

Impact of Healthcare Infrastructure Quality on Patient Satisfaction and Retention in Private Hospitals

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Abstract: *This paper looks at how the quality of infrastructure in private hospitals in India affects whether patients are satisfied with their visit and whether they come back to the same hospital in the future. The study collected primary data from 96 patients who visited a private hospital at least once in the past year. A structured questionnaire with 20 questions was used. The questionnaire covered eight areas of infrastructure quality -cleanliness, medical equipment, waiting time, staff communication, physical environment, digital services, patient room comfort, and support services. Data was analyzed using percentage analysis, mean scores, standard deviation, and correlation analysis in Microsoft Excel. The results show that all eight infrastructure areas have a positive relationship with both patient satisfaction and patient retention. Modern medical equipment got the highest satisfaction score (mean = 3.95) while waiting time got the lowest (mean = 3.19). Staff behavior and communication quality showed the strongest link with patient retention, with correlation values of 0.79 and 0.81 across two retention measures. About 80.2% of patients said that rude staff behavior would stop them from returning to the same hospital, even if the medical treatment was excellent. About 77.1% said poor cleanliness would make them switch hospitals. Both alternate hypotheses of the study were accepted, confirming that healthcare infrastructure quality significantly impacts patient satisfaction and retention in Indian private hospitals.*

Keywords: Healthcare Infrastructure, Patient Satisfaction, Patient Retention, Private Hospitals, India

I. INTRODUCTION

1.1 Background

India has one of the largest and fastest growing healthcare markets in the world. Over the past 30 years, the healthcare sector has changed from a system that depended mainly on government hospitals to a large and competitive private hospital industry. Large hospital chains, multi-specialty hospitals, and super-specialty hospitals have come up across major cities. Thousands of international patients now visit India for medical treatment every year, which shows how far private healthcare in India has come.

India's healthcare market is expected to grow beyond 600 billion USD by 2030. This growth is driven by a rising population, increasing awareness about health, a rise in lifestyle diseases like diabetes and heart disease, growing health insurance coverage, and increasing urbanization.

The Indian healthcare system has two main parts. The first is the government sector, which provides free or low-cost care to citizens. The second is the private sector, which includes privately owned hospitals, clinics, diagnostic labs, and specialty care centers. Government hospitals are often overloaded, underfunded, and short on staff and equipment. Because of this, more than 70% of all healthcare services in urban India are now provided by private hospitals.

Private hospitals in India are no longer in a market where patients have no choice. In most cities, patients today can choose from many private hospitals. This competition has changed the relationship between hospitals and patients. The patient is now an informed consumer who reads online reviews, compares hospitals, and makes decisions about where



to go for care. This has made patient satisfaction and patient retention one of the most important priorities for hospital management.

1.2 Role of Healthcare Infrastructure

When people think of a hospital, they first think of doctors and medicines. But a hospital is much more than that. The physical and service setup of a hospital -everything from how clean the toilets are to how the front-desk staff speak to patients -shapes the entire patient experience.

Healthcare infrastructure includes physical buildings and spaces, sanitation and cleanliness standards, quality and availability of medical equipment, comfort of patient rooms and waiting areas, behavior and communication of all staff, digital systems like online appointment booking and report delivery, and support services like the pharmacy, cafeteria, and parking.

This is especially important in private hospitals because patients are paying for their care. Paying patients have higher expectations. They want clean premises, working equipment, respectful staff, reasonable wait times, clear communication, and a comfortable environment. If these expectations are met, patients are satisfied and return. If they are not met, patients leave -and they often tell others about their bad experience.

Understanding which parts of healthcare infrastructure matter most to patients helps hospitals decide where to focus their improvements and how to spend their money wisely.

1.3 Research Topic and Key Definitions

Patient satisfaction in this study means the level of comfort and happiness a patient feels during their entire hospital visit, covering both the physical environment and the interaction with staff.

Patient retention means how likely a patient is to visit the same hospital again and to recommend it to family or friends.

Healthcare infrastructure quality in this study covers eight areas: cleanliness and hygiene, availability of medical equipment, waiting time management, staff communication, physical environment, digital services, comfort of patient rooms and waiting areas, and support services like pharmacy, parking, and cafeteria.

The central question of this study is: which of these infrastructure areas matters most to patients when they decide whether they are satisfied with a private hospital and whether they will return?

1.4 Problem Statement

Private hospitals in India are spending large amounts of money on improving infrastructure. Yet patients still complain about long waiting times, dirty toilets and corridors, rude reception and billing staff, poor communication from doctors, uncomfortable waiting areas, and difficult digital systems. There is a gap between what hospitals think patients want and what patients actually value. Filling this gap with real patient data is the main motivation for this study.

Patient satisfaction also links to actual health outcomes. Satisfied patients follow their treatment plans, attend follow-up appointments, and share accurate information with their doctors. Investing in infrastructure quality is therefore good for both the hospital's business and for patients' health.

1.5 Significance of the Study

This study is significant for three groups of people:

For hospital managers and administrators, this study provides direct data about which infrastructure areas matter most to their patients. This helps them make smarter decisions about where to invest.

For quality managers and bodies like the National Accreditation Board for Hospitals (NABH), this study provides India-specific data that can be used to improve quality standards and assessment criteria.

For government policymakers, the study highlights the need to regulate and benchmark infrastructure quality in private hospitals, especially as more people access private hospitals through schemes like Ayushman Bharat.



1.6 Scope of the Study

The study covers patients aged 18 to 65 who visited a private hospital in urban or semi-urban India at least once in the past year. Both in-patients (those admitted to the hospital) and outpatients (those who came for consultation, diagnostics, or day procedures) are included. The study covers eight infrastructure quality areas identified from the existing research literature. It does not measure clinical outcomes -whether the patient was medically treated correctly is not part of this study. The focus is entirely on non-clinical infrastructure factors and their relationship with patient satisfaction and retention.

II. REVIEW OF LITERATURE

2.1 Introduction

Before starting new research, it is important to understand what other researchers have already found on the same topic. This is called a literature review. It helps identify what is already known, what gaps exist, and how the current research builds on prior work.

The following is a summary of key studies reviewed for this research, covering the period 2022 to 2026.

Nair and Krishnamurthy (2022) studied how the behavior of front-desk and reception staff affects patient satisfaction in hospitals in Kerala and Tamil Nadu. They studied 130 patients and found that the first staff contact a patient has - usually at reception -has a disproportionately large impact on the patient's overall experience. Patients who were treated warmly at the reception reported higher overall satisfaction, even if other parts of the visit were not ideal. Patients who were treated rudely at reception were far less satisfied and many said they would not return, even if the medical care was good.

Joshi and Patel (2022) looked at how clearly hospitals communicate information to patients -about their diagnosis, treatment plan, costs, and discharge process. They studied 160 patients in Ahmedabad and Surat and found that patients who felt well-informed reported much higher satisfaction. Billing transparency was especially important -patients who received clear, explained bills were less likely to complain about high costs.

Bose, Roy, and Joshi (2023) studied the impact of digital hospital systems -like online appointment booking, electronic health records, and WhatsApp updates -on patient satisfaction. Studying 210 respondents across Kolkata, Bhubaneswar, and Guwahati, they found that patients who used digital booking systems saved 20 to 30 minutes of waiting time on average. However, older patients and those with low digital literacy were frustrated by digital-only systems and needed offline alternatives.

Srivastava and Tiwari (2023) focused on elderly patients in North India and found that their infrastructure priorities are different from younger patients. Physical accessibility features like ramps, grab bars, and wide corridors matter more to them. They are also less interested in digital services and prefer phone-based appointments and in-person communication.

Reddy and Subramaniam (2023) studied the impact of visible infection control measures on patient trust and satisfaction in Hyderabad, Vijayawada, and Visakhapatnam after the COVID-19 pandemic. They found that patients became much more aware of visible hygiene measures after the pandemic. Patients who could see hygiene protocols being followed felt safer and reported higher overall satisfaction.

Iyer and Balasubramanian (2024) looked specifically at waiting area design in outpatient settings in Tamil Nadu. They studied 180 patients and found that a well-designed, comfortable waiting area significantly reduced patient anxiety during long waits and improved overall satisfaction. Simple improvements -better seating, clean drinking water, and good air conditioning -had a big positive impact even when wait times were long.

Patel and Shah (2024) studied how parking facilities, hospital signage, and navigation systems affect the first-contact experience for patients in Gujarat. They found that many patients felt stressed even before meeting a doctor, because of poor parking and confusing signage at large hospital campuses. A well-organized arrival experience set a positive tone for the whole visit.



Anand and Kulkarni (2024) examined telemedicine and digital health services in Mumbai, Bengaluru, and Hyderabad, studying 220 patients. They found that patients who had smooth digital experiences were significantly more loyal to their hospital. However, technical problems with video calls or confusing apps led to lower satisfaction. Hybrid models that combined in-person and digital options performed best across all patient age groups.

Pandey and Chaturvedi (2025) studied how safety infrastructure -security staff, CCTV, fire exits, visitor management systems -affects patient satisfaction in Delhi, Noida, and Gurgaon. They found that visible safety systems were positively associated with overall satisfaction. Patients felt more comfortable and more likely to recommend hospitals that had clear and well-maintained safety systems.

Thakur and Mehrotra (2025) studied private hospital patients in tier-3 cities like Gorakhpur and Bareilly. They found that infrastructure expectations were lower in smaller cities but patients still had clear minimum standards for cleanliness and staff attitude. Simple improvements in these two areas could significantly improve satisfaction and reduce patient migration to bigger cities for routine care.

Bhatt and Sood (2025) studied how patients assess value for money in private hospitals in Mumbai, Ahmedabad, and Jaipur. They found that patients judge infrastructure quality in relation to what they paid. A moderately equipped hospital with reasonable fees was rated more satisfactory than an expensive hospital that did not appear to match its pricing in quality. Perceived value for money was a strong predictor of patient retention.

Rao and Venkatesh (2026) conducted a large quantitative study of 300 patients across Chennai, Hyderabad, and Bengaluru, measuring all major infrastructure dimensions together. They found that staff behavior and cleanliness showed the highest independent correlation with overall patient satisfaction. Digital services and room aesthetics had smaller independent effects. For retention specifically, staff behavior and overall satisfaction were the two strongest predictors.

Singh and Ahluwalia (2026) analyzed over 5,000 online patient reviews from 50 private hospitals and also surveyed 180 patients. They found that the three most commonly mentioned infrastructure factors in positive and negative reviews were cleanliness, staff behavior, and waiting time. Hospitals with consistently high ratings on these three dimensions attracted significantly more new patients through digital word-of-mouth.

2.2 Research Gaps

Three main gaps were identified from this literature review.

First, most studies focus on one or two infrastructure dimensions at a time. No single study has combined all key dimensions -physical facilities, cleanliness, equipment, staff behavior, waiting time, digital services, patient comfort, and support services -into one framework and measured their combined effect on both patient satisfaction and retention. Second, very few studies include both inpatients and outpatients together. Both groups interact with hospital infrastructure and a more complete picture requires data from both.

Third, most studies are geographically limited to one city, state, or region. No study covers a wider cross-section of urban and semi-urban India across multiple regions.

III. RESEARCH METHODOLOGY

3.1 Research Design

This study uses a descriptive research design. A descriptive design is used when the researcher wants to describe and measure a situation as it currently exists, without changing anything or running an experiment. This study aims to measure patients' current perceptions of healthcare infrastructure quality and how those perceptions relate to their satisfaction and retention decisions. This design is appropriate because the goal is to capture, describe, and analyze existing patient opinions -not to test a new intervention or treatment.



3.2 Research Approach

The study uses a quantitative research approach. Quantitative research collects numerical data from respondents and analyzes it using mathematical and statistical methods to find patterns and relationships. Patients were asked to rate statements on a 5-point Likert scale, which produced numerical data that was then analyzed in Microsoft Excel. A quantitative approach is suitable here because it allows the relationship between infrastructure quality and patient outcomes to be measured accurately and expressed in numbers that hospital managers can directly use.

3.3 Research Objectives

Objective 1: To find which healthcare infrastructure quality factors in private hospitals affect patient satisfaction in India.

Objective 2: To study the relationship between healthcare infrastructure quality and patient retention decisions in private hospitals in India.

3.4 Research Hypotheses

Hypothesis Set 1 -Patient Satisfaction

H₀₁: Healthcare infrastructure quality does not have a significant impact on patient satisfaction in private hospitals in India.

H₁₁: Healthcare infrastructure quality has a significant impact on patient satisfaction in private hospitals in India.

Hypothesis Set 2 -Patient Retention

H₀₂: There is no significant relationship between healthcare infrastructure quality and patient retention in private hospitals in India.

H₁₂: There is a significant relationship between healthcare infrastructure quality and patient retention in private hospitals in India.

3.5 Data Sources

This study uses only primary data collected directly from patients. Secondary data such as government reports or hospital records was not used in the data analysis. This choice was made because the study requires current, direct patient opinions and perceptions, which only fresh primary data can provide.

3.6 Sampling Design

Parameter	Details
Target Population	Patients who visited a private hospital in India at least once in the past one year
Age Group	18 to 65 years
Geography	Urban and semi-urban India
Sampling Method	Convenience sampling
Sample Size	96 respondents
Type of Respondents	Both in-patients and outpatients

Convenience sampling was used because it is practical and time-efficient for a management research study with a fixed submission timeline. It is appropriate for a descriptive study where the aim is to understand patient opinions and trends, not to make statistically precise claims about a defined population.

3.7 Data Collection Method

Data was collected using a structured questionnaire with 20 questions, organized in three sections. Section A had five demographic questions. Section B had eight Likert scale questions about infrastructure quality and patient satisfaction. Section C had seven Likert scale questions about infrastructure quality and patient retention.

Data was collected in two ways at the same time. An online survey using Google Forms was shared through WhatsApp groups, email, and social media. A paper-based survey was distributed in the waiting areas of private hospitals and



clinics to reach respondents who were not comfortable with online forms. Both methods used the same questionnaire so that all 96 responses could be combined and analyzed as a single dataset.

All participation was voluntary. No personal identifying information was collected. All responses were anonymous and used only for academic research.

3.8 Likert Scale

All Likert scale questions in Section B and Section C used the same 5-point scale:

Scale Value	Meaning
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

A higher mean score indicates a more positive patient response. A lower mean score indicates more dissatisfaction or disagreement.

3.9 Data Analysis Techniques

Three main techniques were used in Microsoft Excel:

Percentage analysis was used for all demographic and frequency data to show the distribution of responses in a clear way.

Mean and standard deviation were calculated for every Likert scale question. The mean shows the average response and the standard deviation shows how spread out or consistent the responses were.

Correlation analysis using the Excel CORREL function was used to measure the strength of the relationship between each infrastructure quality dimension and the two main patient retention variables (Q14 and Q20).

3.10 Reliability and Validity

The questionnaire is reliable because it uses the widely accepted 5-point Likert scale format, which is consistently used in healthcare management research. The questions are clearly written and easy to understand. The instrument was adapted from five peer-reviewed studies published between 2021 and 2025.

The questionnaire has content validity because all 20 questions are directly tied to the two research objectives, the two hypothesis sets, and the eight infrastructure dimensions identified from the literature. No question goes beyond the scope of the study.

IV. DATA ANALYSIS AND INTERPRETATION

4.1 Demographic Analysis

Table 1: Age Group Distribution (Q1)

Age Group	Number of Respondents	Percentage
18 to 30 years	34	35.4%
31 to 45 years	38	39.6%
46 to 60 years	18	18.8%
Above 60 years	6	6.3%
Total	96	100%

The 31–45 age group is the largest at 39.6%, followed by the 18–30 group at 35.4%. Together these two groups make up 75% of respondents. This is expected, as working-age adults are the most active users of private healthcare and are also better positioned to assess infrastructure quality across multiple dimensions.



Table 2: Gender Distribution (Q2)

Gender	Number of Respondents	Percentage
Male	52	54.2%
Female	41	42.7%
Prefer not to say	3	3.1%
Total	96	100%

The gender split is reasonably balanced at 54.2% male and 42.7% female. This balance means the findings reflect the views of both male and female private hospital patients fairly.

Table 3: Frequency of Hospital Visits (Q3)

Frequency of Visit	Number of Respondents	Percentage
Once	18	18.8%
2 to 3 times	42	43.8%
4 to 6 times	27	28.1%
More than 6 times	9	9.4%
Total	96	100%

About 81.3% of respondents visited a private hospital more than once in the past year. This is important because repeat visitors are better equipped to evaluate infrastructure quality and their responses are based on multiple experiences, not a single visit.

Table 4: Purpose of Last Hospital Visit (Q4)

Purpose of Visit	Number of Respondents	Percentage
Outpatient consultation	41	42.7%
In-patient admission	19	19.8%
Emergency	11	11.5%
Diagnostic or lab test	18	18.8%
Surgery or procedure	7	7.3%
Total	96	100%

Outpatient consultation is the most common reason for visiting a private hospital at 42.7%. Respondents cover all five types of hospital visits, giving the study a broad view of infrastructure quality across different patient journeys.

Table 5: Basis of Hospital Selection (Q5)

Basis of Choosing Hospital	Number of Respondents	Percentage
Family or friend recommendation	38	39.6%
Doctor referral	24	25.0%
Searched online	22	22.9%
Nearest option available	12	12.5%
Total	96	100%

Nearly 40% of patients chose a hospital because of a family or friend recommendation. This highlights a direct link between patient satisfaction and new patient acquisition -satisfied patients recommend hospitals, and those recommendations bring in new patients. Word-of-mouth is the single biggest driver of hospital choice in this sample.

4.2 Section B: Infrastructure Quality and Patient Satisfaction (Q6 to Q13)

Table 6: Cleanliness and Hygiene -Q6 *"The cleanliness and hygiene of the hospital premises -including wards, toilets, waiting areas, and corridors -met my expectations during my visit."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	4	4.2%
Disagree	2	9	9.4%



Neutral	3	14	14.6%
Agree	4	41	42.7%
Strongly Agree	5	28	29.2%
Total		96	100%

Mean = 3.83 | Standard Deviation = 1.04

71.9% of respondents agreed or strongly agreed that hospital cleanliness met their expectations. The mean of 3.83 shows a generally positive view of cleanliness. However, 13.6% disagreed or strongly disagreed, showing that a meaningful number of patients found cleanliness standards poor. Cleanliness is one of the highest-rated dimensions in this study and is consistently cited in the literature as a top patient priority.

Table 7: Medical Equipment and Diagnostic Facilities -Q7 *"The availability of modern medical equipment and diagnostic facilities in the hospital increased my confidence in the quality of care I received."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	3	3.1%
Disagree	2	7	7.3%
Neutral	3	12	12.5%
Agree	4	44	45.8%
Strongly Agree	5	30	31.3%
Total		96	100%

Mean = 3.95 | Standard Deviation = 0.97

This question received the highest mean score of all Section B questions at 3.95. 77.1% of respondents agreed or strongly agreed. The low standard deviation of 0.97 shows that this view was consistent across the sample. Patients strongly link modern equipment with high-quality care. Equipment is the strongest driver of patient confidence in this study.

Table 8: Waiting Time Management -Q8 *"The waiting time for doctor consultations or test results at this private hospital was acceptable and did not cause me significant frustration."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	11	11.5%
Disagree	2	19	19.8%
Neutral	3	21	21.9%
Agree	4	31	32.3%
Strongly Agree	5	14	14.6%
Total		96	100%

Mean = 3.19 | Standard Deviation = 1.21

Waiting time got the lowest mean score in Section B at 3.19. A significant 31.3% disagreed or strongly disagreed that waiting time was acceptable. The high standard deviation of 1.21 shows very inconsistent experiences across hospitals. This is the weakest area of infrastructure quality in this study and directly matches what the literature consistently reports -long waiting times are the most common complaint from patients at Indian private hospitals.

Table 9: Staff Communication Quality -Q9 *"Hospital staff -including doctors, nurses, and front-desk personnel - communicated clearly, respectfully, and with empathy during my visit."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	5	5.2%
Disagree	2	10	10.4%
Neutral	3	16	16.7%
Agree	4	40	41.7%
Strongly Agree	5	25	26.0%



Total		96	100%
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Mean = 3.73 | Standard Deviation = 1.07

67.7% of respondents agreed or strongly agreed that hospital staff communicated clearly and respectfully. The mean of 3.73 is positive but not as high as equipment quality or cleanliness. The 15.6% who disagreed is a notable proportion given how strongly staff communication impacts patient decisions to return. Inconsistency in communication quality is a real problem that hospital management needs to address directly.

Table 10: Physical Environment of the Hospital -Q10 *"The overall physical environment of the hospital -including lighting, ventilation, noise levels, and interior design -made me feel comfortable and safe."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	4	4.2%
Disagree	2	8	8.3%
Neutral	3	17	17.7%
Agree	4	43	44.8%
Strongly Agree	5	24	25.0%
Total		96	100%

Mean = 3.78 | Standard Deviation = 1.01

69.8% of respondents agreed or strongly agreed that the hospital's physical environment made them comfortable and safe. The mean of 3.78 is solid. Lighting, ventilation, and noise levels are basic physical environment factors that most patients in this sample found acceptable. The 12.5% who disagreed shows there is still room for improvement.

Table 11: Digital Infrastructure and Services -Q11 *"The digital systems available at the hospital -such as online appointment booking, digital reports, and SMS reminders -made my experience more convenient and hassle-free."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	6	6.3%
Disagree	2	11	11.5%
Neutral	3	22	22.9%
Agree	4	38	39.6%
Strongly Agree	5	19	19.8%
Total		96	100%

Mean = 3.55 | Standard Deviation = 1.10

59.4% agreed or strongly agreed that digital services made the experience more convenient. The mean of 3.55 is the second lowest in Section B. The high neutral response of 22.9% suggests that many patients either did not use digital systems or found them neither helpful nor unhelpful. Digital services benefit younger and more tech-savvy patients more, while older patients often need offline alternatives.

Table 12: Patient Room and Waiting Area Comfort -Q12 *"The comfort and facilities of the patient rooms or waiting areas -including seating, air conditioning, and basic amenities -were satisfactory during my visit."*

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	5	5.2%
Disagree	2	11	11.5%
Neutral	3	18	18.8%
Agree	4	39	40.6%
Strongly Agree	5	23	24.0%
Total		96	100%

Mean = 3.67 | Standard Deviation = 1.08



64.6% agreed or strongly agreed that patient rooms and waiting areas were comfortable. The mean of 3.67 is moderate. Since outpatients spend a large part of their hospital visit waiting, the quality of waiting areas directly affects their overall experience. The 16.7% who disagreed indicates that room and waiting area comfort is an area needing attention.

Table 13: Support Service Availability -Q13 "The availability of support services -such as pharmacy, cafeteria, parking, and ambulance -within or near the hospital premises added to my overall satisfaction."

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	4	4.2%
Disagree	2	8	8.3%
Neutral	3	15	15.6%
Agree	4	42	43.8%
Strongly Agree	5	27	28.1%
Total		96	100%

Mean = 3.83 | Standard Deviation = 1.02

71.9% agreed or strongly agreed that support services added to their satisfaction. The mean of 3.83 ties with cleanliness as the second highest in Section B. This finding shows that patients value convenience services -pharmacy, parking, cafeteria -more than hospitals might assume. Support services are not peripheral; they are a genuine part of what patients judge when rating their hospital visit.

Table 14: Summary of Section B -Mean Scores Ranked

Rank	Infrastructure Dimension	Question	Mean Score	SD
1	Medical Equipment and Diagnostics	Q7	3.95	0.97
2	Cleanliness and Hygiene	Q6	3.83	1.04
2	Support Service Availability	Q13	3.83	1.02
4	Physical Environment	Q10	3.78	1.01
5	Staff Communication Quality	Q9	3.73	1.07
6	Patient Room and Waiting Area Comfort	Q12	3.67	1.08
7	Digital Infrastructure and Services	Q11	3.55	1.10
8	Waiting Time Management	Q8	3.19	1.21
	Overall Section B Mean		3.69	

The overall average satisfaction score across all eight infrastructure dimensions is 3.69 out of 5. This is an "adequate but not excellent" result. Medical equipment is the strongest area; waiting time management is clearly the weakest and most urgent area for improvement.

4.3 Section C: Infrastructure Quality and Patient Retention (Q14 to Q20)

Table 15: Likelihood of Returning to the Same Hospital -Q14

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	4	4.2%
Disagree	2	8	8.3%
Neutral	3	15	15.6%
Agree	4	42	43.8%
Strongly Agree	5	27	28.1%
Total		96	100%

Mean = 3.83 | Standard Deviation = 1.02

71.9% of respondents are likely or very likely to return to the same hospital based on their satisfaction with infrastructure. This is a strong result for private hospital management. Only 12.5% said they would not return. This directly supports the hypothesis that infrastructure quality and patient retention are positively related.



Table 16: Likelihood of Recommending the Hospital -Q15

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	4	4.2%
Disagree	2	7	7.3%
Neutral	3	16	16.7%
Agree	4	43	44.8%
Strongly Agree	5	26	27.1%
Total		96	100%

Mean = 3.83 | Standard Deviation = 1.01

71.9% would recommend the hospital to family or friends. This matches the return intention score exactly, which is significant -patients who intend to return also tend to recommend the hospital. Both behaviors together represent strong patient loyalty with direct business value.

Table 17: Impact of Poor Cleanliness on Hospital Switching -Q16

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	3	3.1%
Disagree	2	6	6.3%
Neutral	3	13	13.5%
Agree	4	38	39.6%
Strongly Agree	5	36	37.5%
Total		96	100%

Mean = 4.02 | Standard Deviation = 0.98

77.1% of respondents agreed or strongly agreed that poor cleanliness would make them switch hospitals even if medical treatment was good. This is one of the most important findings of the entire study. Cleanliness is not just about hygiene -it is a retention factor. Poor cleanliness can cause patient loss regardless of how good the clinical care is. The low standard deviation of 0.98 shows strong agreement on this point across the full sample.

Table 18: Impact of Rude Staff Behavior on Return Intention -Q17

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	3	3.1%
Disagree	2	5	5.2%
Neutral	3	11	11.5%
Agree	4	37	38.5%
Strongly Agree	5	40	41.7%
Total		96	100%

Mean = 4.11 | Standard Deviation = 0.96

This question got the highest mean score of the entire questionnaire at 4.11 with the lowest standard deviation at 0.96 - the strongest and most consistent finding of the entire study. 80.2% of respondents agreed or strongly agreed that rude or unhelpful staff behavior would make them reluctant to return, no matter how good the medical treatment was. This is the clearest and most actionable finding in this research: staff behavior is the single most powerful driver of patient loss in private hospitals.

Table 19: Impact of Digital Services on Hospital Loyalty -Q18

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	5	5.2%
Disagree	2	10	10.4%
Neutral	3	24	25.0%
Agree	4	37	38.5%



Strongly Agree	5	20	20.8%
Total		96	100%

Mean = 3.59 | Standard Deviation = 1.08

59.3% agreed that digital services increase their loyalty to a hospital. The mean of 3.59 is moderate. The 25% neutral response -the highest neutral rate among all Section C questions -suggests that digital services have not yet reached the same level of importance as cleanliness or staff behavior in influencing whether patients return. This is likely to change as digital adoption increases among younger patients.

Table 20: Impact of Excessive Waiting Time on Hospital Switching -Q19

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	5	5.2%
Disagree	2	10	10.4%
Neutral	3	18	18.8%
Agree	4	36	37.5%
Strongly Agree	5	27	28.1%
Total		96	100%

Mean = 3.73 | Standard Deviation = 1.10

65.6% of respondents agreed or strongly agreed that excessive waiting times have previously caused them to switch to a different hospital. This measures past actual switching behavior, not just future intention. This makes it one of the most practically significant findings in the study -patient loss due to waiting time is already happening, not just a future risk.

Table 21: Overall Infrastructure Quality as the Primary Retention Factor -Q20

Response	Scale Value	Respondents	Percentage
Strongly Disagree	1	3	3.1%
Disagree	2	6	6.3%
Neutral	3	12	12.5%
Agree	4	40	41.7%
Strongly Agree	5	35	36.5%
Total		96	100%

Mean = 4.02 | Standard Deviation = 0.97

78.2% of respondents agreed or strongly agreed that overall infrastructure quality -covering facilities, staff behavior, cleanliness, equipment, and digital services -is the most important factor that determines whether they stay with or switch from a hospital. This validates the entire premise of this research. Patients themselves confirm that infrastructure quality as a whole is what drives their hospital loyalty decision.

4.4 Correlation Analysis

Correlation analysis was done in Microsoft Excel using the CORREL function. It measures the strength and direction of the relationship between each infrastructure quality dimension from Section B and two retention variables from Section C -Question 14 (return intention) and Question 20 (overall infrastructure as the primary retention factor). A correlation value closer to 1.0 means a stronger positive relationship.

Table 22: Correlation Between Infrastructure Dimensions and Return Intention (Q14)

Infrastructure Quality Dimension	Question	Correlation with Q14 (r)	Relationship Strength
Staff Communication Quality	Q9	0.79	Strong Positive
Cleanliness and Hygiene	Q6	0.74	Strong Positive
Waiting Time Management	Q8	0.71	Strong Positive
Medical Equipment and Diagnostics	Q7	0.68	Strong Positive



Physical Environment	Q10	0.66	Strong Positive
Patient Room and Waiting Area Comfort	Q12	0.63	Strong Positive
Support Service Availability	Q13	0.61	Strong Positive
Digital Infrastructure and Services	Q11	0.58	Moderate Positive

Staff communication quality has the strongest correlation with return intention at 0.79. Cleanliness follows at 0.74. Waiting time management comes third at 0.71. Digital services have the weakest correlation at 0.58 -still positive but noticeably lower than the others. All eight dimensions show positive correlations, confirming that improving any dimension of infrastructure quality will increase the likelihood that patients return.

Table 23: Correlation Between Infrastructure Dimensions and Overall Retention (Q20)

Infrastructure Quality Dimension	Question	Correlation with Q20 (r)	Relationship Strength
Staff Communication Quality	Q9	0.81	Very Strong Positive
Cleanliness and Hygiene	Q6	0.76	Strong Positive
Waiting Time Management	Q8	0.69	Strong Positive
Medical Equipment and Diagnostics	Q7	0.65	Strong Positive
Physical Environment	Q10	0.64	Strong Positive
Patient Room and Waiting Area Comfort	Q12	0.62	Strong Positive
Support Service Availability	Q13	0.60	Strong Positive
Digital Infrastructure and Services	Q11	0.55	Moderate Positive

The pattern is consistent with the Q14 results. Staff communication quality again leads at 0.81 -the only "very strong positive" in the study. Cleanliness follows at 0.76. Digital services again have the lowest correlation at 0.55. The consistent pattern across both retention measures makes the findings more reliable -the same infrastructure factors are important regardless of how patient retention is measured.

Table 24: Average Correlation Across Both Retention Measures

Infrastructure Quality Dimension	Avg. Correlation	Overall Ranking
Staff Communication Quality	0.80	1st
Cleanliness and Hygiene	0.75	2nd
Waiting Time Management	0.70	3rd
Medical Equipment and Diagnostics	0.67	4th
Physical Environment	0.65	5th
Patient Room and Waiting Area Comfort	0.63	6th
Support Service Availability	0.61	7th
Digital Infrastructure and Services	0.57	8th

Staff communication is clearly the top driver of patient retention. Cleanliness and waiting time management are second and third. Digital services, while positively related to retention, are the least critical factor among the eight measured.

4.5 Hypothesis Testing

Table 25: Hypothesis Testing Results

Hypothesis	Evidence from Data	Decision
H ₀ 1: Infrastructure quality does not significantly impact patient satisfaction	All eight dimensions received positive mean scores from 3.19 to 3.95. Overall Section B mean is 3.69. Majority of respondents rated every dimension positively.	Rejected
H ₁ 1: Infrastructure quality significantly impacts patient satisfaction	All eight infrastructure dimensions received positive majority ratings. Equipment quality got mean 3.95; even the lowest dimension (waiting time) got mean 3.19 showing clear positive relationship.	Accepted



H ₀ 2: No significant relationship between infrastructure quality and patient retention	All eight dimensions show positive correlations with both retention variables ranging from 0.55 to 0.81 -all well above zero.	Rejected
H ₁ 2: Significant relationship between infrastructure quality and patient retention	All eight correlations are positive and significant (0.55 to 0.81). Average correlations range from 0.57 to 0.80. Direct retention questions confirm 71.9% to 80.2% of patients link infrastructure to their return decision.	Accepted

Both null hypotheses are rejected. Both alternate hypotheses are accepted. Healthcare infrastructure quality does significantly impact patient satisfaction and has a significant positive relationship with patient retention in Indian private hospitals.

V. FINDINGS AND CONCLUSIONS

5.1 Key Findings

Modern medical equipment is the top satisfaction driver. It received the highest mean score (3.95) and 77.1% positive responses. Patients directly link modern equipment with confidence in the quality of care they are receiving.

Waiting time is the biggest problem. It got the lowest mean score (3.19) with the highest standard deviation (1.21) - meaning not only is satisfaction low, it is also highly inconsistent across hospitals. 65.6% of patients have already switched hospitals because of waiting time. This is an immediate operational priority.

Staff behavior is the most powerful retention factor. With a mean of 4.11 and correlation values of 0.79 and 0.81, and 80.2% of patients saying rude staff would stop them from returning regardless of medical quality -staff behavior stands out as the single most important factor hospitals need to manage.

Cleanliness is a non-negotiable retention condition. 77.1% of patients would switch hospitals due to poor cleanliness even if medical care was good. Cleanliness is not optional. It is a basic requirement that patients treat as a condition for staying loyal to a hospital.

Digital services are growing but not yet central. The moderate mean scores (3.55 for satisfaction, 3.59 for loyalty) and the 25% neutral rate on digital loyalty show that digital services are valued but are not yet at the level of staff behavior, cleanliness, or waiting time as retention drivers. They will likely become more important as the younger patient base grows.

Patient satisfaction and patient retention are directly linked. The chain works in one direction -better infrastructure quality leads to higher patient satisfaction, which leads to higher patient retention and more word-of-mouth referrals.

Overall private hospital infrastructure is adequate but needs significant improvement. The overall Section B mean of 3.69 out of 5 shows that while most patients are moderately satisfied, no dimension scored close to 5. There is real and measurable improvement potential across all eight areas.

5.2 Conclusions

On Objective 1 (Infrastructure Quality and Patient Satisfaction): Healthcare infrastructure quality significantly affects patient satisfaction in Indian private hospitals. All eight dimensions measured in this study showed positive satisfaction ratings and together form the complete picture of patient experience. Medical equipment quality is the strongest driver of satisfaction. Waiting time management is the weakest area and the most urgent one to fix.

On Objective 2 (Infrastructure Quality and Patient Retention): There is a strong and consistent positive relationship between infrastructure quality and patient retention. Staff communication is the most powerful predictor of whether patients return. Cleanliness is the most powerful predictor of whether poor infrastructure drives patients away. The correlation data shows clearly that improving any of the eight infrastructure dimensions will increase patient retention.



On Hypothesis Testing: Both alternate hypotheses are accepted with strong data support. Infrastructure quality matters -for both satisfaction and retention -in Indian private hospitals.

5.3 Recommendations

For Private Hospital Management:

Staff behavior and communication training must be a top strategic priority. Since 80.2% of patients say rude staff would stop them from returning regardless of how good the medical care is, staff training is not just an HR activity -it is a direct business investment. All staff in all departments -doctors, nurses, reception, billing, security, parking -should receive regular structured training on respectful communication, empathy, and patient service standards.

Visible, high-standard cleanliness must be maintained throughout the hospital, not just in wards. Cleanliness schedules should be displayed in patient areas. Cleaning should happen multiple times a day with documented records. Patient feedback on specific cleanliness problems must be acted on immediately.

Waiting time management needs operational overhaul. Better appointment scheduling systems, clearer queue management at reception, honest communication to patients about expected wait times, and digital appointment tools that reduce walk-in pressure can all reduce waiting time problems significantly without requiring large capital investment.

Medical equipment should be regularly upgraded and its availability should be communicated to patients through the hospital's website, social media, and in-hospital signage.

Digital services should be improved but always with offline backup options. Since 22.9% of patients are neutral on digital services and older patients often struggle with digital-only systems, every digital option must have a phone or in-person alternative.

For Healthcare Policymakers:

National accreditation bodies like NABH should include measurable patient-facing infrastructure standards for cleanliness, staff behavior, and waiting time as core accreditation criteria. The current focus on clinical quality needs to be balanced with clear standards on non-clinical infrastructure quality.

The government should require private hospitals receiving patients under Ayushman Bharat and other insurance schemes to meet minimum infrastructure quality benchmarks. Many of these patients are first-time private hospital users and their experience will shape their trust in the broader healthcare system.

VI. LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

6.1 Limitations

The sample size of 96, while sufficient for a descriptive study, limits the ability to make broad statistical claims about the entire population of private hospital patients in India.

Convenience sampling means the sample is not fully random and may be biased toward respondents who were more accessible through online channels -which may over-represent younger, more educated, and more digitally active patients.

The study is limited to urban and semi-urban India. Patients in rural areas who access private hospitals will have different experiences and expectations.

The study does not measure clinical quality -whether patients were treated medically well. It is possible that clinical quality and infrastructure quality interact in ways this study cannot capture.

The study captures perceptions at a single point in time. Patient satisfaction and retention views can change based on changes in hospital quality, economic conditions, or health needs.

6.2 Scope for Future Research

A larger sample study covering 500 or more respondents across multiple Indian states would produce results that can be generalized more broadly.



A comparative study between tier-1, tier-2, and tier-3 city private hospitals would reveal how infrastructure quality expectations and satisfaction levels differ by city size.

A longitudinal study tracking the same patients over multiple visits would measure how infrastructure improvements actually change patient satisfaction and retention behavior over time.

A study that includes both patient and hospital staff perspectives would provide a more complete picture of the gaps between what hospitals deliver and what patients experience.

Research that combines clinical quality measures with infrastructure quality measures would show how the two interact and whether one can compensate for weakness in the other.

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QUESTIONNAIRE

SECTION A -DEMOGRAPHIC INFORMATION

Q1. What is your age group?

- 18–30 years
- 31–45 years
- 46–60 years
- Above 60 years

Q2. What is your gender?

- Male
- Female
- Prefer not to say

Q3. How many times have you visited a private hospital in the past one year?

- Once
- 2–3 times
- 4–6 times
- More than 6 times

Q4. What was the main purpose of your last private hospital visit?

- Outpatient consultation (visiting a doctor without admission)
- In-patient admission (admitted to the hospital for one or more days)
- Emergency visit
- Diagnostic or lab test only
- Surgery or procedure

Q5. How did you choose this private hospital?

- Recommendation from family or friend
- Doctor referral
- I searched online
- It was the nearest option available



SECTION B -HEALTHCARE INFRASTRUCTURE QUALITY AND PATIENT SATISFACTION

Please rate each statement from 1 to 5: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Q6. The cleanliness and hygiene of the hospital premises -including wards, toilets, waiting areas, and corridors -met my expectations during my visit.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q7. The availability of modern medical equipment and diagnostic facilities in the hospital increased my confidence in the quality of care I received.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q8. The waiting time for doctor consultations or test results at this private hospital was acceptable and did not cause me significant frustration.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q9. Hospital staff -including doctors, nurses, and front-desk personnel -communicated clearly, respectfully, and with empathy during my visit.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q10. The overall physical environment of the hospital -including lighting, ventilation, noise levels, and interior design -made me feel comfortable and safe.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q11. The digital systems available at the hospital -such as online appointment booking, digital reports, and SMS reminders -made my experience more convenient and hassle-free.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q12. The comfort and facilities of the patient rooms or waiting areas -including seating, air conditioning, and basic amenities -were satisfactory during my visit.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q13. The availability of support services -such as pharmacy, cafeteria, parking, and ambulance -within or near the hospital premises added to my overall satisfaction with the hospital.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

SECTION C -HEALTHCARE INFRASTRUCTURE QUALITY AND PATIENT RETENTION

Please rate each statement from 1 to 5: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Q14. I am very likely to visit the same private hospital again for future medical needs because I was satisfied with the quality of its infrastructure and facilities.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q15. I would recommend this private hospital to my family members and friends because of the good quality of its facilities and patient care infrastructure.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q16. Poor cleanliness or poor maintenance of hospital facilities would make me switch to a different private hospital even if the medical treatment quality was good.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q17. Rude or unhelpful behavior from hospital staff -regardless of how good the medical treatment was -would make me reluctant to return to the same hospital.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q18. The availability of easy and convenient digital services -like online reports, WhatsApp communication, and app-based appointments -makes me more loyal to this hospital compared to hospitals without these features.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |



Q19. Excessive waiting times during my hospital visit have previously caused me to switch to a different private hospital for future visits.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

Q20. Overall, the quality of healthcare infrastructure -including facilities, staff behavior, cleanliness, equipment, and digital services -is the most important factor that determines whether I continue to visit the same private hospital or switch to another.

| 1 Strongly Disagree | 2 Disagree | 3 Neutral | 4 Agree | 5 Strongly Agree |

