



A Relationship between Physical Infrastructure and Patient Satisfaction: A Case Study of Kantipur Dental Hospital

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Abstract

This study investigates the impact of physical infrastructure on patient satisfaction at Kantipur Dental Hospital, a prominent dental care facility in Nepal. With the increasing demand for high-quality healthcare services, understanding the factors influencing patient satisfaction is crucial for healthcare providers. The research aims to explore how various aspects of the hospital's infrastructure—specifically, the use of state-of-the-art equipment, cleanliness and hygiene, sterilization practices, and convenient location—affect patients' perceptions of care quality. A quantitative research design was employed, utilizing a structured questionnaire distributed to 117 patients who had received treatment at Kantipur Dental Hospital within the last six months. The questionnaire measured patients' perceptions of the clinic's infrastructure and their overall satisfaction, with a focus on two key dimensions: confidence after treatment and the acceptability of service fees. Data analysis was conducted using Spearman's rho correlation to assess the relationships between the perceived infrastructure variables and patient satisfaction outcomes. The findings reveal significant positive correlations between perceptions of the hospital's physical infrastructure and patient satisfaction. Specifically, the use of modern equipment and a clean, hygienic environment were strongly associated with increased patient confidence post-treatment. Furthermore, the accessibility of the hospital location was also found to influence perceptions of service fee acceptability. Notably, while sterilization practices contributed positively to patient confidence, they did not significantly



impact fee perceptions, suggesting that patients prioritize cleanliness and modernity in their overall evaluation of care. These results underscore the critical role of physical infrastructure in enhancing patient satisfaction at Kantipur Dental Hospital. The study recommends that healthcare facilities continue to invest in modern technology and maintain high standards of cleanliness to foster patient confidence and satisfaction. This research provides valuable insights for clinic management and policy-makers, emphasizing that improving physical infrastructure is essential for delivering quality healthcare services and ensuring positive patient experiences.

Keywords: Infrastructure, patient, perception, satisfaction

Introduction

Nowadays almost every organization is concerned with the matter of satisfaction that will be received by the users who can be known as customers, patients, consumers or clients (Dangol & Mishra, 2024; Khadka, Nyaupane, & Timalseña, 2024). The quality of healthcare services has been a significant area of focus in both developed and developing countries. Among various healthcare services, dental care stands out due to its direct impact on overall health and well-being. Dental diseases, if not treated properly, can lead to severe health issues, including heart diseases, diabetes, and respiratory infections. Consequently, the perception of patients towards the quality of dental care services is critical in ensuring effective treatment outcomes and overall patient satisfaction (Piya, Shrestha, & Shrestha, 2022).

customer satisfaction is earned, a number of customers will be followed and the long-term relationship can be built with their customers. Sakha and Silwal (2019) also firmly stated consumer satisfaction as “the very core of modern marketing theory and practice” which supports the concept of meeting the needs of customers among the organizations to get the benefit of surviving and prosperity (Khatri, Bista, & Poudel, 2024; Neupane & Timsina, 2015). Oral health can influence the quality of an individual’s life. Patient’s perception of the service plays a vital role in understanding the reasons as to why a patient may be satisfied or dissatisfied with the service that they accessed at a dental setting.

The important of quality in dental care encompasses various dimensions, including technical competence, interpersonal interactions, physical environment, and accessibility of services. High-quality dental care not only ensures the effective treatment of dental problems but also plays a crucial role in preventing future dental issues (Sakha & Menariya, 2021). Moreover, quality care can enhance patient trust, adherence to treatment plans, and overall satisfaction, thereby fostering a positive patient-provider relationship.

Patients is desirable for receiving the quality of dental care services. stated that dental patients who can be called the consumers of healthcare are highly aware in increasing demand for more responsibility from the service providers. Concerning with improving the quality of dental care services, some factors are determined for the dental service quality such as ensuring oral health, achieving the desires of the patients, satisfying the needs of the patients and providing optimal solutions for the best process or procedures in function (Gurung & Saraswat, 2019). There are several research studies showing that the quality, satisfaction and dissatisfaction in healthcare



services are determined by variables like great relation between doctors and patients, available of basic infrastructure, waiting time, consultation time and information received, Therefore, the quality of dental care service is the distinction of service factor for the dental healthcare sector.

Patient satisfaction with dental care service quality is an important aspect of influencing factor to visit again in the future (Dangol & Mishra, 2024). In another word, it can be explained that satisfied patients will become loyal customers, re-visitors, and contribute positively to the success of their dental care experiences. Described patient satisfaction as the extent to which the needs or expectations of the patients are met with decent standard of service quality. Also stated that patient satisfaction can help to locate the strength and weakness aspects in the dental centers and assist in evaluating the quality of treatment in the dental field. Patient satisfaction may seem easy to understand but difficult to perform because it reflects total experience of dental healthcare service concerning with many factors such as service quality, emotional, intellectual, previous experiences and expectations of the patients (Wagle, Neupane, Nyaupane, & Timalsena, 2024).

Existing literature has explored various aspects of healthcare quality; however, there is limited research focused specifically on dental care services from the patient's perspective. Many studies have prioritized clinical outcomes and professional viewpoints, often neglecting the subjective experiences and satisfaction of patients. This study aims to address this gap by focusing on patient perceptions at Kantipur Dental Hospital, providing a comprehensive analysis that can inform patient-centered improvements in dental care.

The background of this study underscores the significance of understanding patient perceptions in dental care quality. By exploring the factors influencing these perceptions and addressing gaps in existing literature, this research aims to contribute valuable insights that can enhance the quality of dental care services at Kantipur Dental Hospital. Ensuring high-quality, patient-centered dental care is essential for achieving better health outcomes and patient satisfaction.

This structured approach provides a comprehensive background for your study, emphasizing the importance of patient perceptions in evaluating and improving dental care services at Kantipur Dental Hospital.

Problem Statement

The perception of patients towards the quality of dental care services is a critical aspect of healthcare that directly influences patient satisfaction, adherence to treatment plans, and overall health outcomes. Despite the importance of high-quality dental care, there remains a gap in understanding how patients perceive the services provided at dental hospitals, particularly in specific contexts such as Kantipur Dental Hospital.

The primary problem addressed by this study is the lack of comprehensive data on patient perceptions regarding the quality of dental care services at Kantipur Dental Hospital. This gap in knowledge can lead to several issues:

- 1) This study will provide dental care service providers in Kantipur Dental Hospital by the information concerning with the factors of dental care service quality, patient satisfaction,



- 2) This study will help dental care service providers in Kantipur Dental Hospital in enhancing dental care service quality, maintain current customers, attracting new
- 3) Service quality and improvement without clear insights into patient perceptions, it is challenging for Kantipur Dental Hospital to identify areas needing improvement. Understanding patient feedback is essential for implementing effective strategies to enhance the quality of dental care services.
- 4) Patient satisfaction is a key indicator of the success of healthcare services. Negative perceptions can lead to low satisfaction levels, affecting patient retention rates. Patients who are dissatisfied with the quality of care are less likely to return for future services and may discourage others from seeking care at the hospital.

Significance of the study

The significance of this study lies in its potential to improve the quality of dental care services at Kantipur Dental Hospital by providing a detailed understanding of patient perceptions. By addressing patient needs and expectations, the hospital can enhance service delivery, increase patient satisfaction, and foster a culture of continuous improvement and patient-centered care. The insights gained from this study will not only benefit Kantipur Dental Hospital but also contribute to broader efforts to improve dental care services and patient outcomes in the healthcare sector.

Objective

The general objective of this study was to examine the relationship between perceived physical infrastructure of clinics and patient satisfaction.

Hypothesis

H1: There is a significant positive relationship between perceived clinic physical infrastructure and patients' satisfaction.

Methods & Materials

Research Design

A quantitative research design with a correlational approach was utilized in this study, which examined the perceived physical infrastructure of clinics in relation to patients' satisfaction with their visit to the clinics (Mahat, Neupane, & Shrestha, 2024). This would be in testing the hypothesis that there is a significant positive relationship between perception of patients on clinic infrastructure, in terms of state-of-the-art equipment, cleanliness, sterilization practices, and convenient location, and their satisfaction, as measured by confidence after treatment and acceptability of service fees. Data was collected through a structured survey distributed to patients, and Spearman's rho correlation was the appropriate technique relating the different variables analyzed.

Sample and Sampling Procedure

The sample consisted of 117 patients who had visited any dental clinic within the last six months. This convenience sampling is used to recruit participants to ensure ease of access, targeting a population with recent experiences in dental clinics. The inclusion criteria involved



adults aged 18 years or older who had been treated in a dental clinic. The total sample size of 117 respondents **Data Collection**

Data collection was done through a self-administering structured questionnaire, developed for this study. It assessed perceptions about the physical structure of the clinic and satisfaction with the services. The instrument had two parts:

Perceived Clinic Infrastructure: This subscale consisted of the utilization of sophisticated up-to-date equipment, cleanliness, hygiene, sterilization, and an easily accessible location. All the items were measured on a 5-point Likert scale anchored from 1 (strongly disagree) to 5 (strongly agree).

Patient Satisfaction: This aspect measured the satisfaction of the patients based on two main variables, namely, confidence after treatment and acceptability of the clinic's fees in offering dental services. The confidence after treatment was assessed by questionnaires that probed into the secretiveness of patients in regard to the results of their treatment. The acceptability of fees was assessed based on the perception by the respondents of the reasonableness of the charges for the services, relative to the quality of care provided.

was adequate to detect statistically significant correlations in the analysis.

Data Analysis

Data collected were entered and analyzed using the Statistical Package for Social Sciences, SPSS version 26. The hypothesis was tested by applying Spearman's rho correlation, since the data were non-parametric. Spearman's rho ranks variables and is especially suited for testing both strength and direction of monotone relationships between ranked variables. The strength of the correlation coefficients was interpreted thus:

0.00-0.19: Very weak

0.20-0.39: Weak

0.40-0.59: Moderate

0.60-0.79: Strong

0.80-1.0: Very strong

The levels of significance were $p < 0.05$ for statistical significance and $p < 0.01$ for high statistical significance.

Ethical Considerations

Informed consent was obtained from all participants prior to the study, having previously been informed of its purpose. Participation was strictly on a voluntary basis, and respondents were assured that their responses would be treated as confidential. The research study was in conformance with ethical standards as set by the relevant institutional review boards, and no identifying personal information was collected in order to assure anonymity.

Limitations

One of the possible limitations could be a convenience sampling method, in which generalizability may be restricted. Moreover, self-reporting data also can be vulnerable to response bias, since participants may overestimate or underestimate their perceptions about the clinic infrastructure and its satisfaction. However, the sample size is large enough, and appropriate statistical techniques may reduce the risk of spurious correlation.

Results & Analysis

Hypothesis testing

Table 1: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
The clinic uses State-of-art equipment.	.225	109	.000	.898	109	.000
The clinic has cleaned and hygienic appearance.	.240	109	.000	.881	109	.000
The clinic has provided treatment through sterilization of instruments	.252	109	.000	.851	109	.000
The clinic is located in convenient arrival."	.216	109	.000	.850	109	.000
I have more confidence after treatment	.279	109	.000	.819	109	.000
I think the fee for dental services in the clinic is acceptable.	.284	109	.000	.848	109	.000

a. Lilliefors Significance Correction

Source: Survey 2024

Table 1 (Tests of Normality) shows the results of the Kolmogorov-Smirnov (K-S), and Shapiro-Wilk tests to test the normality of each variable data.

Kolmogorov-Smirnov Test (K-S Test): The Kolmogorov-Smirnov Statistic is a test for normality of data. For all the above, the p-value is .000, that is, $p < 0.05$. The test therefore rejects the null hypothesis of normality for each of the variables.

Shapiro-Wilk Test: The Shapiro-Wilk Statistic for normality is a much-associated normality test and is preferred when sample sizes are small. The p-value for all of them is .000 as in the case of other variables. Again, this would also mean that distribution is not normal.

Thus, the point is that the Kolmogorov-Smirnov and Shapiro-Wilk tests in all the variables, from "The clinic uses state-of-the-art equipment" to "The clinic has a clean and hygienic appearance," etc., are under 0.05, which means that this data significantly differs from the

normal distribution. It means that none of the mentioned variables has normally distributed data. Hence, rather than Pearson's correlation, Spearman's correlation test is preferred.

Table 2: Correlation between infrastructure and satisfaction

			The clinic uses State-of-art equipment.	The clinic has cleaned and hygienic appearance.	The clinic has provided treatment through sterilization of instruments	The clinic is located in convenient arrival."	I have more confidence after treatment	I think the fee for dental services in the clinic is acceptable.
Spearman's rho	The clinic uses State-of-art equipment.	Correlation Coefficient	1.000	.361**	.375**	.263**	.236*	.216*
		Sig. (2-tailed)	.	.000	.000	.004	.011	.020
		N	117	115	117	116	114	115
	The clinic has cleaned and hygienic appearance.	Correlation Coefficient	.361**	1.000	.322**	.299**	.275**	.403**
		Sig. (2-tailed)	.000	.	.000	.001	.003	.000
		N	115	115	115	114	112	113
	The clinic has provided treatment through sterilization of instruments	Correlation Coefficient	.375**	.322**	1.000	.345**	.242**	.158
		Sig. (2-tailed)	.000	.000	.	.000	.010	.091
		N	117	115	117	116	114	115
	The clinic is located in convenient arrival."	Correlation Coefficient	.263**	.299**	.345**	1.000	.232*	.286**
		Sig. (2-tailed)	.004	.001	.000	.	.014	.002
		N	116	114	116	116	113	114

I have more confidence after treatment	Correlation Coefficient	.236*	.275**	.242**	.232*	1.000	.476**
	Sig. (2-tailed)	.011	.003	.010	.014	.	.000
	N	114	112	114	113	114	112
I think the fee for dental services in the clinic is acceptable.	Correlation Coefficient	.216*	.403**	.158	.286**	.476**	1.000
	Sig. (2-tailed)	.020	.000	.091	.002	.000	.
	N	115	113	115	114	112	115
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: Survey 2024

Hypothesis 1- There is a significant positive relationship between perceived clinic physical infrastructure and patients' satisfaction. To test this hypothesis, Spearman's rho correlation was used. This analysis explores the correlation of perceptions of various elements relating to the physical infrastructure of the facility, such as "State-of-the-art equipment," "Clean and hygienic appearance," "Sterilization of instruments," and "Convenient location," against measures of patient satisfaction like "Confidence after treatment" and "Acceptability of the fee for services."

The perceptions that reflect the physical infrastructure of the clinic are the use of advanced state-of-the-art equipment, cleanliness and hygiene, treatment of patients by sterilization of instruments, and convenience of location to arrive at. Variables reflecting patient satisfaction would be confidence after treatment and the acceptability of the clinic's fees for dental services.

Correlation between Clinic Infrastructure and Confidence After Treatment:

The findings indicate that the perception of state-of-the-art equipment and confidence after treatment is significantly correlated, as indicated by Spearman's $r = .236$, $p = .011$; thus, it can be obtained that the patients who perceive the clinic to use modern equipment tend to have higher confidence post-treatment. In the same way, confidence after treatment is positively and significantly related to the perception of the clinic as being clean and hygienic, $r = .275$, $p = .003$. $p = .003$, further indicating that when patients perceive the clean environment of the clinic, their confidence post-treatment is likely to be higher. In addition, sterilization of instruments also has a positive relationship with patient confidence, $r = .242$, $p = .010$, showing that when patients perceive sterilization at the clinic, they tend to be confident in their treatment. Finally, the location of the clinic is significantly related to patient confidence after treatment, $r = .232$, $p = .014$. $p = .014$), which also could influence the outcome of a treatment.



Clinic Infrastructure and Acceptability of Fees:

As for the acceptability of dental fee service, perceived state-of-the-art equipment is positively related to finding the fees acceptable ($r = .216$, $p = .020$).

The correlation between the perception of using advanced equipment and the patients' view that the fee is acceptable was significant at $r = .384$, $p = .020$. Thus, the higher a patient feels that the clinic uses up-to-date equipment, the more he or she would find the fees reasonable. A relationship between the cleanliness of the clinic and the acceptability of the fee was noticed: $r = .403$, $p = .000$, $p = .000$, indicating that cleanliness significantly affects the perceived value of the services. The correlation of sterilization of instruments to the acceptability of fees showed no statistical significance ($r = .158$, $p = .091$), suggesting that this feature of infrastructure may not be of much importance in the fee's acceptability. The last positive correlation that this study had was between a convenient location of the clinic and the acceptability of the fees: $r = .286$, $p = .002$, $p = .002$) again, which might indicate that ease of access is also an added factor in how patients grade the value of services relative to their cost. The findings from this analysis indicate that there is a significant positive relationship between patients' perceptions of the physical infrastructure of the clinic and their satisfaction as measured by confidence after treatment and the acceptability of fees. Of these, the perceptions of a clean and hygienic environment and a conveniently located clinic are also reported to be strong predictors of patient satisfaction. Most of the infrastructure-related variables correlate positively with satisfaction, except that the perception of instrument sterilization did not significantly influence the acceptability of the clinic's fees.

The hypothesis is, therefore, accepted, and it points to a positive significant correlation between perceptions of the clinic's physical infrastructure on its cleanliness, modernity of equipment, and accessibility with the satisfaction of the patients. These results support the fact that for any improvement in patient satisfaction, the clinics should not only provide a clean and hygienic environment but also use advanced and state-of-the-art equipment, and ensure easy and convenient accessibility for their patients.

Conclusion

The research found a very significant positive correlation between the patients' perceptions of the physical infrastructure of the clinics and their level of satisfaction. To be specific, it identified the predictive nature of modern, state-of-the-art equipment, neat and hygienic conditions, and the convenience of the clinic's location on the patient's satisfaction of confidence after treatment and the acceptability of the fees charged. In contrast, while sterilization of instruments was directly related to patient confidence, it did not bear much impact on perceived acceptability of service fees. These findings support the hypothesis that the physical environment of a clinic plays a critical role in shaping patients' overall satisfaction. For this reason, it is clear that providing excellent medical care is not enough but also keeping the physical environment modern, clean, and accessible for any type of patient will determine the level of satisfaction of patients from a clinic. The study also indicated that infrastructure belonged to service quality since it affected patient confidence and value for money.



Recommendations

From the above information and results obtained, the following recommendations are suggested:

Invest in Modern Equipment: Clinics should invest in the most modern equipment. It is of great importance as the level of technology makes a huge difference with which patients express confidence and the value they believe the services carry. With modern equipment, trust may be enhanced and satisfaction promoted, particularly in treatments.

Care for Cleanliness and Hygiene: Cleanliness is one of the most important aspects that any clinic must be fully concerned with, as it helps build confidence among patients, which again relates highly to the acceptability of service fees. Regular cleaning and maintenance routines should be strictly adhered to in all areas of the clinic.

Ensure Easy Access: Convenience in the location of clinics was to be ensured, as this was one of the leading factors of satisfaction for the patients. While selecting a location, one should consider parking availability and the options for public transportation.

Emphasize Patient-Centric Sterilization Practices: As the sterilization practices are about the safety of the patient, the study did not find their impact on the feelings of patients about the acceptability of fees. The clinics must continue to emphasize safety; still, it has also been considered proper that such communications should be done among the patients so that they value the added worth.

Value Proposition Improved Communication: Facilities and cleanliness are among the most important factors that affect the patients' overall satisfaction and determine whether or not they feel the service was worth what they paid for. The benefits of a facility with modern infrastructure, cleanliness, pricing transparency, educating the patient on the benefits of advanced equipment, and safety precautions will make them feel better about the value proposition of the treatment.

Addressing such infrastructure aspects helps the clinics work on garnering greater patient satisfaction and ensuring their loyalty over a longer period of time, thus contributing to the quality in service provision within the health sector.

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