “Physicians and you reached a consensus on the subsequent treatment process”, with a mean of 6.78 and 6.75. These items belong to the interacting value and the shared decision-making value.

The items with the second lowest scores from perceived patient value are EV2 and EV3 – “Your drug expenditure was acceptable” and “Your treatment expenditure was acceptable”, with a mean of 6.65. These items are included in the economic dimension. PS2 is also the item with the lowest value as well as the lowest consensus – “The overall experience of your inpatient treatment was better than you expected”, with a mean of 6.62 and a standard deviation (SD) of 0.74. In terms of the agreement reached by the patients, SDMV is the dimension that has the highest degree of consensus (SD of 0.60). PS gains the least agreement with SD of 0.72 (Table 8). Patients report experiencing PV with relatively high ratings and PS and L with results that are inferior to PV. In general, most participants provided a rating of 7, with few making discriminations for each question.

Table 7 - The minimum, maximum, mean, and standard deviation of 19 items.

Items	Minimum	Maximum	Mean	Std. Deviation
HOV1	2	7	6.69	0.68
HOV2	4	7	6.72	0.63
HOV3	4	7	6.74	0.58
SDMV3	4	7	6.74	0.59
SDMV4	1	7	6.73	0.62
SDMV5	4	7	6.75	0.58
IV1	3	7	6.68	0.66
IV2	4	7	6.67	0.65
IV3	4	7	6.68	0.64
IV4	4	7	6.70	0.62
IV7	4	7	6.78	0.53
IV9	4	7	6.74	0.58
EV1	4	7	6.66	0.69
EV2	3	7	6.65	0.71
EV3	3	7	6.65	0.71

PS1	1	7	6.65	0.70
PS2	2	7	6.62	0.74
L1	1	7	6.65	0.71
L2	1	7	6.64	0.71

(Source: prepared by the author)

Table 8 The mean, and standard deviation of 6 dimensions.

Dimension	Mean	Std. Deviation
HOV	6.72	0.63
SDMV	6.74	0.60
IV	6.71	0.62
EV	6.65	0.70
PS	6.63	0.72
L	6.64	0.71

(Source: prepared by the author)

4.4. Structural Equation Modelling

The hypotheses on which the conceptual model is built were examined using a structural equation modelling (Figure 1). The comparative fit index (CFI) is 0.97, the Tucker-Lewis index (TLI) is 0.96, and the standardized root mean square residual (SRMR) is 0.03. Both the CFI and the TLI are considerably over the threshold of 0.95 which indicates a good fit (Hu and Bentler, 1999). The SRMR meets the requirement of less than the cut-off value close to 0.08, which is an excellent match (Hu and Bentler, 1999). While the root mean square error of approximation (RMSEA) lower than the threshold of 0.08 shows a good fit, between 0.08 to 0.10 providing a moderate fit (Hooper et al., 2007; MacCallum et al., 1996), RMSEA is equal to 0.08 which is rather acceptable. The χ^2/df ratio would be highly influenced by sample size, data nonnormality and model complexity (Nye and Drasgow, 2011). Because the Chi-Square statistic is sensitive to sample size, when large samples are utilised, the Chi-Square result always rejects the model (Hooper et al., 2007). The fit of the model for the observed covariance matrix: $\chi^2 = 920.03$, χ^2/df ratio = 6.53 is slightly higher than the recommended standard which is less than 5.0 (Wheaton et al., 1977). However, it is still able to draw a conclusion that there is a reasonably good fit between hypothesized model and the observed data.

There is no big difference of factor loadings between CFA and SEM (Figure 2 in Appendix 3 and Table 9 in Appendix 4). IV3 is correlated with IV2 (estimated coefficient = 0.49, $p < 0.001$) and IV7 is correlated with IV9 (estimated coefficient = 0.51, $p < 0.001$). HOV1 is weakly correlated with HOV3 (estimated coefficient = -0.23, $p < 0.001$). Regarding the path loading between latent variables and their indicators, with one unit increase in the HOV measure, the latent score of HOV1 increases by 0.88,

HOV2 by 0.93, and HOV3 by 0.94 (Table 9 in Appendix 4). Each other latent variables having high factor loadings indicates that they are strongly correlated with each factor.

These are the findings from the SEM analysis (Table 10). H1 states that IV has a positive effect on HOV. This effect is confirmed (estimated coefficient = 0.62, $p < 0.001$), supporting H1. IV also has a positive effect on SDMV (estimated coefficient = 0.92, $p < 0.001$); thus, H2 is confirmed. H3 and H4 posit that SDMV has a positive effect on both HOV (estimated coefficient = 0.34, $p < 0.001$) and EV (estimated coefficient = 0.35, $p < 0.001$); thus, H3 and H4 are confirmed. H5 assumes that HOV has a positive effect on EV (estimated coefficient = 0.49, $p < 0.001$); thus, confirming this hypothesis, HOV (estimated coefficient = 0.35, $p < 0.001$) and EV (estimated coefficient = 0.61, $p < 0.001$) have positive effects on patient satisfaction; thus, confirming H6 and H7. Patient satisfaction is an antecedent of loyalty (estimated coefficient = 0.94, $p < 0.001$); thus, confirming H8.

Based on the confirmed hypotheses, it can be concluded that IV occurs as an antecedent of SDMV and HOV; SDMV occurs as an antecedent of HOV and EV; HOV occurs an antecedent of EV and PS; EV occurs an antecedent of PS; PS occurs an antecedent of L. SDMV mediates the relationships between IV and both HOV and EV. HOV is a mediator of the relationship between IV and both EV and PS. EV is a mediator in the relationship between SDMV and PS, and the same occurs in the relationship between HOV and PS. Furthermore, PS is a mediator in the relationship HOV and L, and the same occurs in the relationship between EV and L.

Table 10 – Estimated standardized coefficients of the structural model

Variables	SDMV	IV	HOV	EV	PS	L
SDMV			0.34*** (0.36; 0.05)	0.35*** (0.42; 0.06)		
IV	0.92*** (0.85; 0.01)		0.62*** (0.62; 0.05)			
HOV				0.49*** (0.55; 0.06)	0.35*** (0.40; 0.03)	
EV					0.61*** (0.62; 0.03)	
PS						0.94*** (0.97; 0.01)

Notes: *** $p < 0.001$; In parentheses: (nonstandardized coefficient; standard error)

5. Discussion

The chapter discusses the key findings of the research and proposes theoretical implications and managerial implications for practice.

5.1. Theoretical implications

In this study, four dimensions of PV (HOV, IV, SDMV, and EV) are presented and three conclusions regarding the relationship between them are identified:

1. Health-outcome value and economic value as an interface between patient value and patient satisfaction have a significant impact on patient satisfaction;
2. In terms of the relationship within the patient value, interacting value serves as the starting point for explaining the consequent aspects, ending by the health-outcome value and economic value which are affected by the interacting value and shared decision-making value;
3. According to the empirical research (Lei and Jolibert, 2012; Platonova et al., 2008), patient satisfaction is the antecedent of patient loyalty, which has been confirmed in this study.

The findings of this research suggest that patients are mainly concerned with health and economic concerns, which is in line with the findings of the empirical research (Porter and Teisberg, 2006). When doctors and nurses are able to communicate effectively with patients, there is a greater chance that they will collaborate with patients on decision-making, which results in greater transparency on treatment details. Since patients have expectations regarding the outcomes as well as the risks of the surgery, they are more likely to admit receiving a quality service at a reasonable cost. It is interesting to note that patients who believe they obtain a good treatment have a more favourable perception of the reasonableness of their bills. Health-outcome value and economic value are significant determinants of and positive affect on patient satisfaction. High health-outcome value and economic value explain why patient are satisfied with inpatient experience, which hence explains why they are likely to repurchase the service and promote it to others. This suggests that patients do not have unrealistically high expectations, therefore their experiences may more readily meet their expectations.

Most inpatients reported benefiting from IV, SDMV, and HOV of patient value, indicating that the perception of inpatient service by patients was relatively positive as a result of effective medical care, their opinions being respected prior to surgery, and ample opportunities to interact with medical staff during their hospitalisation, according to the descriptive analysis performed in the preceding chapter. Yet, each value cannot be discriminated properly. Fewer patients agree that they may benefit from EV that entails inpatient service at an unreasonable price to some degree, which might be the primary dimension of patient value referred to as the “bucket effect” that reduces PS and L. PS and L as the

overall impressions that have accumulated discontent over a particular patient value are typically represented in three elements (PS1, L1, and L2) that receive the highest number of lowest ratings. Improving health outcomes and lowering healthcare costs may boost the perception of PS and L. The likelihood that a patient will recommend a hospital to friends and family increases when their overall inpatient experience meets or exceeds their expectation.

5.2. Managerial implications

Since patient value is a vital antecedent in determining patient satisfaction, hospitals can implement a variety of strategies at their disposal to improve the perceptions of PS and L held by their respective patient populations. Hospital policy should mandate a specific number of ward rounds and pre- and post-surgery activities and guarantee high responsiveness and enough communication with patients. It is necessary to pay attention to the environment of the ward. Maintaining a clean environment is conducive to wound healing, which in turn impacts HOV. Privacy protection provides an optimal setting for communication, which is the foundation of SDMV. Because some patients may not be capable of understanding the medical terminology and not all healthcare professionals are able to make collaborative decisions with patients using easily comprehensible language, hospitals should give their staff proper training to prevent the failure of shared decision making. The hospital in this study should concentrate on the causes for the lowest consensus of acceptance of treatment expenditures and attempt to cut expenses. Physicians should consider the costs of uninsured patients in particular and have a thorough discussion with them while developing a treatment plan.

This study draws relevant implications for management and provides ideas to boost patient satisfaction and attract more patients in order to earn profits by enhancing the patient value that matters to patients in China. Managers and all employees should improve their understanding of the internal environment of hospitals to enable hospitals to respond swiftly to market demands by transforming their resources in a timely manner.

It highlights the necessity for Chinese hospitals to place a higher emphasis on health outcomes by hiring high-skilled medical workers and periodic training in medical techniques. However, upgrading the skill levels of medical workers is costly or time-consuming. Reducing medical costs and unnecessary consumption is one method for accelerating the acceptance of inpatient expenditures and, by extension, increasing PS. Educating or training medical workers in the use of interpersonal skills is helpful for decreasing patients' price sensitivity. Once patients realise the logic behind various treatment alternatives, their expectations about cost items become more realistic, and the occurrence of unplanned expenses reduces. Managers should urge or encourage physicians to engage patients in their treatment decision-making processes. In the meanwhile, managers should focus on generating a positive

atmosphere for patients by periodically inspecting ward hygiene and removing unqualified outsourced cleaning companies.

This study also offers insights to policymakers for medical insurance and commercial insurance companies. Policymakers should leverage the coverage of medical insurance and support the development of insurance that encourages patients to spend fewer out-of-pocket expenses. Commercial insurance companies should cooperate closely with public hospitals and reach a consensus on effective measures to control medical expenses by managing providers' behaviour to increase the coverage of commercial insurance, as a supplement to medical insurance. This is also beneficial for hospitals, as the availability of diverse commercial insurance settlement ways helps hospitals attract more patients by reducing out-of-pocket payments and increasing patient satisfaction.

6. Conclusions

The aim of the present research was to clarify the definition of PV and to determine its dimensions (IV, SDMV, EV, HOV), as well as to examine the relationships between PV, PS and L, as perceived by inpatients admitted to a tertiary hospital in China, and to make recommendations for the future development of Chinese tertiary hospitals. Tertiary public hospitals have the greatest number of inpatients, compared to other types of hospitals, such as secondary or primary hospitals, having been under pressure as a result of the rising demand for their services. Even though most tertiary public hospitals are government-owned and have the most patient visits, hospitals must still find a way to build long-term relationships with patients and maintain their loyalty to stay competitive on the market and face the challenge of the growing number of private hospitals, as market new entrants, for the sake of maximising profitability.

The findings clearly indicate that when patients perceive values while interacting with medical personnel and the hospital environment, it is beneficial for facilitating their perception of SDMV and HOV. Effectively interacting physicians are more likely to reach a consensus with their patients during the treatment process, as they are better equipped with an empathic consciousness and pragmatic communication skills. Keeping the environment tidy and pleasant helps patients rest and heal, and as they interact with the ward environment, they may maintain a positive disposition. SDMV positively impact on HOV and EV. When a patient has a thorough understanding of their disease and treatment details, they are more inclined to adhere to their preferred medication and treatment and to accept the associated cost. HOV has positive influenced on EV. Patients are more willing to pay for an effective treatment, in addition to an effective treatment being more prone to be cost-effective, as subpar treatment outcomes increase expenditures. The research also showed that HOV and EV are most influential dimensions on PS, in agreement with the findings of the empirical research that patients are primarily concerned with health and economic issues (Porter and Teisberg, 2006). There is a statistically significant link among PV, PS and L. Patients with high PS are more likely to repurchase and recommend the same healthcare service. It should be noted that few patients concurred that they benefited from a reasonable price; this may be the primary cause for the decline in PS and L, referred to as the “bucket effect”, in this study. When a patient’s overall inpatient experience meets or exceeds their expectations, their likelihood of recommending a hospital to friends and family increases. Managers can take measures to interfere with the expectations and experiences of patients in this situation in order to increase L. PS concentrates more on subjective experiences that represent the perceptions of patients across the continuum of health care, which can be impacted by individual expectations and preferences during healthcare treatment (Zhang et al., 2020). Moreover, PV depends on health status, personal beliefs, and environment, evolving around the relationship between providers and patients (Miao et al., 2020). This study seeks to identify ways for increasing L for the sake of

maximising profitability (Hallowell, 1996) . The findings also offer hospital administrators with insights that may be put into action to solve the deficiencies on both the strategic and the operational levels.

This work contributes to the existing knowledge of the related research on PV, PS, and L by providing a new construct being added to the model for the first time. To the best of knowledge, this is the first study to investigate inpatients' perceptions of their tertiary inpatient experience with regard to PV, PS, and L within the Chinese context. The present findings confirm the definitions of PV, PS, and L as well as their dimensions, which were primarily extracted from prior research and tailored to the Chinese healthcare context. It is worth mentioning that the work of Miao et al., (2020) serves as an important foundation for this research. Several differences distinguish this study from the work of Miao et al., (2020) such as different targeted populations, outpatient groups vs. inpatient groups, different geographical areas, Shanghai municipality vs. Shenzhen city of Guangdong province, and different PV dimensions, economic value-added ability, supplemental value-added ability, fair value-added ability, and health value-added ability vs. IV, SDMV, HOV, and EV, etc. Through a literature review, a targeted interview, and a pilot test, this study created a self-designed questionnaire that is adapted for tertiary hospital inpatients. From the preceding discussion, it follows that PV is the antecedent of PS and PS is the antecedent of L. Another finding to emerge from the analysis is that IV has a strong influence on SDMV and HOV; SDMV has a positive influence on HOV and EV; HOV has a positive effect on EV; HOV and EV as an interface of PV have a strong impact on PS. The results initially confirm the relationships between PV, PS and L in the Chinese healthcare reality. This study has provided a deeper insight into the hospital management that managers can take measures to increase the patient perceptions of IV, SDMV, HOV, and EV in order to increase PS and L and achieve profitability.

Limitations to this pilot study need to be acknowledged. One limitation of the study is to be focused on a single hospital, but it represents the type of tertiary public hospitals. Additional further studies on more tertiary public hospitals are needed to confirm the results and, other types of hospitals, such as secondary public hospitals, primary public hospitals and private hospitals, may have produced different results. Second, in light of the hospital rule prohibiting unauthorised access to inpatient settings during the COVID-19 pandemic, this survey was completed with the assistance of the registered nurse. Even though the questionnaire was tagged anonymous, patients might be apprehensive that giving a poor result would lead to a negative impact on them. Further survey can be conducted by third-party personnel after discharged settlements to eradicate the risk that patients being concerned about their physicians or nurses knowing the results, thereby verifying the findings of this research. Third, the research results shed new light on healthcare management, but future iterations of the conceptual model by adding the comparison of healthcare services before and after changing the status quo may ascertain effectiveness of the recommendation to demonstrate greater potential.

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Appendix 1 – Protocol for Interviews

Q1: What components are believed to comprise health-outcome value?

Q2: Do you agree or disagree that the inclusion of effective treatment, pain management, and highly experienced medical professionals contributes to the health-outcome value?

Q3: What components are believed to comprise shared decision-making value?

Q4: Do you agree or disagree that informing you of diseases information, asking your preference of treatment alternatives, and reaching a consensus on the subsequent treatment process are important for you to gain shared decision-making value?

Q5: During each healthcare inpatient encounter, it is necessary to interact with both the physical environment and healthcare professionals. What components are believed to comprise interacting value?

Q6: Do you agree or disagree that alleviating anxieties, conducting sufficient ward rounds, fostering effective communication; providing timely responses, exhibiting positive attitudes, ensuring clean, comfortable, quiet and noise-free ward, establishing a well-protected environment, and offering good food catering services, contributes to interacting value?

Q7: What components are believed to comprise economic value?

Q8: Do you agree or disagree that acceptable examination costs, drug costs, treatment costs, overall inpatient costs, and a preliminary knowledge of the entire expenses before your hospitalisation, contributes to economic value?

Q9: Do you think the additional items implemented for the purpose of gathering personal information from patients are appropriate?

Appendix 2 - Questionnaire

ID number _____

Hospitalisation Experience Questionnaire

Dear participants,

The aim of this research is to investigate your perception of hospitalisation experiences in Shenzhen Hospital of Southern Medical University. I am inviting you to participate in this research by completing the following survey. Your anonymous contribution will help me develop my master thesis.

This questionnaire should be filled out by the patient who is also the payer and is aware of the payment process and details. If the patient is not able to respond to the questionnaire, his/her relatives can help, but all the answers should be given on behalf of the patient. The patient should be aged above 18. Please ensure that your questions are submitted on June 30th at the latest. Otherwise, the questionnaire channel will be blocked.

The following questionnaire will require approximately 10 minutes to complete. Thank you for taking your time in assisting me with this research. The data collected will remain confidential and used solely for academic purposes. Thank you in advance for your cooperation.

Sincerely,

Name: Liang Zhishan

Final Year Student from Master of Management of Services and Technology

ISCTE-IUL University, Lisbon, Portugal

Supervisors: Professor Teresa Sofia Grilo and Professor José Dias

1. (Filter) Please select your age range below

- ☐ ≤17
☐ 18-24
☐ 25-34
☐ 35-44
☐ 45-54
☐ 55-64
☐ ≥65

2. The surgery you received was effective.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

3. Your pain was well-controlled during hospitalisation.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

4. Nurses were skilful in taking care of you during hospitalisation.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

5. Physicians were skilful in your treatment during hospitalisation.*

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

6. Physicians provided you with detailed information about the disease(s) that you had. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

7. Physicians explained to you the diagnostic and therapeutic decisions that you needed to make. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

8. Physicians informed you of different treatment alternatives.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

9. Physicians asked you which treatment alternative you preferred.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

10. Physicians and you reached a consensus on the subsequent treatment process.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

11. Nurses helped to ease your anxieties and put your mind at rest in time.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

12. Physicians conducted ward rounds for you at a sufficient frequency.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

13. Physicians communicated with you well during ward rounds.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

14. Nurses responded to your call promptly.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

15. Physicians responded to your call promptly. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

16. The attitude of the medical workers who treated you was good. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

17. Your ward was clean and comfortable.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

18. Your ward was quiet and noise-free during night hours. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

19. Your privacy was safely protected inside your ward.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

20. You received good food catering services during hospitalisation. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

21. Your examination expenditure was acceptable.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

22. Your drug expenditure was acceptable.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

23. Your treatment expenditure was acceptable.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

24. Your total inpatient expenditure was acceptable. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

25. You had a preliminary knowledge of the overall expense before your hospitalisation. *

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

26. You were satisfied with the overall experience of inpatient treatment.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

27. The overall experience of your inpatient treatment was better than you expected.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

28. You are likely to choose this hospital for future healthcare services.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

29. You would like to recommend this hospital to others.

Completely agree

7	6	5	4	3	2	1
---	---	---	---	---	---	---

 Completely disagree

Self-identification Questions

30. Gender

☐ Female

☐ Male

31. Marital status

☐ Single

☐ Married/Living together

☐ Other

32. Education level

☐ Junior high school and below

☐ High school or secondary school

☐ Junior college

☐ Undergraduate

☐ Master and above

33. Monthly income level (yuan)

☐ ≤5,000

☐ 5,001 ~ 15,000

☐ 15,001 ~ 20,000

☐ 20,001 ~ 25,000

☐ ≥25,001

34. How many times have you received treatments from this hospital?

☐ The first time

☐ 2-3 times

☐ More than 4 times

35. Have you received reimbursement for your treatment from medical insurance?

☐ Yes

☐ No

26.1 If Yes in Q35, did you receive reimbursement within the hospital?

☐ Yes

☐ No

36. How long was your hospitalisation?

- ☐ Within 1 day
- ☐ Between 2 and 5 days
- ☐ Between 6 and 10 days
- ☐ Between 11 and 15 days
- ☐ Between 16 and 20 days
- ☐ Between 21 and 25 days
- ☐ 26 days and more

37. If you would like to receive a summary research output of this study, please leave your email or phone number. We will send you the outcome via email or SMS. _____

Thank you very much for your collaboration!

*: Item deleted

Appendix 3 – Factor loadings in CFA

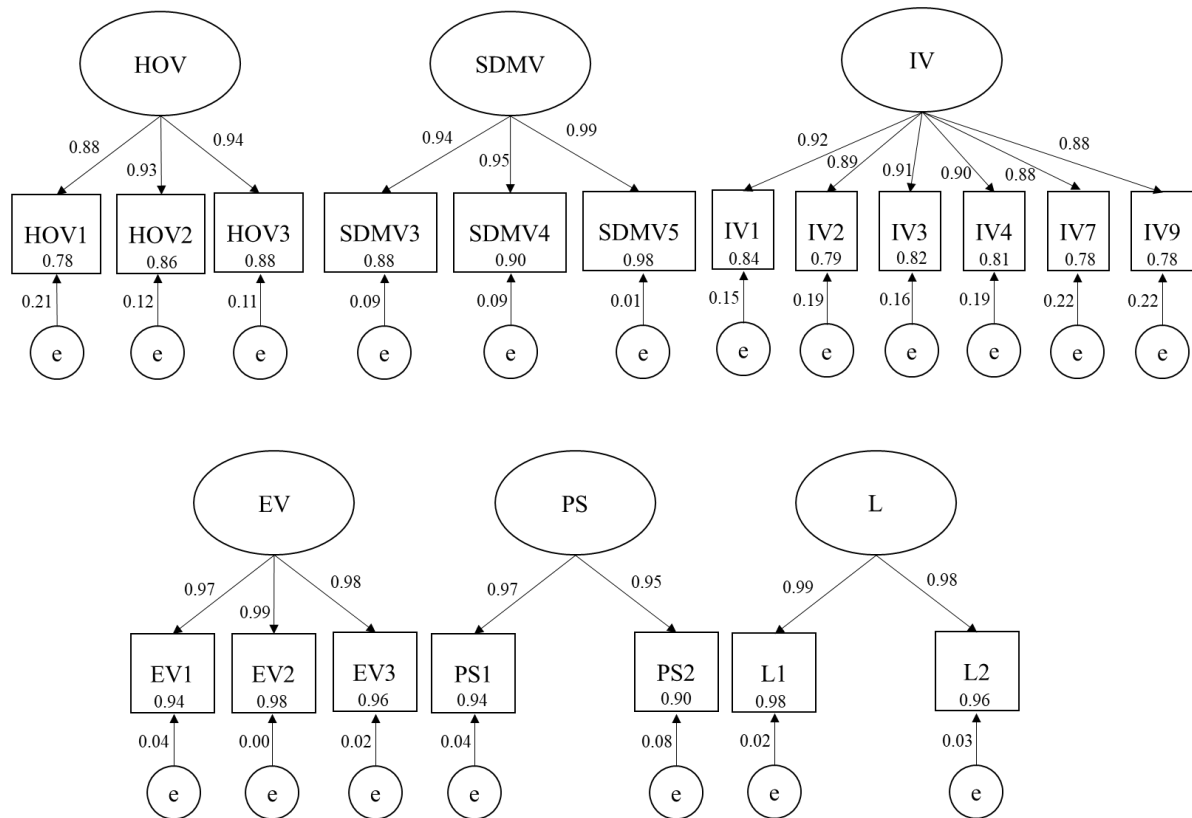


Figure 2 Factor loadings in CFA

Appendix 4 - Construct measurement in SEM

Table 9 - Construct measurement in SEM

Dimensions and Items	Estimate	S.E.	Est./S.E.
<i>Health-outcome value</i>			
1. The surgery you received was effective.	0.88	0.01	92.29
2. Your pain was well-controlled during hospitalisation.	0.93	0.01	163.09
3. Nurses were skilful in taking care of you during hospitalisation.	0.94	0.01	151.77
4. Physicians were skilful in your treatment during hospitalisation. *	-	-	-
<i>Shared decision-making value</i>			
1. Physicians provided you with detailed information about the disease(s) that you had. *	-	-	-
2. Physicians explained to you the diagnostic and therapeutic decisions that you needed to make. *	-	-	-
3. Physicians informed you of different treatment alternatives.	0.95	0.00	235.74
4. Physicians asked you which treatment alternative you preferred.	0.95	0.00	254.63
5. Physicians and you reached a consensus on the subsequent treatment process.	0.99	0.00	618.78
<i>Interacting value</i>			
1. Nurses helped to ease your anxieties and put your mind at rest in time.	0.92	0.01	142.98
2. Physicians conducted ward rounds for you at a sufficient frequency.	0.90	0.01	111.34
3. Physicians communicated with you well during ward rounds.	0.91	0.01	130.28
4. Nurses responded to your call promptly.	0.90	0.01	115.53
5. Physicians responded to your need promptly. *	-	-	-
6. The attitude of the medical workers who treated you was good. *	-	-	-
7. Your ward was clean and comfortable.	0.88	0.01	94.24
8. Your ward was quiet and noise-free during night hours. *	-	-	-
9. Your privacy was safely protected inside your ward.	0.88	0.01	92.88
10. You received good food catering services during hospitalisation. *	-	-	-
<i>Economic value</i>			
1. Your examination expenditure was acceptable.	0.98	0.00	590.66
2. Your drug expenditure was acceptable.	1.00	.00	1510.39

3. Your treatment expenditure was acceptable.	0.99	0.00	805.50
4. Your total inpatient expenditure was acceptable. *	-	-	-
5. You had a preliminary knowledge of the overall expense before your hospitalisation. *	-	-	-
<i>Patient satisfaction</i>			
1. You were satisfied with the overall experience of inpatient treatment.	0.97	0.00	330.99
2. The overall experience of your inpatient treatment was better than you expected.	0.96	0.00	251.97
Loyalty			
1. You are likely to choose this hospital for future healthcare services.	0.99	0.00	500.01
2. You would like to recommend this hospital to others.	0.98	0.00	415.89

*: Item deleted