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INTERVENTIONS TO IMPROVE SERVICE DELIVERY IN RURAL MPUMALANGA HOSPITALS OF SOUTH AFRICA

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ABSTRACT

Purpose: This study investigated the effects of healthcare service quality dimensions on service delivery improvement and patient satisfaction in the South African public healthcare sector.

Theoretical framework: The quality of service delivery in the healthcare sector and its influence on patient satisfaction have gained attention globally, including in South Africa. Factors that affect service delivery, such as empathy, efficiency, tangibility, safety, reliability, responsiveness, assurance, communication, and discipline, have attracted the attention of both academics and healthcare practitioners, particularly in public healthcare facilities.

Design/methodology/approach: A quantitative research design was followed. A data set of 500 was collected from Mpumalanga Province, South Africa, and a structural equation modelling approach was used to test ten hypotheses using Smart PLS statistical software.

Findings: The research findings supported all the proposed hypotheses, with four hypotheses being insignificant. The study contributes to the literature on the effects of health service quality dimensions on service delivery improvement and patient satisfaction in an often-neglected context, namely Africa.

Research, Practical & Social implications: The study provides recommendations for healthcare policies and strategies to improve service delivery in the public healthcare sector based on the research findings.

Originality/value: The results indicate that the Healthcare sector needs to focus on quality service to be provided to the public. It also contributed to the body of knowledge on this topic in South Africa.

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INTERVENÇÕES PARA MELHORAR A PRESTAÇÃO DE SERVIÇOS NOS HOSPITAIS RURAIS DE MPUMALANGA DA ÁFRICA DO SUL

RESUMO

Objetivo: Este estudo investigou os efeitos das dimensões da qualidade dos serviços de saúde na melhoria da prestação de serviços e na satisfação do paciente no setor público de saúde sul-africano.

Referencial teórico: A qualidade da prestação de serviços no setor de saúde e sua influência na satisfação do paciente têm ganhado atenção globalmente, inclusive na África do Sul. Fatores que afetam a prestação de serviços, como empatia, eficiência, tangibilidade, segurança, confiabilidade, capacidade de resposta, garantia, comunicação e disciplina, têm atraído a atenção de acadêmicos e profissionais de saúde, principalmente em unidades públicas de saúde.

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Desenho/metodologia/abordagem: Seguiu-se um desenho de pesquisa quantitativa. Um conjunto de dados de 500 foi coletado da província de Mpumalanga, África do Sul, e uma abordagem de modelagem de equação estrutural foi usada para testar dez hipóteses usando o software estatístico Smart PLS.
Resultados: Os resultados da pesquisa apoiaram todas as hipóteses propostas, com quatro hipóteses sendo insignificantes. O estudo contribui para a literatura sobre os efeitos das dimensões da qualidade dos serviços de saúde na melhoria da prestação de serviços e na satisfação do paciente em um contexto frequentemente negligenciado, a saber, a África.
Pesquisa, implicações práticas e sociais: O estudo fornece recomendações para políticas e estratégias de saúde para melhorar a prestação de serviços no setor de saúde pública com base nos resultados da pesquisa.
Originalidade/valor: Os resultados indicam que o setor Saúde precisa focar na qualidade do serviço prestado ao público. Também contribuiu para o corpo de conhecimento sobre este tópico na África do Sul.

Palavras-chave: Garantia da Qualidade, Assistência Médica, Qualidade de Serviço, Gestão de Cuidados de Saúde.

INTERVENCIONES PARA MEJORAR LA PRESTACIÓN DE SERVICIOS EN LOS HOSPITALES RURALES DE MPUMALANGA EN SUDÁFRICA

RESUMEN
Objetivo: Este estudio investigó los efectos de las dimensiones de la calidad del servicio de salud en la mejora de la prestación de servicios y la satisfacción del paciente en el sector de la salud pública de Sudáfrica.
Marco teórico: La calidad de la prestación de servicios en el sector de la salud y su influencia en la satisfacción del paciente ha ganado atención a nivel mundial, incluso en Sudáfrica. Factores que afectan la prestación de los servicios, como la empatía, la eficiencia, la tangibilidad, la seguridad, la confiabilidad, la capacidad de respuesta, la garantía, la comunicación y la disciplina, han llamado la atención de académicos y profesionales de la salud, especialmente en las unidades de salud pública.
Diseño/metodología/enfoque: Se siguió un diseño de investigación cuantitativo. Se recopiló un conjunto de datos de 500 de la provincia de Mpumalanga, Sudáfrica, y se utilizó un enfoque de modelado de ecuaciones estructurales para probar diez hipótesis utilizando el software estadístico Smart PLS.
Resultados: Los resultados de la encuesta apoyaron todas las hipótesis propuestas, siendo cuatro hipótesis insignificantes. El estudio se suma a la literatura sobre los efectos de las dimensiones de calidad de los servicios de salud en la mejora de la prestación de servicios y la satisfacción del paciente en un contexto que a menudo se pasa por alto, a saber, África.
I**mplicaciones sociales, prácticas y de investigación:** El estudio proporciona recomendaciones para las políticas y estrategias de salud para mejorar la prestación de servicios en el sector de la salud pública en función de los resultados de la investigación.
Originalidad/valor: Los resultados indican que el sector Salud necesita enfocarse en la calidad del servicio brindado al público. También contribuyó al conjunto de conocimientos sobre este tema en Sudáfrica.

Palabras clave: Aseguramiento de la Calidad, Asistencia Médica, Calidad de Servicio, Gestión de la Atención en Salud.

INTRODUCTION

In recent years, public sector healthcare research has focused on service delivery and patient satisfaction, with a particular emphasis on service quality (Maphumulo & Bhengu, 2019). However, the delivery of quality healthcare services in Mpumalanga Province, South Africa, faces challenges that negatively impact patient satisfaction. Research indicates that healthcare service quality strongly influences patients' perceptions of service delivery, satisfaction, referrals, choice, and usage (Maphumulo & Bhengu, 2019). Despite significant government investment in the public healthcare sector, low utilization rates of facilities suggest patients' negative perceptions of healthcare service quality.

Studies in developing countries have shown that poor public healthcare quality can lead patients to seek private healthcare providers (Guldner & Rifkin, 1993). In Bangladesh, increased government expenditure on the public healthcare sector did not improve the quality of care (Kawnine, Killingsworth & Thomas, 1995). Health service quality significantly affects patients' perception of healthcare delivery, and poor quality of public healthcare services can lead to underutilization of available healthcare services (Tana, 2013).

Background

The South African government has invested heavily in public healthcare since 1994, yet the quality of service delivery has faced severe public criticism, leading to violent protests and property destruction (Myburgh et al., 2005). The performance gap in healthcare service delivery may be due to lack of essential drugs, inadequate specialized staff, poor quality facilities, and lack of supervision and accountability. The increasing demand for healthcare services in South Africa only exacerbates the situation. Improvement in healthcare service quality is crucial, especially in rural areas.

Recent studies have identified empathy, tangibility, efficiency, safety, reliability, responsiveness, assurance, communication, and discipline as important healthqual dimensions that predict improved service quality and patient satisfaction in the healthcare sector (Lee & Kim, 2017). However, most studies have been conducted in developed countries or in developing countries in Asia, leaving a research gap in African developing countries.

Objective of the Research

This study aims to examine the impact of healthqual dimensions on service quality and patient satisfaction in Mpumalanga Province, South Africa, and fill the gap in neglected research contexts. The findings of this study will contribute to generating new academic knowledge and practical implications for healthcare practitioners and policymakers.

LITERATURE REVIEW

Theoretical Framework

Servqual model and healthqual model

The widely-used model for assessing service quality is SERVQUAL, created by Parasuraman in 1988. This model includes 22 measurement instruments to evaluate customers' expectations and perceptions of service delivery. SERVQUAL's five dimensions are Tangibles,

Reliability, Responsiveness, Assurance, and Empathy. Researchers have used SERVQUAL to measure service quality in various industries, including tourism, hospitality, and healthcare. Lee (2001) proposed the HEALTHQUAL model, which builds upon SERVQUAL, but focuses more on healthcare processes and results, with empathy, tangibles, safety, efficiency, and degree of improvements of care service as its components. This study uses an extended version of the HEALTHQUAL model, for its suitability to the study's purpose.

Empirical Literature

Empathy

Empathy lacks a consensual definition. Rogers (1980) defines it as the therapist's ability to understand the client's thoughts, feelings and struggles from the client's perspective. Shamay-Tsoory (2009) describes empathy as the feeling that one experiences when entering another person's perceptual world and being sensitive to their changing felt meaning. Decety and Ickes (2009) identify three processes that explain human empathy: emotional simulation, conceptual perspective-taking, and emotion regulation. Empathy has also been defined as a trait or response skill, an identification process, and a hermeneutic interpretive process. In healthcare, empathy can be seen as the establishment of empathic rapport, where practitioners demonstrate a compassionate attitude and strive to understand the patient's experience. Practitioners can also display empathy by staying attuned to the patient's unfolding experience.

Tangibility

Tangibility, referred to as physical quality, encompasses the appearance, equipment, staff, advertising material, and other physical characteristics that contribute to service delivery (McFadden et al., 2015). Parasuraman et al. (1988) include tangibility as one of the dimensions in service quality assessment in the SERQUAL model. Lee (2017) defines tangibility as the degree to which medical staff, advanced medical equipment, and technology are available. Tsai et al. (2007) categorize tangibility as cleanliness, neat appearance of tangible components, and physical comfort of the environment. Better tangible facilities, including expert medical staff, up-to-date equipment, and technology, improve patient and attendant satisfaction (Andaleeb et al., 2007) and are critical to delivering quality healthcare services (Reimer & Kuehn, 2005).

Safety

Patient safety involves reducing medical errors during healthcare delivery, which can occur during specific episodes of care such as retained surgical items or wrong site surgeries (Graban, 2009). Medical errors result from faulty systems and processes, not individual recklessness (IOM, 2000). Patients expect their care to be safe, and may interpret service quality lapses as threats to their safety, even if no actual adverse event has occurred (Weingart et al., 2007). Violations of patient expectations can lead to safety concerns. Therefore, a comprehensive lean orientation can improve patient safety.

Efficiency and Reliability

The efficiency of healthcare services is the accuracy of operational aspects, including medication use, ease of medical procedures, and reasonable medical expenditure (Tsai et al., 2007). Lee (2017) defines efficiency as effective service provision through operational processes. Studies have shown that higher levels of efficiency are associated with higher patient satisfaction (Mamilla, Janardhana & Anjan Babu, 2013; Omar et al., 2015). Reliability, defined as consistency in service delivery (Gunawardane, 2011), includes fulfilling promises about pricing, delivery, problem-solving, and service provision (Zeithaml et al., 2009; Weber, 2013). Reliability is a crucial factor in determining service quality perceptions among customers (Gunawardane, 2011; Omar, Sadaan & Seman, 2015; Zeithaml et al., 2009).

Responsiveness

Responsiveness refers to an organization’s ability to promptly handle customer complaints, problems, questions, and requests. This attribute assesses the company's willingness and ability to provide service quickly when dealing with customers (Zeithaml, Parasuraman & Malhotra, 2002). Understanding customer needs and developing services based on customer feedback can improve service satisfaction and trust (Gummerus et al., 2004). In the health insurance sector, responsiveness is demonstrated by the waiting periods for membership cards, the time taken to attend to and resolve customer queries, and the promptness in settling medical claims (Nsiah-Boateng et al., 2016; Zeithaml et al., 2009).

Assurance

Assurance is the dimension of service quality that aims to inspire trust and confidence in others (Yousapronpaiboon, 2014). In healthcare, patient trust is specifically defined as the

optimistic acceptance of vulnerability with the belief that healthcare providers will prioritize the patient's interests. Assurance is particularly significant in services that clients perceive as risky or uncertain, such as legal, medical, brokerage, and banking services. Assurance is one of the major factors that influence customer perception of service quality in life insurance companies. Additionally, it is a critical determinant of patients' satisfaction in public healthcare.

Communication

Patients' need for information and a patient-centered approach are often unmet in healthcare. Medical service providers tend to communicate in a way that reveals their power, authority, and professional detachment, which may not be appreciated by customers. Provider communication style is a crucial determinant of customer satisfaction, and a non-dominating communication style can lead to greater satisfaction. In healthcare, patients want communication to occur between different parties involved, including information provision, adequate information about ailments and treatments, obtaining information, updating patients and family members, and addressing their feelings about the interaction with staff. (Webster and Sundaram, 2009).

Discipline

Work discipline refers to attitudes, behaviors, and actions that comply with both written and unwritten company regulations. High work discipline is crucial to maintain order and ensure the successful execution of tasks (Parasuraman et al., 1991, 1994; Angur et al., 1999). The appearance of hospital facilities and staff can provide tangible cues regarding the quality of services patients can expect (Brady et al., 2006). Poor work discipline can manifest as staff who neglect their routine duties, which can be detrimental to patient care (Arasli et al., 2008).

Improved service delivery perceptions and healthcare service satisfaction

The SERVQUAL model is a comprehensive conceptualisation of service quality delivery that includes an instrument to measure perceived service quality and provides practical implications for hospitals (Butt and De Run, 2010; Sohail, 2003; Parasuraman et al., 1991, 1994; Angur et al., 1999). Hospital service quality perception is based on three dimensions: physical environment, interaction quality, and outcome quality (Martinez Fuentes, 1999; Arasli et al., 2008; Brady and Cronin, 2001). Patient satisfaction is influenced by their expectation of hospital service (Aminingsih, Khatibi and Azam, 2023), which could be based on a previous

experience or information obtained from others (Tateke Woldie & Ololo, 2012). Patient-centredness (PC) emphasises the need for physicians to interact and communicate with their patients and provide an environment conducive to their full and free expression (Setlhare, Couper & Wright, 2014:1). The South African Patient's Rights Charter allows patients the right to complain about the quality of health service they receive (Department of Health, 2000).

Conceptual model and hypotheses development

The conceptual model constitutes a graphical or diagrammatical representation of the various constructs and their interrelationships. Within this model, the predictor variables consist of a set of health care service quality factors, namely empathy, tangibility, safety, efficiency, reliability, responsiveness, assurance, communication, and discipline. The mediating variable is represented by improved health care service delivery, while the sole outcome variable is satisfaction with service delivery. Within the framework of this conceptual model, the predictor variables exert an influence on the mediating variable, which in turn has a significant impact on the outcome variable, namely the degree of patient satisfaction with service delivery in the rural health care centres situated in Mpumalanga Province.

Empathy and improved health service delivery perception

Empathy is a crucial factor in enhancing patient satisfaction, as it involves giving sufficient attention and personal care to patients, including mental support from doctors and nurses. According to Andaleeb et al. (2007), empathy improves an individual's ability to relate to others and behave in ways that are suitable for various conditions, leading to a positive perception of health service delivery by patients. Itani and Inyang's (2015) study on salespeople revealed that empathy and listening skills were essential for building strong relationships with customers. They recommended that managers recruit people with high empathy and listening levels and reduce felt stress levels to improve their empathy. However, Varca's (2009) study showed that role conflict increased when front-line employees engaged in emotionally empathetic behavior. Thus, based on the above circumstances, it is proposed that there is a positive relationship between empathy and improved health service delivery perception (H1).

Tangible and improved health service delivery perception

Tangibility is more significant in people processing and possession-processing activities, especially in cinema halls and universities, compared to accounting firms and

insurance companies. These results were consistent with Bitner's (1992) findings that servicescape has more influence on customers who spend more time on business premises, such as restaurants and theatres, compared to fast transaction services, such as banks and dry cleaners (Nguyen, Hoang, Hoang & Nguyen, 2022). However, El Saghier and Nathan (2013) found that tangibility had no significant effect on client satisfaction in banking services, while reliability, empathy, assurance, and responsiveness had a significant impact. Similarly, Yesilada and Direktor (2010) found that tangibility had an insignificant influence on satisfaction in public hospitals. Since these studies were conducted on services offered in hospitals, clinics, and insurance companies, it is difficult to generalize the results to the health insurance industry.

In a study by Lee et al. (2000), it was concluded that tangibility is a more significant element in an equipment/facility-based rather than a people-based service industry. Given that the health insurance industry is classified as a people-based service industry, where clients do not spend much time in facilities, it can be postulated that tangibility has an insignificant effect on customer satisfaction in health insurance companies. Reimer and Kuehn (2005) also found tangibility to be more significant in determining quality for restaurant and bank patrons than the other four dimensions measured by the SERVQUAL scale. Thus, it is hypothesized that there is a positive relationship between tangible cues and improved health service delivery perception (H2).

Safety and improved health service delivery perception

Patient safety, defined as the avoidance of accidental injury or medical errors during medical care, is an important concern in medicine (Kohn et al., 1999). Creating a culture of patient safety involves changing management behavior, safety systems, and employee safety perceptions to encourage healthcare professionals to adopt behaviors that promote patient safety (Colla et al., 2005; Fleming, 2005). Safety is positively related to Improved Health Service Delivery Perception (DeJoy, 1985; Zohar, 1980). Safety enhances trust in the organization, job satisfaction, and working conditions (Pronovost et al., 2003). Thus, the following hypothesis can be proposed: H3: There is a positive relationship between Safety and Improved Health Service Delivery Perception.

Efficiency and improved health service delivery perception

Efficiency in medical services is a key benchmark for hospital service. Hospital efficiency involves both medical administration and administrative management. An essential

component of hospital efficiency assessment is the efficient utilization of available hospital beds and medical support. The relationship between quality and efficiency is linear and positive, particularly in the case of complications, as shown in Gholami, Higón, and Emrouznejad's (2015) study. Furthermore, Srimayarti, Leonard, and Yasli's (2021) study found that efficiency is the foundation for obtaining a wider patient base and improving the quality of hospital services. Thus, we hypothesize that: H4: There is a positive relationship between Efficiency and Improved Health Service Delivery Perception.

Reliability and improved health service delivery perception

Healthcare services are distinct from other services as patients surrender their privacy and confidentiality to healthcare professionals (Berry and Seltman, 2008). In healthcare, control of information is crucial to privacy and involves decisions about what information is shared (Muyeskens, 1982; Ziporyn, 1984). Silvestro (2005) emphasizes the importance of maintaining privacy and confidentiality from the patient's perspective. Therefore, this dimension deals with providing medical treatment while maintaining privacy and confidentiality. It is thus hypothesized that:

H5: There is a positive relationship between Privacy/Confidentiality and Improved Health Service Delivery Perception.

Responsiveness and improved health service delivery perception

Patient responsiveness is crucial for a positive healthcare experience, as it directly impacts patient welfare and comfort. Patient expectations, both medical and non-medical, influence their evaluation of care and satisfaction with the treatment outcome. Patient satisfaction is linked to perceived performance and responsiveness, with unmet expectations leading to dissatisfaction and poor response. Meeting reasonable expectations through responsiveness leads to patient satisfaction, which in turn increases utilization of health services and improves health service delivery perception. Therefore, it can be concluded that there is a positive relationship between responsiveness and improved health service delivery perception (H6).

Assurance and improved health service delivery perception

Patients have a basic expectation that they will receive professional and efficient treatment from skilled and competent hospital staff, with procedures performed correctly on

the first attempt. If patients perceive service providers as lacking in these qualities, their assurance in receiving proper medical attention will decrease, leading to reduced satisfaction levels. Therefore, it can be concluded that there is a positive relationship between the level of assurance provided by hospitals and improved health service delivery perception. This relationship is represented by hypothesis H7.

Communication and improved health service delivery perception

The perception of customer service is largely influenced by service delivery, with quality resulting from interactions between providers and customers (Lehtinen & Lehtinen, 1991). Communication is a critical aspect of service quality, with two-way communication fostering trust, resolving disputes, and aligning perceptions and expectations (Moorman et al., 1993; Morgan & Hunt, 1994). However, patients' need for information and a patient-centred approach are often unfulfilled, with many medical service providers communicating in a manner that emphasizes their power and status (Hall et al., 1981; Street & Weimann, 1987). A non-dominating communication style generally leads to greater customer satisfaction (Webster & Sundaram, 2009). In healthcare, patients' satisfaction is enhanced when communication occurs between different parties and when staff provides adequate information about ailments, treatments, and updates to family members (Andaleeb, 1998, Aminingsih et al., 2023). Therefore, it can be hypothesized that there is a positive relationship between the quality of communication between hospital staff and patients and Improved Health Service Delivery Perception, represented by hypothesis H8.

Discipline and improved health service delivery perception

Effective work discipline is crucial for maintaining order and ensuring the smooth execution of tasks. Recent research by Hamid, Nur and Putera (2019) found a significant positive relationship between work discipline and patient satisfaction. This implies that good work discipline contributes to improving patient satisfaction in hospitals. Similarly, Andaleeb (2001) found that discipline, as a component of the "tangibles" dimension, had the most significant impact on customer satisfaction. Based on these findings, we can propose the hypothesis that there is a positive correlation between work discipline and the perception of improved health service delivery (H9).

Improved health service delivery perception and satisfaction with health service delivery

Kim et al. (2008) identified that improvements in health care service delivery are a result of various factors such as medical staff, medical facilities and equipment, administrative processes, and during and after care systems of provincial hospitals. Patient satisfaction, defined as the judgment of perceived value and sustained response toward service-related stimulus before, during or after the consumption of medical services by a patient, is influenced by the fulfillment of patient expectations in terms of empathy, tangibility, safety, efficiency, reliability, responsiveness, assurance, communication, and discipline experienced (Altai & Kodadah, 2008; Sureshchandar, Rajendran & Anantharaman, 2002) at the Provincial hospitals in Mpumalanga. Meeting patient expectations, which are categorized as required, adequate, and predictable services, can lead to patient satisfaction, resulting in benefits such as increased usage of medical services, adherence to prescribed treatment, and patient loyalty (Lee et al., 2010; Hekkert et al., 2009). The quality of provided services is a critical indicator of the status or prestige of the organization and is a means of achieving competitive advantage by meeting customer needs and increasing customer satisfaction and loyalty (Parasuraman et al., 1985). Service quality factors, such as promptness, medical aid, and patient interest, were positively associated with patient satisfaction and adherence to medical services. The proposed hypothesis is that there is a positive relationship between improved health service delivery perception and satisfaction with health service delivery (H10).

METHODOLOGY

Measurement Instrument and Questionnaire Design

The survey utilized, comprised of six sections, with five of the sections measuring each of the five constructs. The questionnaire was designed to evaluate empathy, tangibility, security, efficiency, reliability, responsiveness, trust, communication, discipline, improving the delivery of health services, and satisfaction with the provision of health services. All metrics utilized in the survey were specifically developed to assess healthcare quality, healthcare improvement, and patient satisfaction. The survey items were modified to suit the target population. Responses were rated using a 5-point Likert scale.

Respondent Profile

The participant profile reveals that the majority of the respondents were female, accounting for 75.92% of the total sample. Male participants constituted 23.9%, while the

remaining 0.18% identified as other. Regarding age, the highest proportion of participants (26.47%) were between 30 and 35 years old, followed by 24.82% who fell into the 24-29 years age bracket. Participants aged 41 years and above accounted for 20.4% of the sample, whereas those aged 18-23 comprised 17.83%. The smallest age group was participants aged 36-40 years, making up 10.48% of the sample. The majority of participants were single (71.14%), while the remaining 28.86% were married. In terms of education, most participants (43.75%) held a matric qualification, with the smallest group having a postgraduate degree (0.09%). The majority of participants were unemployed (61.95%), while 31.8% were employed, and the remainder indicated other employment status.

Data Analysis

SmartPLS, a component-based approach to structural equation modeling, was used in this study to test the research model using SEM. Unlike other statistical software, such as AMOS or LISREL, SmartPLS allows for relatively complex exploratory models with a focus on predictive rather than confirmatory analysis. It is also robust and does not require normal distribution of manifest variables, making it suitable for small sample sizes like that of this study (n=166). The study followed a two-stage procedure for hypothesis testing recommended by Anderson and Gerbing (1988), first examining the convergent and discriminant validity of items and constructs in the measurement model, followed by an examination of path coefficients between constructs in the structural model.

Measurement Model

To establish convergent validity, items should have loadings greater than 0.6 on their respective constructs, and to ensure discriminant validity, there should be no significant cross-loadings. Table 3 shows that all items have loadings greater than 0.6, with no cross-loadings greater than 0.6, and all loadings are significant at $p \leq 0.001$. Therefore, the measurement items converged well on their respective constructs. For convergent validity, constructs should have an average variance extracted (AVE) of more than 0.5 and a composite reliability (CR) of more than 0.7, and inter-construct correlations should be less than the square root of the AVE (Chin, 1998). As shown in Table 3, all constructs exceed these criteria, with AVE and CR generally equal to or greater than 0.6 and 0.9 respectively, and the square root of the AVE being at least 0.77 greater than the inter-construct correlations (Table 1). These results confirm the presence of discriminant validity in the measurement employed in this study.

Table 1: Scale accuracy analysis

Research constructs		Scale Items		Item-to-Total Correlation Value	Cronbach's Alpha Value	Composite Reliability Values	Average Variance Extracted (AVE	Factor Loadings
		Mean	SD					
EM	EM1	3.801	1.291	0.718	0.937	0.948	0.693	0.783
	EM2	4.074	1.240	0.756				0.821
	EM3	4.070	1.223	0.760				0.818
	EM4	4.075	1.251	0.816				0.864
	EM5	3.950	1.293	0.794				0.845
	EM6	4.022	1.228	0.804				0.854
	EM7	3.993	1.268	0.809				0.858
	EM8	4.222	1.217	0.753				0.815
TA	TA1	4.094	1.213	0.653	0.866	0.903	0.652	0.792
	TA2	3.724	1.252	0.723				0.824
	TA3	3.895	1.262	0.722				0.829
	TA4	4.344	1.110	0.653				0.788
	TA5	3.967	1.292	0.691				0.803
SA	SA1	3.958	1.260	0.633	0.848	0.898	0.687	0.792
	SA2	3.818	1.298	0.646				0.795
	SA3	3.822	1.282	0.742				0.867
	SA4	3.965	1.238	0.722				0.860
EF	EF1	4.002	1.278	0.602	0.865	0.903	0.651	0.737
	EF2	4.107	1.180	0.741				0.856
	EF3	3.987	1.204	0.731				0.831
	EF4	3.897	1.249	0.681				0.796
	EF5	3.875	1.302	0.674				0.808
REL	REL1	3.776	1.301	0.770	0.936	0.948	0.722	0.835
	REL2	3.671	1.371	0.751				0.816
	REL3	3.871	1.304	0.747				0.811
	REL4	3.901	1.278	0.802				0.858

	REL5	3.811	1.299	0.834				0.883
	REL6	3.897	1.335	0.825				0.878
	REL7	3.926	1.280	0.807				0.866
RES	RES1	3.778	1.396	0.705	0.844	0.896	0.682	0.851
	RES2	3.559	1.380	0.710				0.851
	RES3	3.597	1.392	0.613				0.763
	RES4	3.588	1.365	0.500				0.836
ASS	ASS1	3.733	1.301	0.751	0.929	0.944	0.738	0.824
	ASS2	3.860	1.332	0.798				0.860
	ASS3	4.094	1.205	0.803				0.869
	ASS4	3.958	1.211	0.793				0.862
	ASS5	4.096	1.215	0.803				0.868
	ASS6	4.026	1.260	0.803				0.869
COM	COM1	4.028	1.227	0.810	0.934	0.950	0.792	0.879
	COM2	4.108	1.201	0.814				0.883
	COM3	4.044	1.209	0.845				0.903
	COM4	4.046	1.226	0.850				0.908
	COM5	4.068	1.218	0.802				0.875
DIS	DIS1	3.454	1.561	0.735	0.930	0.947	0.783	0.810
	DIS2	3.840	1.312	0.853				0.909
	DIS3	3.939	1.239	0.853				0.919
	DIS4	3.895	1.291	0.787				0.871
	DIS5	3.886	1.300	0.842				0.911
DICS	DICS1	3.947	1.189	0.706	0.904	0.929	0.724	0.812
	DICS2	4.048	1.179	0.736				0.834
	DICS3	4.018	1.222	0.785				0.868
	DICS4	4.131	1.194	0.804				0.880
	DICS5	4.097	1.222	0.772				0.860
	SAT1	3.868	1.312	0.842				0.879

SAT	SAT2	3.871	1.286	0.887	0.962	0.968	0.788	0.915
	SAT3	3.884	1.215	0.829				0.868
	SAT4	3.930	1.239	0.861				0.895
	SAT5	3.947	1.300	0.862				0.895
	SAT6	3.904	1.303	0.848				0.885
	SAT7	4.042	1.240	0.846				0.886
	SAT8	4.057	1.249	0.837				0.879

Source: Prepared by the authors (2023)

Note: EM = Empathy; TA = Tangible; SA= Safety, EF = Efficiency, REL = Reliability, RES =Responsiveness, ASS = Assurance, COM = Communication, DIS = Discipline, DICS = Improved Health Service Delivery Perceptions, SAT = Satisfaction with Health Service Delivery

SD= Standard Deviation CR= Composite Reliability AVE= Average Variance Extracted

** Scores: 1 – Strongly Disagree; 3 – Moderately Agree; 5 – Strongly Agree*

Overall Model Fit Assessment

The data fit to the conceptual model was mainly assessed using two indicators namely the global Goodness of Fit (GoF) statistic and the Normed Fit Index.

Global Fit Statistic

Overall, R^2 for, DICS and SAT in Figure 2 indicates that the research model explains more than 79.9%, and 57.7% of the variance in the endogenous variables respectively. Following formulae provided by The Global Goodness-of-Fit (GoF) statistic for the research model was calculated using the equation:

$$GoF = \sqrt{\overline{AVE} * \overline{R^2}}$$

The calculated global Goodness of Fit (GoF) is 0.703, which exceeds the threshold of GoF>0.36 suggested by Chinomona (2013). Thus, this study concludes that the research model has a good overall fit.

Smart PLS Model Fit Indices

Model fit was further assessed using the Chi-square (x2/df) and the Normed Fit Index (NFI). While the Chi-square (x2/df) and NFI have met the acceptable threshold – the results in Table 2, can be regarded marginally acceptable. For instance, NFI should be above 0.8 while 0.9 is regarded excellent.

Table 2: Model Fit

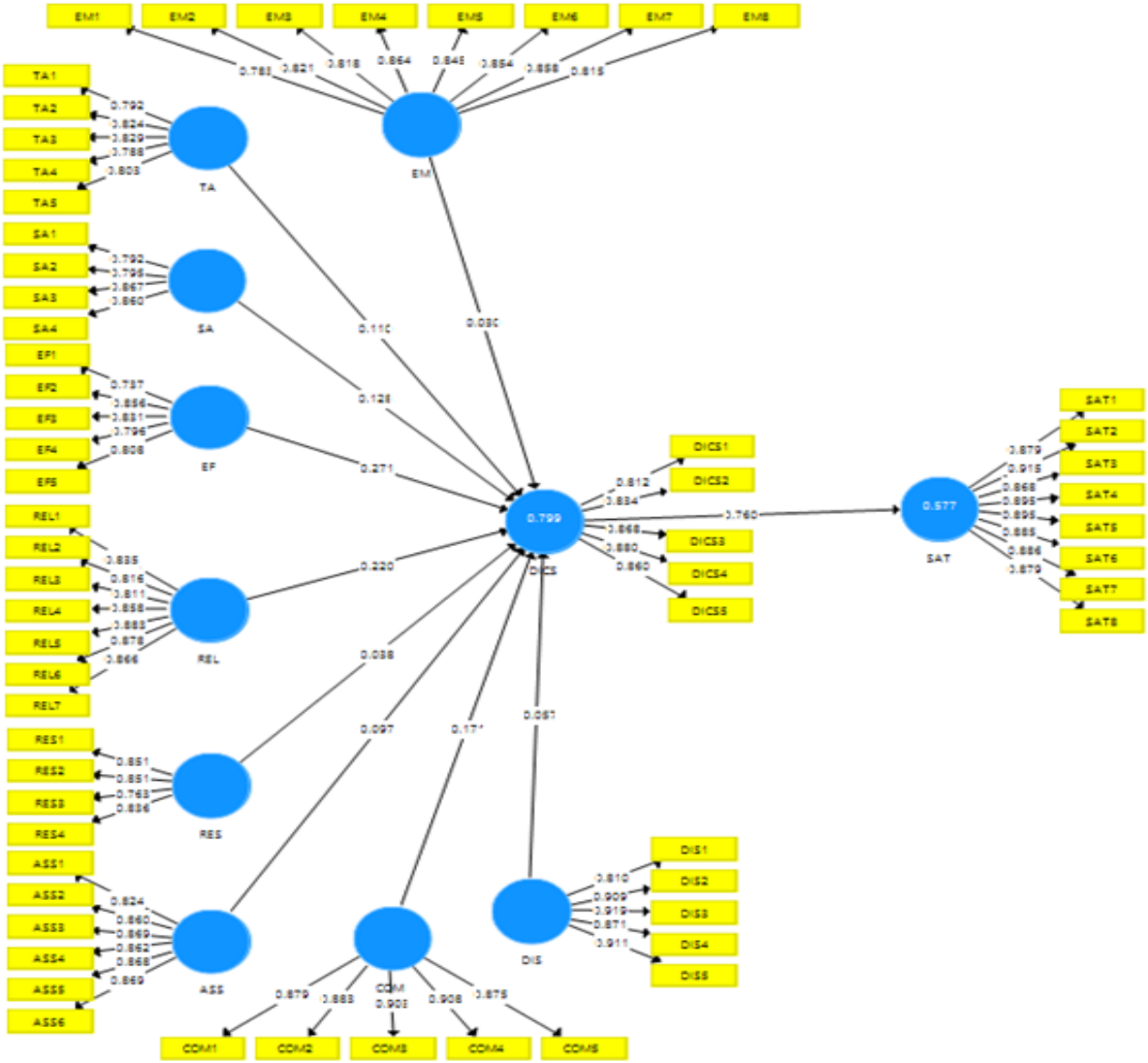
	Saturated Model	Estimated Model
Chi-Square	5684.451	6025.660
NFI	0.833	0.823

By and large, the GoF and NFI provided in Table 2 indicate a marginal fit of the data to the proposed conceptual model. On this basis of this marginal fit – the researcher proceeded to test the proposed hypotheses.

Structural Model

After the hypothesized measurement and structural model had been assessed and finalized, the next step was to examine causal relationships among latent variables through path analysis (Henseler, Hubona & Ray, 2016). According to Lefcheck (2016) and Hair et al. (2017), structural equation modeling (SEM) posits that certain latent variables directly or indirectly influence other latent variables within the model, resulting in estimation results that explain how these latent variables are interrelated. For this study, estimation results obtained through hypothesis testing shows the proposed hypotheses, path coefficients, t-statistics, and whether the hypothesis was supported or rejected. It is widely acknowledged in the literature that t >1.96 indicates significant relationship and higher path coefficients indicate strong relationships among latent variables (Chinomona, Lin, Wang & Cheng, 2010).

Figure1: Structural Model



Prepared by the authors (2023)

Ten hypotheses were tested, and their path coefficients are shown in Figure 1. Hypotheses were considered significant if the p-value was ≤ 0.05 and t-statistics were greater than 1.96 (Hair et al., 2010). The proposed hypotheses, path coefficients, p-values, and decision to accept or reject the hypotheses are presented in Table 3. The path coefficients indicate the strength of the relationships between the independent and dependent variables. Out of the ten hypotheses, six were significant at $p<0.05$, while H1, H6, H7, and H9 were not significant.

Table 3, provides results for the ten hypotheses tested. All ten hypotheses were proposed to be positive.

Table 3: Path Analysis Results

Hypothesized Relationship	Hypotheses	Path Co-efficient	T-Statistics	P-value	OUTCOME
EM → DICS	H1	0.030	0.639	0.523	Supported but Insignificant
TA → DICS	H2	0.110	3.016	0.004	Significant & Supported
SA → DICS	H3	0.128	2.857	0.003	Significant & Supported
EF → DICS	H4	0.271	6.036	0.000	Significant & Supported
REL → DICS	H5	0.220	3.907	0.000	Significant & Supported
RES → DICS	H6	0.038	1.202	0.230	Supported but Insignificant
ASS → DICS	H7	0.097	1.941	0.053	Supported but Insignificant
COM → DICS	H8	0.171	3.797	0.000	Significant & Supported
DIS → DICS	H9	0.057	1.497	0.135	Supported but Insignificant
DICS → SAT	H10	0.760	29.084	0.000	Significant & Supported

Prepared by the authors (2023)

Note: Note: EM = Empathy; TA = Tangible; SA= Safety, EF = Efficiency, REL = Reliability, RES =Responsiveness, ASS = Assurance, COM = Communication, DIS = Discipline, DICS = Improved Health Service Delivery Perceptions, SAT = Satisfaction with Health Service Delivery

Ten hypotheses were proposed in the study. All hypotheses except H1, H6, H7 and H9 are statistically significant. The strongest relationship was between DICS and SAT which has β=0.760; t=29.084; p=0.000. This was followed by the relationship between EF to DICS which has β=0.217; t=6.036; p=0.000; EF to DICS which has β=0.220; t=3.907; p=0.000; COM to DICS which has β=0.171; t=3.797; p=0.000; TA to DICS which has β=0.110; t=3.016; p=0.004; SA to DICS which has β=0.128; t=2.857; p=0.003; ASS to DICS which has β=0.097; t=1.941; p=0.053; DIS to DICS which has β=0.057; t=1.497; p=0.135; RES to DICS which has β=0.038; t=1.202; p=0.230; EM to DICS which has β=0.030; t=0.639; p=0.523 respectively.

RESULTS AND DISCUSSION

Results After Testing Hypothesis 1

The findings from the analysis of H1 reveal a significant positive association between Empathy (EM) and Improved Health Service Delivery Perceptions (DICS). The estimated path coefficient of 0.030 suggests that Empathy (EM) has a positive impact on Improved Health Service Delivery Perceptions (DICS). However, the relationship between Empathy (EM) and Improved Health Service Delivery Perceptions (DICS) is found to be statistically insignificant (t=0.639, p=0.623).

Results After Testing Hypothesis 2

The analysis of H2 revealed that there is a significant positive relationship between Tangible (TA) and Improved Health Service Delivery Perceptions (DICS), with a path coefficient of 0.110 indicating that Tangibility has a positive influence on Improved Health Service Delivery Perceptions. The results demonstrate that the relationship between Tangibility and Improved Health Service Delivery Perceptions is significant, as indicated by the t-value of 3.016 and p-value of 0.004.

Results After Testing Hypothesis 3

The findings of the hypothesis test for H3 suggest a positive association between Safety (SA) and Improved Health Service Delivery Perceptions (DICS), as indicated by a path coefficient of 0.128. This implies that Safety (SA) has a positive effect on Improved Health Service Delivery Perceptions (DICS). The results further indicate that the relationship between Safety (SA) and Improved Health Service Delivery Perceptions (DICS) is significantly positive, with a t-statistic of 2.857 and a p-value of 0.003.

Results After Testing Hypothesis 4

The findings resulting from the test of H4 indicated that there is a relationship between Efficiency (EF) and Improved Health Service Delivery Perceptions (DICS). The estimated path coefficient for H4 was 0.271, indicating a positive association between Efficiency (EF) and Improved Health Service Delivery Perceptions (DICS). Moreover, the results demonstrated that the relationship between Efficiency (EF) and Improved Health Service Delivery Perceptions (DICS) is significantly positive, with a t-statistic of 6.036 and a p-value of 0.000.

Results After Testing Hypothesis 5

The findings derived from testing H5 indicate that a relationship exists between Reliability (REL) and Improved Health Service Delivery Perceptions (DICS). The path coefficient estimated for H5 was 0.220, indicating that Reliability (REL) has a positive influence on Improved Health Service Delivery Perceptions (DICS). Furthermore, the results reveal that the relationship between Reliability (REL) and Improved Health Service Delivery Perceptions (DICS) is significantly positive (t=3.907, p=0.003).

Results After Testing Hypothesis 6

The findings from testing H6 revealed that there is a relationship between Responsiveness (RES) and Improved Health Service Delivery Perceptions (DICS). The path coefficient for this relationship was 0.038, indicating that Responsiveness (RES) has a positive impact on Improved Health Service Delivery Perceptions (DICS). However, the results also suggest that the association between Responsiveness (RES) and Improved Health Service Delivery Perceptions (DICS) is not statistically significant, as indicated by the insignificant t-value of 1.202 and a p-value of 0.230.

Results After Testing Hypothesis 7

After testing H7, the results obtained confirmed that there is a positive relationship between Assurance (ASS) and Improved Health Service Delivery Perceptions (DICS), as evidenced by a path coefficient of 0.097. However, the analysis also indicates that the relationship between Assurance (ASS) and Improved Health Service Delivery Perceptions (DICS) is not significant, as shown by an insignificant t-value of 1.941 and a p-value of 0.053.

Results After Testing Hypothesis 8

After testing H8, the obtained results confirmed the existence of an association between Communication (COM) and Improved Health Service Delivery Perceptions (DICS). The calculated path coefficient was 0.171, indicating that Communication (COM) has a positive influence on Improved Health Service Delivery Perceptions (DICS). Additionally, the findings demonstrate that the relationship between Communication (COM) and Improved Health Service Delivery Perceptions (DICS) is significantly positive, as evidenced by a t-value of 3.797 and a p-value of 0.000.

Results After Testing Hypothesis 9

After testing H9, the results indicated that there is a relationship between Discipline (DIS) and Improved Health Service Delivery Perceptions (DICS). Specifically, a path coefficient of 0.057 was observed, suggesting a positive influence of Discipline (DIS) on Improved Health Service Delivery Perceptions (DICS). However, the relationship between the two variables was found to be positive but insignificant (t=1.497, p=0.135).

Results After Testing Hypothesis 10

The results obtained from testing H10 confirmed the existence of an association between Improved Health Service Delivery Perceptions (DICS) and Satisfaction with Health Service Delivery (SAT). The test revealed a path coefficient of 0.760, indicating that Improved Health Service Delivery Perceptions (DICS) has a positive influence on Satisfaction with Health Service Delivery (SAT). Moreover, the findings indicate that the relationship between Improved Health Service Delivery Perceptions (DICS) and Satisfaction with Health Service Delivery (SAT) is significantly positive, as evidenced by the large t-value of 29.084 and a p-value of 0.000.

Overall Analysis of Hypotheses Testing Results

The present study tested ten hypotheses (H1-H10) examining the association between various dimensions of healthcare service quality and Improved Health Service Delivery Perceptions (DICS) and Satisfaction with Health Service Delivery (SAT). The individual path coefficients of the ten hypotheses were 0.030, 0.110, 0.280, 0.271, 0.220, 0.038, 0.097, 0.171, 0.057, and 0.760, respectively. These results suggest that all hypothesized relationships are positively associated. Specifically, the results show that DICS has the strongest positive relationship with SAT (path coefficient = 0.760), while the weakest relationship was observed between Empathy (EM) and DICS (path coefficient = 0.030), based on the path coefficient values.

CONCLUSION

The study found that efficiency and reliability were the most significant predictors of improved health service delivery perceptions, indicating that patients in rural Mpumalanga value the accuracy and operational aspects of healthcare services, including appropriate medication and reasonable medical expenditure. Communication, safety, and tangibility also had positive effects on health service delivery perceptions, reflecting patients' preference for non-dominating communication styles, error reduction, and physical quality of healthcare facilities.

In contrast, assurance, discipline, responsiveness, and empathy had positive but insignificant effects on improved health service delivery perceptions, which was unexpected given their significance in previous studies. However, contextual factors may have influenced these results.

The study also found a strong positive relationship between improved health service delivery perceptions and patient satisfaction with quality-of-service delivery, emphasizing the importance of improving healthcare service delivery to enhance patient satisfaction levels. Overall, the study highlights the need for public healthcare institutions to focus on improving the quality of their services in order to enhance patient satisfaction and perceptions of health service delivery.

This study has important managerial implications for hospitals and healthcare providers to continuously improve their service quality strategies and pay attention to the factors that strongly influence patient satisfaction. The study contributes to the literature by examining the influence of HEALTHQUAL dimensions on health service delivery perceptions specifically in a South African context. The findings provide practitioners with a better understanding of how to influence patient satisfaction and can inform decisions by managers and policy makers. It is important for managers to understand that empathy, tangibility, safety, efficiency, reliability, responsiveness, assurance, communication, and discipline all influence health delivery satisfaction.

The study faced limitations such as a narrow focus on Mpumalanga provincial hospitals, and the use of an online survey that could lead to rushed responses and potential issues with language barriers. To address these limitations, future research should consider replicating the study in different sectors and countries and using qualitative methods with multiple language options to better accommodate the multilingual South African population. Continued research on factors affecting health delivery satisfaction can help managers develop effective strategies.

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