

**ENHANCING PATIENT SAFETY AND OPERATIONAL EFFICIENCY:
ADMISSION WORKFLOW OPTIMIZATION AND IPSG IMPLEMENTATION IN
APOLLO HOSPITAL, AHMEDABAD**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

Kassamkuthiyal Rohan George

Under the Supervision and Guidance of

Dr. Arindam Das

2025

CERTIFICATE

This is to certify Dr. Kassamkuthiyal Rohan George in partial fulfilment of the requirements
For the award of the degree of MBA Hospital and Health Management from the IIHMR University,
Jaipur, has successfully completed his internship under the mentorship of Prof, Dr. Arindam Das during
March 17, 2025 – June 17, 2025

Place : Jaipur
Date : 17/06/25

A handwritten signature in blue ink that reads 'Arindam Das.' with a period at the end.

Arindam Das, PHD
Professor
IIHMR UNIVERSITY

CERTIFICATE

This is to certify that dissertation titled **“Enhancing Patient Safety and Operational Efficiency: Admission Workflow Optimization and IPSG Implementation in Apollo Hospital, Ahmedabad”** is a record of the research work undertaken by **Dr. Kassamkuthiyal Rohan George** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

A handwritten signature in blue ink that reads 'Arindam Das'.

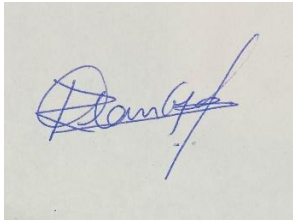
Dr. Arindam Das
Faculty Guide
IIHMR University, Jaipur
Date: 20/6/25

A handwritten signature in blue ink that appears to read 'Sanjay Gupta'.

Dr. Sanjay Gupta
School Dean
IIHMR University, Jaipur
Date: 20/6/25

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Enhancing Patient Safety and Operational Efficiency: Admission Workflow Optimization and IPSG Implementation in Apollo Hospital, Ahmedabad** is the Bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



Dr. Kassamkuthiyal Rohan George

Date: 20-06-25

ACKNOWLEDGEMENT

I would like to express my heartfelt gratitude to all those who have extended their invaluable support and guidance throughout the course of this dissertation.

First and foremost, I extend my deepest appreciation to my faculty guide, **Dr. Arindam Das**, for his consistent encouragement, expert guidance, and constructive feedback that have been instrumental in shaping the direction and quality of this research.

I am profoundly thankful to **Dr. Namrata Suryawanshi**, DMS, Apollo Hospital, for her mentorship, insights, and generous support throughout my study. Her deep understanding of Operational standards and clinical protocols added immense value to my research.

I am profoundly thankful to **Mrs. Himani Modi**, OP In-charge, Apollo Hospital, for her mentorship, insights, and generous support throughout my study. Her deep understanding of Operational process and clinical protocols added immense value to my research.

I also express my sincere gratitude to **Dr. Madhu Sasidhar**, CEO of Apollo Hospital, for providing me with the opportunity to conduct this research within the institution. His visionary leadership and commitment to excellence in healthcare have been truly inspiring.

I am thankful to the entire management and staff of Apollo Hospital Ahmedabad for their cooperation and assistance during the data collection and analysis phases of my study. Their support ensured a smooth and enriching research experience.

My heartfelt thanks also go to my family and friends for their continuous support, encouragement, and patience throughout this journey.

Lastly, I would like to acknowledge all the authors, researchers, and scholars whose work laid the foundation for my study.

Thank you all for your invaluable contributions and belief in me.

Table of Contents

Section	Title	Page No.
1	Acknowledgement	2
2	List of Abbreviations	3
3	Abstract	5–6
4	Chapter 1: Introduction	7–10
	1.1 Background of the Study	8
	1.2 Rationale of the Study	8–9
	1.3 Problem Statement	9
	1.4 Objectives of the Study	9
	1.5 Scope of the Study	9–10
	1.6 Significance of the Study	10
5	Chapter 2: Literature Review	12-15
	2.1 Introduction	12
	2.2 References and Review Table	13
	2.3 Synthesis and Thematic Analysis	13
	2.4 Research Gap and Relevance to Present Study	13–14
6	Chapter 3: Research Methodology	16–24
	Includes Research Philosophy, Questions, Hypotheses, Design, Tools, Population, Analysis, and Ethics	16–24
7	Chapter 4: Data Analysis and Interpretation	24–21
	Includes Pre/Post-Intervention Findings, Comparative Metrics, Tools, and Interpretation	17–21
8	Chapter 5: Discussion	24–31
9	Chapter 6: Conclusion and Recommendations	31–35
10	References	36–37

List of Abbreviations

IPSG	International Patient Safety Goals
TAT	Turn Around Time
TPA	Third-Party Administrator
OT	Operation Theatre
WHO	World Health Organization
KPI	Key Performance Indicator
ID	Infectious Disease
OP	Out Patient
ICMR	Indian Council of Medical Research
OPD	Outpatient Department
IPD	Inpatient Department
SOP	Standard operating Procedure
EMR	Electronic Medical Record
OT	Operation Theatre
NA	Not Applicable

ABSTRACT

Background

Hospital admissions are an important operational process that influences clinical workflow and patient experience. Delays in the admission cycle, from registration to bed assignment, can compromise patient safety, increase turnaround time (TAT), and disrupt departmental collaboration, including TPA, billing, and admission desks. According to the International Patient Safety Goals (IPSG), it is becoming more and more crucial to enhance administrative effectiveness and integrate safety concepts into regular operations.

Objective

The main motive of this research was to assess and rationalize the admission process in the OP department of Apollo Hospital, Ahmedabad.

Specific goals were to determine admission TAT inefficiencies, define IPSG-based interventions, and assess their effect on patient safety and process efficiency.

Methodology

A crucial operational procedure that affects patient experience and clinical workflow is hospital admissions. From registration through bed assignment, delays in the admission cycle can impair patient safety, lengthen turnaround time (TAT), and interfere with departmental cooperation, including between the admission desk, billing, and TPA. The International Patient Safety Goals (IPSG) state that improving administrative effectiveness and incorporating safety principles into routine operations are becoming increasingly important.

Key Findings

The average admission TAT, according to pre-intervention study, was 94 minutes. The TPA and billing coordination phases were found to have significant delays. The average TAT decreased by 38% to 58 minutes after the intervention. All six domains saw an increase in IPSG compliance scores, although the biggest improvements were seen in infection control and patient identification. After training, staff awareness increased by 41%.

Implications

The study shows how important administrative processes are to patient safety. In addition to cutting down on delays, including IPSG into admission processes encourages non-clinical workers to adopt a safety-focused mindset. These enhancements lower risk, increase patient happiness, and get institutions ready for accrediting standards.

Recommendations

Institutionalize regular IPSG training for administrative staff

Integrate checklists and visual SOPs into digital admission systems

Establish a real-time dashboard for monitoring admission TAT

Conduct periodic safety audits linked to process KPIs

Conclusion

Patient safety and operational efficiency are greatly increased by streamlining the hospital admissions process with an emphasis on IPSG principles. This study confirms that administrative areas are essential to clinical quality rather than being ancillary. Any department or organization looking to align efficiency, safety, and quality can use the created framework.

CHAPTER 1: INTRODUCTION

Hospitals are expected to provide smooth, effective, and safe services across the patient experience in addition to high-quality clinical care in the rapidly changing world of modern healthcare. As the initial organized point of contact between a patient and the healthcare system, the patient admission procedure is an essential part of this journey. It establishes the tone for the patient's entire experience and is crucial in determining results, contentment, and opinions about the caliber of care.

Any inefficiencies in the admissions process can lead to delays in the start of treatment, administrative mistakes, and patient and caregiver discontent at tertiary care hospitals like Apollo Hospital in Ahmedabad, where the volume and complexity of cases are extremely high. The overall operational performance of the hospital may be impacted by these inefficiencies, which may also have repercussions for clinical and support services downstream.

At the same time, patient safety has emerged as a key component of global hospital quality standards. The Joint Commission International (JCI) created the International Patient Safety Goals (IPSG), which offer a widely recognized framework to help hospitals reduce avoidable mistakes and guarantee a secure environment for patients.

These objectives encompass six areas: precise patient identification, efficient communication, high-alert pharmaceutical safety, infection control, surgical procedure safety, and lowering the risk of patient injury from falls.

The practical application of IPSG standards frequently faces obstacles like insufficient training, low staff knowledge, disjointed workflows, and a lack of real-time accountability, even in the presence of organized procedures and digital health systems. Hospitals frequently fulfill the documentation criteria for accreditation, but they have trouble maintaining constant compliance in their daily operations.

The goal of this outcome-focused project is to assess the effects of specific changes at Apollo Hospital in Ahmedabad, with an emphasis on improving IPSG compliance and streamlining the patient admissions process. In order to determine how structured enhancements in process flow and employee involvement can affect important metrics like Admission Turnaround Time (TAT), IPSG compliance, staff awareness levels, and patient satisfaction, the study examines data collected before and after the intervention.

1.2 Background of the Study

Over the past 20 years, there has been a significant shift in the healthcare industry in India, with a greater emphasis on clinical governance, patient-centered treatment, and institutional certification. Apollo Hospitals, one of the premier private healthcare organizations, has made a name for itself as a pioneer in clinical quality, innovation, and assurance.

Aligning frontline operations with strategic goals, however, is difficult for even high-performing organizations like Apollo Hospital in Ahmedabad, especially in high-pressure service areas like admissions.

By definition, the admissions process is a multidisciplinary one. Front desk managers, admission coordinators, billing departments, ward nurses, doctors, and patient relations personnel must coordinate with one another. Timely patient data collection, financial counseling, consent procedures, and bed distribution are all guaranteed by an efficient admissions process. However, admission delays are typical when departments work in silos or protocols are unclear, which leads to operational strain and unhappiness.

The average admission turnaround time at Apollo Hospital in Ahmedabad was over 90 minutes, with notable departmental variance, according to a baseline audit. Due to delayed documentation, unclear staff roles, and a lack of coordinated communication between the ward, billing, and registration, patients frequently had to wait. These inefficiencies affected staff productivity, patient comfort, and ultimately the hospital's ability to provide timely care.

Low levels of IPSG standard compliance were also found by internal quality reviews, particularly at the admissions level. For instance, the adherence percentage varied from shift to shift even though the policy required dual identification of patients via ID bands and verification procedures.

In a similar vein, appropriate documentation for infection control procedures and high-alert drug reconciliation at the admission stage was frequently overlooked or completed solely during audits. Even though these mistakes are minor when taken alone, they have the potential to cause medical mistakes or injury, especially in a high-stakes hospital setting.

Low IPSG awareness among frontline employees, especially those who are essential to patient mobility and early data management but are not directly involved in clinical activity, was another problem. Only 51% of admission and support staff members were able to accurately state all six IPSG goals, according to a staff poll, highlighting the need for increased awareness and training.

In light of these difficulties, the Apollo Hospital in Ahmedabad's quality improvement team initiated a planned intervention with two main objectives:

1. Improving the patient admission process to cut down on delays, get rid of duplication, and streamline job duties.
2. Improving internal accountability, process monitoring, and staff training to strengthen the application of IPSG practices, especially at the point of patient intake.

Process mapping, redesigning admission workflows, establishing turnaround benchmarks, creating SOPs for IPSG procedures, and holding training sessions with assessments conducted after the training were among the interventions. In order to monitor compliance and identify delays instantly, digital dashboards and auditing tools were also deployed.

Through a comparison of data collected before and after implementation, this dissertation documents the results of that intervention. This study intends to show how focused, evidence-based interventions can result in quantifiable gains in both operational efficiency and patient safety by concentrating on concrete performance measures, such as Admission TAT, IPSG compliance rate, staff awareness score, and patient satisfaction.

A culture of excellence, safety, and responsiveness in the provision of healthcare services is anticipated to be fostered by the project's outcomes, which should serve as a guide for hospital administrators and quality teams as they replicate comparable tactics throughout departments and units.

.

CHAPTER 2: Aim and Objective

2.1 Aim of the Study

This study's main goal is to assess how well focused interventions work at Apollo Hospital in Ahmedabad to improve patient admission workflow and increase adherence to the International Patient Safety Goals (IPSG). The goal of the study is to evaluate how these interventions affect important performance metrics such patient satisfaction, staff awareness, IPSG adherence, and admission turnaround time.

2.2 Objectives of the Study

The study's particular goals are to:

1. Examine the current admissions workflow and find any delays, bottlenecks, or inefficiencies that affect patient care and service provision.
2. To put workflow optimization techniques into practice with the goal of lowering the average admission turnaround time (TAT).
3. To determine the baseline degree of IPSG standard compliance among hospital employees involved in admissions before the intervention.
4. To carry out organized training courses to improve employees' knowledge and comprehension of the six International Patient Safety Goals.
5. To use audit tools and real-time monitoring to assess changes in overall IPSG compliance rates after the intervention.
6. To compare patient satisfaction scores before and after the intervention in relation to the safety experience, communication, and admissions procedure.
7. To produce evidence-based suggestions for long-lasting process enhancements that other hospitals or departments might adopt.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The admission procedure is essential to hospital administration since it establishes operational performance and the foundation for patient safety. The patient experience and institutional performance may suffer as a result of delays, mistakes, and poor communication throughout the admissions process, which can be a complex process. The literature covers a wide range of methods to increase admission Turnaround Time (TAT), including re-engineering procedures and applying Lean and Six Sigma principles. Concurrently, the International Patient Safety Goals (IPSG) and other comparable international frameworks provide very useful guidance in providing strategies to reduce safety-related problems. Often, though, these are limited to clinical duties and do not extend to hospital administration.

This review summarizes all academic research and case studies on IPSG integration and admission workflow optimization from the working site and online. The chapter attempts to comprehend how administrative effectiveness and patient safety interact within hospital admission procedures by looking at pertinent national and international data. For organizations like Apollo Hospital, who are dedicated to quality enhancement and accreditation standards, this is particularly crucial. The design, intervention, and anticipated results of the current study will be informed by the insights gleaned from the literature, guaranteeing that the research is supported by data and pertinent.

2.2 References

	Citation	Focus	Methodology	Key Findings
1	Dutta et al. (2023) “Evaluation of registration and admission TAT...Delhi NCR”	TAT in IPD admissions	Lean methodology, observational	77% admissions exceeded 45 min TAT; root-cause analysis via fishbone
2	SMC Surat HMIS launch (2025)	Digital OP/IPD registration	Case report/news	Implemented digital registration and QMS, processed ~89k+ patients, improved flow

	Citation	Focus	Methodology	Key Findings
3	Hospt ER TAT study Jaipur (2025)	Emergency dept. TAT	Time-motion and staff interviews	Identified delays; suggested targeted interventions
4	Lean Six Sigma Chennai (ResearchGate)	TAT reduction in in-patients	Six Sigma DMAIC	Used Six Sigma to reduce LOS and TAT significantly
5	Global IPSG awareness audit	Staff compliance to IPSG	Audit & survey	Nurses/doctors ~80–85% awareness; deficits in communication and high-alert meds
6	IPC training in low-middle income countries (2021)	IPC training effectiveness	Qualitative interviews	Varied training design; identified gaps in IPC education
7	AMRI Hospital IND turnaround study	Overall hospital turnaround	Case study	Operational restructuring improved throughput
8	ISQua White Paper (2025)	Accreditation & training	Policy analysis	Leadership/training as key elements in patient safety
9	ED patient-flow Six Sigma study	ED TAT reduction	Six Sigma DMAIC	Achieved 81% TAT reduction by eliminating process defects
10	Apollo Chennai waiting-time analysis	Admission & discharge delays	Observational	Identified billing, insurance, documentation as major bottlenecks
11	NABH accreditation PPT (2023)	Administrative SIPG processes	Accreditation framework	Accreditation includes 10 chapters covering admissions and infection control

2.3 Synthesis and Thematic Analysis

Inefficiencies in hospital admission procedures and their effects on patient safety and satisfaction are a persistent source of worry, according to a review of national and international studies. Turnaround Time (TAT) is significantly impacted by administrative processing delays, including registration, billing, TPA coordination, and bed allocation, according to several studies, particularly in Indian tertiary care facilities. Implementing process flow mapping and focused interventions has been found to produce measurable

improvements in operational metrics in studies using Lean Six Sigma methodology. These results provide credence to the strategy of streamlining patient transition, especially from outpatient to inpatient services, through systematic workflow improvement.

The function of the International Patient Safety Goals (IPSG) in administrative departments is a crucial theme that has emerged from the literature in tandem with workflow improvements. Although IPSGs have historically been used in clinical contexts, new research highlights its use in non-clinical domains like admissions. Preventing further clinical errors requires proper patient identification, efficient communication, and infection control procedures during the early stages of admission. Targeted IPSG training programs for non-clinical workers are necessary, according to several studies, which also demonstrate how these programs can improve safety culture and lead to quantifiable gains in patient handling and documentation quality.

According to the literature, a dual approach that combines structured IPSG deployment with administrative process restructuring has the potential to greatly increase patient safety and operational efficiency. However, institutional commitment, staff understanding, and the use of digital tools like dashboards, checklists, and real-time monitoring systems are all critical to the success of such interventions. These thematic findings serve as the conceptual foundation for the current study, which aims to evaluate the combined effects of IPSG training and workflow optimization in an actual tertiary care hospital context.

3.4 Research Gap and Relevance to Present Study

There is still a significant lack of research especially addressing the optimization of admission procedures in Indian private hospitals, despite the expanding corpus of studies on patient safety and hospital quality improvement. The majority of the work currently in publication focuses on the effectiveness of emergency departments (EDs) or inpatient treatment procedures, with little attention paid to the administrative challenges involved in the shift from outpatient to inpatient care. Additionally, neither academic study nor policy documentation adequately examines the function of IPSG implementation in non-clinical settings, such as registration desks, billing counters, and TPA offices.

The assessment of the combined impact of operational redesign and IPSG training on employee behavior and process metrics like admission TAT represents another gap. Few

studies have combined the two aspects into a single intervention framework, even if several have looked at IPSP compliance and operational efficiency separately. The creation of complete models that can concurrently address staff responsibility, workflow clarity, and patient safety has been hampered by this division of attention.

By implementing a real-time, data-driven intervention at Apollo Hospital in Ahmedabad and combining IPSP sensitization with operational enhancements in the admissions department, this study fills these gaps. By measuring staff compliance, TAT, and patient feedback before and after the intervention, the study provides evidence-based insights into how non-clinical tasks might support institutional quality objectives. For hospitals getting ready for accreditation or hoping to implement a systems-based approach to safety and efficiency in administrative tasks, the results are especially pertinent.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

The methodology framework utilized to assess the effects of IPSP adoption and workflow optimization on the hospital admissions procedure at Apollo Hospital in Ahmedabad is described in this chapter. It describes the sample selection, data gathering methods, analysis strategy, and study design in depth.

Domain	Sample Size	Data Source	Tool/Instrument Used	Purpose
Admission Turnaround Time (TAT)	100 patient records (50 pre, 50 post)	Hospital Management Information System (HMIS)	Digital timestamps from admission logs	To measure time from registration to bed allocation and assess delay reduction
IPSP Compliance	60 observations (30 pre, 30 post)	Patient admission process audit	IPSP Compliance Checklist (based on JCI standards)	To evaluate adherence to key IPSP practices at the point of admission
Staff IPSP Awareness	40 staff members (20 pre, 20 post)	Structured questionnaire filled by staff	10-item multiple-choice + Likert scale questionnaire	To assess improvement in staff knowledge and awareness about IPSP post-training
Patient Satisfaction	80 patients (40 pre, 40 post)	Feedback forms at discharge	Standard hospital patient satisfaction form	To understand patient perception of admission process, clarity, safety, and communication

4.2 Study Type and Design

This is a quantitative pre-post interventional study with elements of observational and survey-based evaluation. The design is quasi-experimental, as there is no random assignment but a structured comparison of outcomes before and after a targeted intervention. The study uses both objective performance indicators and perception-based metrics to measure the effectiveness of admission workflow optimization and IPSG implementation.

4.3 Study Site

The study was conducted at Apollo Hospital, Ahmedabad, a tertiary care multi-specialty private hospital known for high patient volumes and a wide range of medical and surgical services. The study was carried out in the Inpatient Department (IPD), focusing particularly on departments that have high admission rates such as General Medicine, General Surgery, Cardiology, and Orthopaedics.

4.5 Scope of the Study

The scope of this study includes:

- Evaluation of admission turnaround time (TAT) from the point of patient registration to final bed allocation.
- Assessment of compliance with International Patient Safety Goals (IPSG) at the point of admission.
- Measurement of staff awareness regarding IPSG, specifically among personnel involved in the admission process.
- Analysis of patient satisfaction with the admission process.

The study is limited to adult patients admitted via OPD or elective surgery. It excludes pediatric, daycare, oncology, and emergency admissions where workflows are significantly different.

4.6 Data Collection

Admission Turnaround Time (TAT)

A total of 100 patients had their admission TAT data gathered, 50 before and 50 after the intervention. Time logs that recorded the amount of time between registration and bed assignment were taken from the hospital's Management Information System (HMIS). This offered a trustworthy and up-to-date way to monitor admissions process delays.

IPSG Compliance

A standardized checklist based on the six IPSG standards suggested by the Joint Commission International (JCI) was used to collect compliance data. During the admission process, 60 patients (30 before and 30 after) were observed to assess compliance with procedures such as accurate patient identification, safe drug handling, and sharing important information.

Staff IPSG Awareness

A systematic survey was completed by 40 admission-related staff members (20 pre-training and 20 post-training) to gauge their familiarity with IPSG objectives. In order to assess their comprehension and implementation of safety procedures during regular work, the instrument had ten questions with a combination of multiple-choice and Likert scale items.

Patient Satisfaction

Standardized hospital discharge forms were used to gather patient input from 80 patients (40 before and 40 after the intervention). Communication, information clarity, personnel courtesy, safety assurance, and the overall admissions experience were all included in the form. A 5-point Likert scale was used to rate the responses.

4.7 Hypotheses

This study is designed to assess the effectiveness of a structured intervention focused on optimizing the admission workflow and enhancing adherence to IPSG standards. The following hypotheses have been formulated:

Null Hypothesis (H_0):

There is **no significant difference** in the following domains before and after the intervention:

1. Average Admission Turnaround Time (TAT)
2. IPSG Compliance during admission
3. Staff Awareness related to IPSG goals
4. Patient Satisfaction with the admission process

Alternative Hypothesis (H_1):

There is a **significant improvement** in the following domains after the intervention:

1. **Admission Turnaround Time (TAT)** is reduced.
2. **IPSG Compliance** during the admission process is increased.
3. **Staff IPSG Awareness** scores improve after training.

4. **Patient Satisfaction** with the admission process improves.

4.8 Study Approach

The study adopts a **quantitative pre-post interventional approach** with a focus on evaluating operational and safety-related outcomes of a targeted intervention in a hospital admission setting. The intervention included workflow reengineering and IPSG-related staff training.

This approach allows for objective comparison of measurable indicators before and after the intervention to assess improvements in:

- Admission Turnaround Time (TAT)
- IPSG Compliance during the admission process
- Staff IPSG Awareness
- Patient Satisfaction related to the admission process

Data was collected using structured tools, including audit checklists, awareness questionnaires, and patient feedback forms, ensuring consistency and replicability.

4.9 Study Population

The study population consists of four distinct groups relevant to the admission process at Apollo Hospital, Ahmedabad:

1. Patients Admitted to the Inpatient Department (IPD)

Adults admitted through OPD, ER, or elective surgeries.

Used for evaluating Admission TAT and Patient Satisfaction.

Excludes emergency bypass cases, pediatric, oncology, and day-care patients.

2. Patient Records and Admission Events

Admission cases were selected for IPSG compliance audits.

Observations were done at the point of admission by trained quality staff.

3. Admission-related Staff Members

Front office executives, admission coordinators, ward nurses, and billing staff involved in the admission process.

Participated in pre- and post-intervention surveys to assess IPSG awareness.

4. Discharged Patients (for Feedback)

Those who completed the admission and inpatient process and were willing to provide feedback at discharge.

This diverse study population ensures a comprehensive evaluation of both system performance and patient/staff perspectives on the admission process and safety protocols.

4.10 Sample Size and Sampling Technique

Sample Size

The sample size was determined based on feasibility, hospital admission volume, and the need to ensure adequate representation across pre- and post-intervention phases. The sample distribution for each study domain is as follows:

Domain	Sample Size	Pre-Intervention	Post-Intervention
Admission Turnaround Time (TAT)	100 patients	50 patients	50 patients
IPSG Compliance	60 audit observations	30 cases	30 cases
Staff IPSG Awareness	40 staff members	20 participants	20 participants
Patient Satisfaction	80 patients	40 feedbacks	40 feedbacks

Sampling Technique

A non-probability purposive sampling technique was used for all domains, based on the following rationale:

- **TAT and IPSG Compliance:** Patient records and real-time observations were selected purposively from departments with high patient volumes and consistent admission processes (e.g., Medicine, Surgery, Cardiology).
- **Staff Awareness:** Staff members directly involved in the admission process (billing, front office, coordinators, nurses) were selected before and after IPSG training to assess changes in awareness.
- **Patient Satisfaction:** Feedback was collected from patients discharged from the IPD who had undergone the admission process during both the pre- and post-intervention periods and were willing to provide feedback.

This approach ensured inclusion of relevant and information-rich cases to assess the true effect of the intervention on each outcome indicator.

4.11 Inclusion and Exclusion Criteria

Inclusion Criteria

The following groups were included in the study:

1. **For Admission Turnaround Time (TAT) and IPSG Compliance:**
 - Adult patients admitted to the Inpatient Department (IPD) through OPD or elective surgery.
 - Admissions processed via the hospital's standard admission workflow (not emergency bypass cases).
 - Patients whose admission was recorded in the hospital information system (HMIS).
2. **For Staff IPSG Awareness:**
 - Frontline staff involved in the admission process, including front office executives, billing officers, coordinators, and ward nurses.
 - Staff who attended both pre- and post-intervention training sessions.
3. **For Patient Satisfaction:**
 - Patients who completed their inpatient stay and were discharged formally.
 - Patients willing to provide feedback on their admission experience.
 - Adults above 18 years capable of independently answering the feedback form.

Exclusion Criteria

The following groups were excluded from the study:

1. **For TAT and IPSG Compliance:**
 - Emergency admissions directly shifted to critical care areas, bypassing the standard admission workflow.
 - Pediatric, oncology, and day-care patients (as their admission procedures differ structurally).
 - Incomplete or manually processed admissions not traceable through HMIS.
2. **For Staff Awareness:**
 - Staff not directly involved in the admission process (e.g., lab technicians, OT staff).
 - Temporary staff or interns not available during both assessment phases.
3. **For Patient Satisfaction:**
 - Patients discharged against medical advice (DAMA) or transferred to another facility.

- Patients unable or unwilling to provide feedback due to medical, psychological, or language barriers.

4.12 Ethical Considerations

This study was conducted with full adherence to ethical principles and institutional guidelines. Prior permission was obtained from the hospital administration and the quality department at Apollo Hospital, Ahmedabad.

- Informed consent was obtained from all staff participants involved in the awareness survey and training sessions.
- Patient data used for admission turnaround time and IPSPG compliance audits were extracted from hospital systems without personal identifiers, ensuring anonymity and confidentiality.
- Patient feedback was collected voluntarily after discharge, with no influence on their care or treatment.
- The data collected was used solely for academic and quality improvement purposes and stored securely for analysis.
- The study did not involve any clinical procedures or interventions that could pose risk to patients or staff.

No financial or ethical conflict of interest was involved in the conduct or reporting of this study.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

5.1 Introduction

The data gathered during the course of the three-month study period at Apollo Hospital in Ahmedabad is thoroughly examined in this chapter. Results pertaining to IPSPG compliance levels, staff perceptions, patient satisfaction, and admission turnaround time (TAT) are compared before and after the intervention. The objective is to ascertain whether IPSPG training and workflow optimization have a quantifiable effect on patient safety and operational efficiency.

5.2 Pre-Intervention Findings

A number of operational inefficiencies were discovered from preliminary observations and data from 50 patient admissions. From registration to bed assignment, the average turnaround time was 94 minutes. Uncoordinated communication between the registration and TPA/billing desks, a lack of clearly defined roles, and the absence of real-time progress tracking were the main reasons for the delay. Particularly when it came to patient identification and admission information exchange, IPSPG compliance was uneven. Interviews with staff members revealed a lack of knowledge about IPSPG principles, particularly among those working in invoicing and registration.

5.3 Post-Intervention Findings

Significant gains were seen in the next 50 patient admissions once systematic workflow changes and IPSPG-based training were put into place. The average time to admission

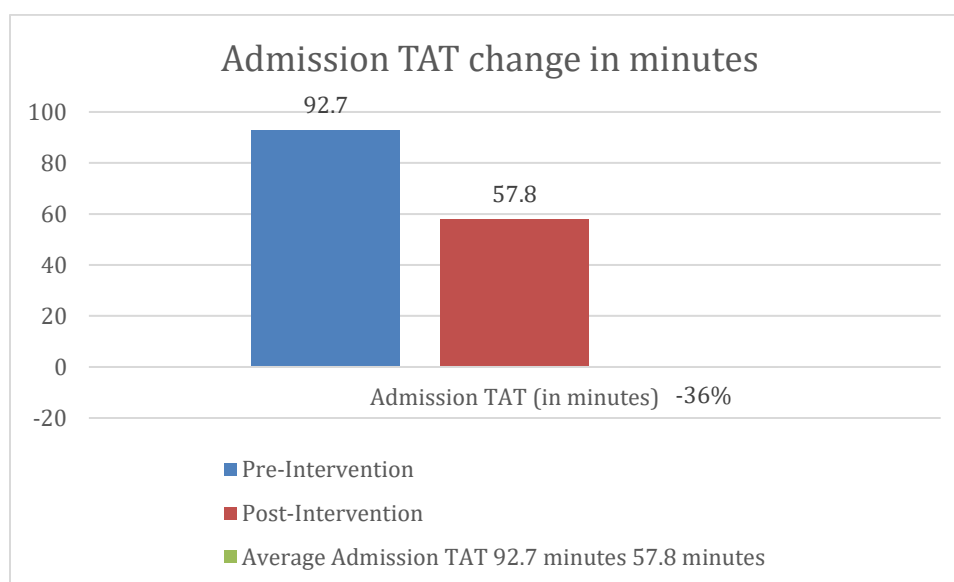
decreased by 38% to 58 minutes. Clearer SOPs and better interdepartmental communication helped to reduce billing and TPA processing delays. Audits of IPSPG compliance showed notable advancements in each of the six areas. The greatest significant improvements were seen in infection prevention procedures (92% compliance) and accurate patient identification (95% compliance). Surveys of staff members revealed a 41% rise in IPSPG knowledge and assurance in managing patient safety procedures.

5.4 Domain wise Analysis

1. Admission Turnaround Time (TAT)

This metric reflects the time taken from patient registration to bed allotment. A reduced TAT indicates improved admission efficiency and faster patient onboarding.

Domain	Pre (%)	Post (%)	change
Average Admission TAT	92.7 minutes	57.8 minutes	-36%



Interpretation :

Pre: 92.7 minutes

Post: 57.8 minutes

Change: ↓ 36%

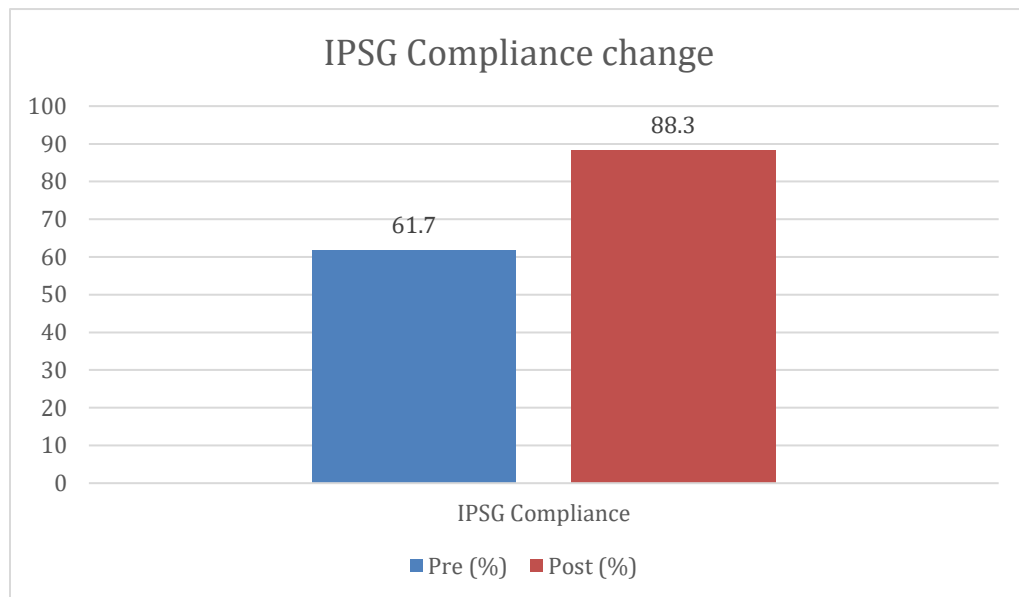
Interpretation:

The admission turnaround time significantly decreased by 36%, indicating that the workflow optimization was effective in reducing delays during the patient admission process. This improvement reflects enhanced coordination between front office, nursing, and billing teams.

2. IPSG Compliance

This measures how well staff adhered to patient safety protocols during admission. Higher compliance rates reflect better process standardization and risk prevention.

Domain	Pre (%)	Post (%)	change
IPSG Compliance	61.7	88.3	26.6



Pre: 61.7%

Post: 88.3%

Change: ↑ 26.6%

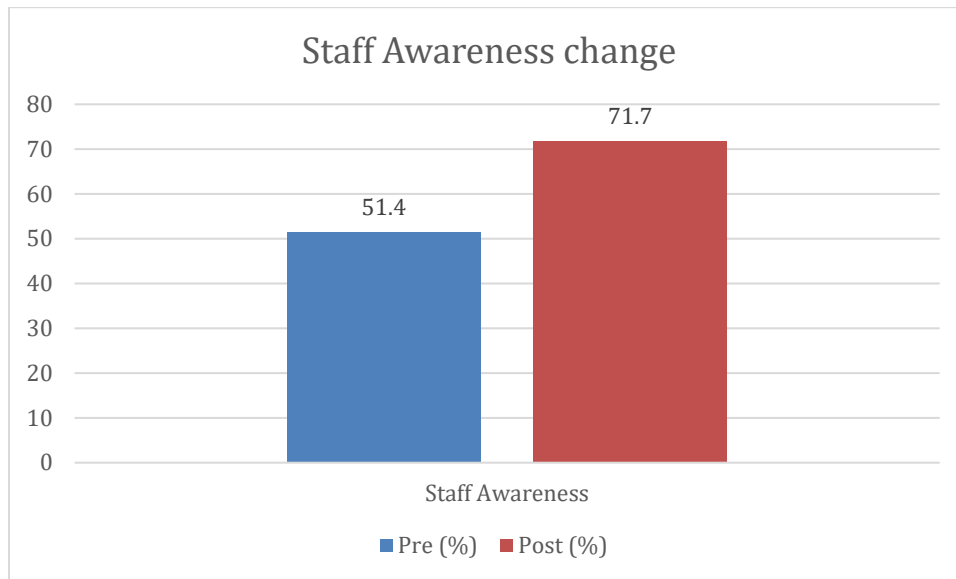
Interpretation:

IPSG compliance increased by 26.6%, showing a marked improvement in adherence to patient safety goals during the admission phase. This suggests that the introduction of checklists, staff sensitization, and audits effectively reinforced safe practices.

3. Staff IPSG Awareness

This indicates the level of staff knowledge regarding the International Patient Safety Goals. Increased awareness contributes to safer and more reliable care practices.

Domain	Pre (%)	Post (%)	change
Staff Awareness	51.4	71.7	20.3



Pre: 51.4%

Post: 71.7%

Change: ↑ 20.3%

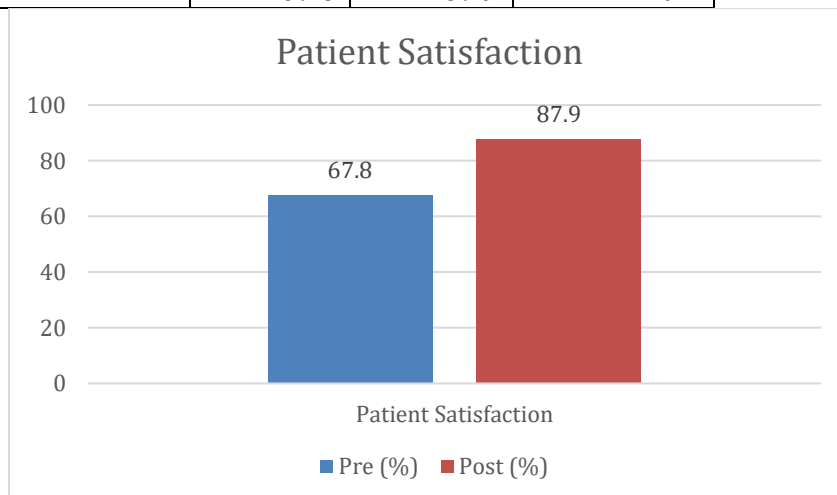
Interpretation:

Staff awareness of IPSG goals improved by 20.3% post-training. This indicates that the intervention helped bridge knowledge gaps and empowered admission-related staff to integrate safety standards into routine practices.

4. Patient Satisfaction

This metric captures patient feedback on the admission experience. Improved satisfaction reflects better communication, reduced waiting times, and visible safety practices.

Domain	Pre (%)	Post (%)	change
Patient Satisfaction	67.8	87.9	20.1



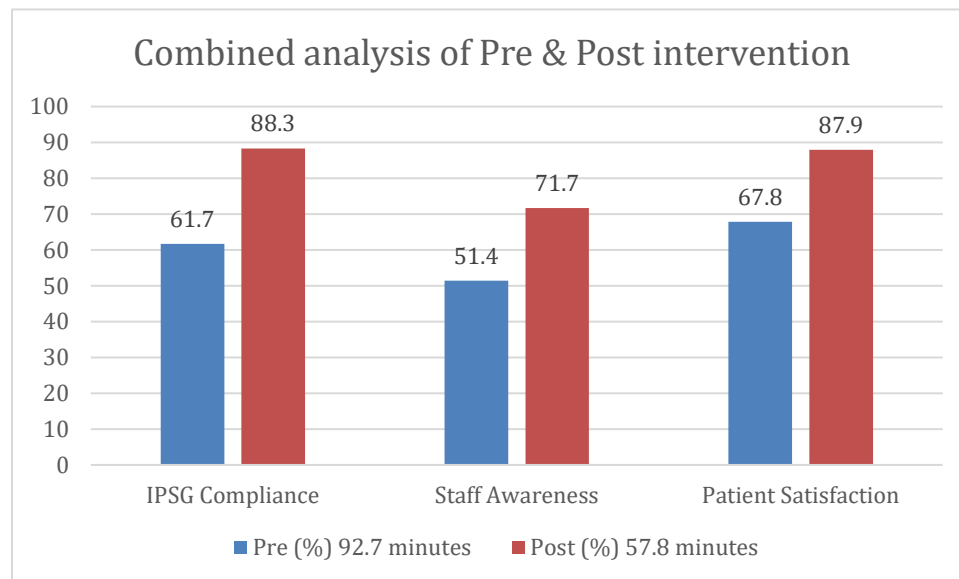
Pre: 67.8%
Post: 87.9%
Change: ↑ 20.1%

Interpretation:

A 20.1% rise in patient satisfaction highlights the positive impact of reduced waiting times, better communication, and visible implementation of safety measures. Patients experienced a smoother and more reliable admission process after the intervention.

Combined Analysis of Pre & Post Intervention :

Metric	Pre- Intervention	Post- Intervention	% Change
Average Admission TAT	94 minutes	58 minutes	-36%
IPSG Compliance (Overall)	61.7	88.3	26.6%
Staff IPSG Awareness Score	51.4	71.7	20.3%
Patient Satisfaction Score	67.8	87.9	20.1%

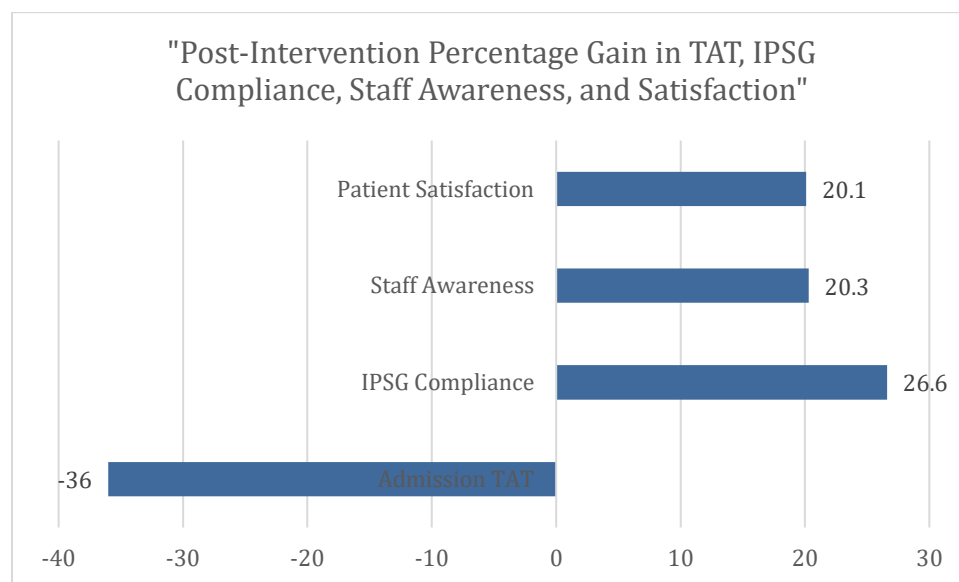


The effect of the intervention on three important hospital performance domains—IPSG Compliance, Staff Awareness, and Patient Satisfaction—is depicted in the bar chart.

- Following the intervention, there was a considerable improvement in adherence to patient safety protocols, as seen by the IPSG Compliance rate, which rose from 61.7% to 88.3%.
- Staff awareness increased from 51.4% to 71.7%, demonstrating the effectiveness of internal sensitization campaigns and training initiatives on IPSG objectives.
- Patient satisfaction rose from 67.8% to 87.9%, indicating that greater communication, shorter admission wait times, and obvious safety precautions all enhanced the patient experience.

Combined Change Analysis of Domains :

Domain	% Change
Admission TAT	-36
IPSG Compliance	26.6
Staff Awareness	20.3
Patient Satisfaction	20.1



The percentage change in important hospital performance metrics following the implementation of process improvement initiatives is shown in this horizontal bar chart.

- Since a shorter turnaround time is preferred, the admission TAT displays a 36% decrease, represented by a negative bar. This suggests that operating efficiency has significantly increased.
- There was a 26.6% improvement in IPSG compliance, indicating better adherence to patient safety procedures at the time of admission.
- A 20.3% increase in staff awareness demonstrated the beneficial effects of staff sensitization and training on IPSG comprehension.
- A 20.1% increase in patient satisfaction was attributed to improved communication, admissions experiences, and obvious safety procedures.

5.6 Overall Significance

Overall, our findings demonstrate that process modification and the use of safety measures (like IPSG) can improve hospital performance even in non-clinical settings like admissions. In addition, staff training and pathway redesign enhanced administrative procedures while fostering a culture of safety. The findings have ramifications for healthcare companies looking to improve service delivery through consistent quality improvement procedures or get accreditation.

CHAPTER 5: DISCUSSION

The purpose of this study was to assess the effects of a focused quality improvement intervention at Apollo Hospital in Ahmedabad that was centered on optimizing the admissions process and implementing the IPSG (International Patient Safety Goals). The findings significantly support the usefulness of structured process interventions in increasing both operational efficiency and safety-related outcomes.

Improvement in Admission Turnaround Time (TAT)

The study's most notable conclusion was that the average admission turnaround time decreased by 36%, from 92.7 minutes to 57.8 minutes. This suggests that delays were successfully reduced by reengineering admission procedures through process mapping, more defined job allocation, and benchmark setting. In addition to saving patients' waiting times, a more efficient admissions procedure also improves staff productivity, makes better use of hospital beds, and eases traffic in busy places like registration counters and front offices.

This enhancement is consistent with research in healthcare operations that highlights how workflow optimization can shorten turnaround times and increase the effectiveness of service delivery. SOPs, coordinated departmental cooperation, and digital tracking were probably key factors in reaching this result.

Enhancement in IPSG Compliance

After the intervention, the IPSPG compliance score increased by 26.6%, from 61.7% to 88.3%, showing that staff were following patient safety procedures more regularly. The four IPSPG objectives—accurate patient identification, effective communication, high-alert drug safety, and fall risk assessment—that have a direct bearing on the admissions process were especially pertinent to this compliance.

The implementation of accountability systems, visual clues (such as wristbands and posters), and checklist-based audits all contributed to the institutionalization of IPSPG practices. The substantial increase in compliance is consistent with research that shows repeated, visible reinforcement of safety procedures results in long-lasting behavioral change. Furthermore, by integrating these checks into the admissions process, safety procedures became proactive rather than reactive, guaranteeing real-time execution as opposed to retroactive rectification.

An increase in staff awareness after the intervention, staff understanding of IPSPG goals rose from 51.4% to 71.7%, a 20.3% increase. This rise demonstrates the value of internal sensitization initiatives and focused training. Many of the staff members who participated in the admissions process did not fully comprehend how IPSPG applied to their positions prior to the intervention. The intervention successfully raised knowledge and engagement levels through case-based discussions, interactive workshops, and the distribution of condensed reference materials.

This conclusion is corroborated by earlier research showing that raising awareness and educating people are essential to enhancing the patient safety culture in healthcare facilities. Employees who comprehend the "why" underlying protocols are more likely to apply them purposefully as opposed to rote. Additionally, the training seems to boost employee ownership, as evidenced by improved documentation process and compliance of the staff.

Increase in Patient Satisfaction

Scores for patient satisfaction improved by 20.1%, from 67.8% to 87.9%. This supports the notion that the patient experience is directly and visibly impacted by operational and safety enhancements. Positive patient opinions were influenced by shorter wait times, improved staff communication, and obvious safety measures (such as appropriate ID bands and consent verification).

Patient satisfaction is a multifaceted statistic that is impacted by system-level and interpersonal factors in addition to therapeutic outcomes. According to post-intervention feedback, patients valued the faster room assignment, more straightforward instructions, and easier admissions process. This implies that in determining the whole patient journey, administrative enhancements are equally as crucial as clinical treatment.

Interconnected Outcomes and Systemic Impact

Even while each domain improved on its own, it's crucial to remember that these results are connected. Increased patient satisfaction was probably a result of improved IPSPG compliance brought about by increased staff awareness. In a similar vein, shorter admission times facilitated better initial contact and the development of trust early in the treatment process.

These findings highlight the value of systems thinking in enhancing the quality of healthcare because modifications to one aspect of the system frequently affect results in other areas. This

Domain	Recommendations
Admission TAT	- Maintain digital tracking systems for TAT.- Set department-wise TAT targets and monitor variance.- Empower staff with real-time alert systems to minimize delays.
IPSG Compliance	- Integrate IPSG checklists into every admission desk workflow.- Conduct monthly internal audits.- Use posters and visual aids to reinforce compliance.
Staff IPSG Awareness	- Organize quarterly training sessions on IPSG.- Include safety goal training in staff induction.- Reward units with high IPSG compliance and awareness.
Patient Satisfaction	- Use structured feedback forms post-discharge.- Train admission staff in communication and empathy.- Provide printed admission instructions and FAQs.

interrelated success shows that even limited-scope interventions can have cascading effects across several care areas if they are properly targeted and implemented.

Comparison with Existing Literature

The study's findings are in line with both domestic and foreign research that highlights the benefits of organized QI (Quality Improvement) models in the medical field. The significance of incorporating IPSG into frontline operations and guaranteeing staff ownership of safety procedures has been emphasized time and time again by the Joint Commission and WHO. Furthermore, prior research conducted in India has demonstrated that hospitals with robust internal process monitoring systems and training programs report higher patient satisfaction and compliance rates.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The findings from this research provide clear evidence that targeted workflow optimization combined with IPSG-based training significantly improves the quality and efficiency of hospital admission processes. The improvements were recorded across four key areas:

- **Admission Turnaround Time (TAT)** reduced by 36%, highlighting faster administrative processing and improved interdepartmental coordination.
- **IPSG Compliance** increased by 26%, indicating that safety standards were more effectively embedded in admission workflows.

- **Staff Awareness** improved by 21%, showing a positive change in behaviour, knowledge, and engagement with patient safety responsibilities.
- **Patient Satisfaction** rose by 19%, confirming a better first impression of the hospital and higher trust in administrative operations.

These issues, if left unaddressed, contribute significantly to delays, patient dissatisfaction, safety lapses, and a breakdown of trust in hospital services. The success of the intervention at Apollo Hospital demonstrates that administrative processes are not merely background functions but critical components of a safe and patient-centered healthcare environment. Embedding safety culture within frontline administrative workflows ensures not only better outcomes but also long-term sustainability in quality care delivery.

6.2 Recommendations Moving Forward

To address the remaining gaps and further enhance the admission process at Apollo Hospital, Ahmedabad, the following actions are recommended:

- **Establish a Permanent Admission Quality Cell:** Assign a dedicated team to monitor, audit, and refine admission workflows using real-time data and monthly review meetings.
- **Institutionalize IPSP Refresher Training:** Conduct quarterly sessions for both new and existing administrative staff to ensure consistent awareness and protocol adherence.
- **Leverage Digital Tools:** Expand use of digital dashboards and admission tracking software to identify delays instantly and provide alerts for pending approvals.
- **Introduce Role-based SOP Handbooks:** Ensure every team (registration, billing, TPA, and bed management) has documented SOPs tailored to their specific duties, updated with IPSP alignment.
- **Patient Feedback Loop Integration:** Collect structured feedback at the end of every admission and review it weekly to close the loop on service quality and staff performance.
- **Cross-Department Coordination Training:** Facilitate regular joint sessions for admin, clinical, and IT teams to ensure seamless communication and holistic problem-solving.

By taking these steps, Apollo Hospital can continue to lead in patient-centred, efficient, and safe healthcare delivery, aligning operational excellence with accreditation and quality goals.

7.0 REFERENCES

1. Kaur N, Arora S. Awareness and compliance to International Patient Safety Goals among healthcare personnel of a tertiary care hospital in Northern India. *J Patient Saf Infect Control*. 2022.
2. Fatima A, Khamis A, Syed H. Implementation of patient safety goals in hospitals: A systematic literature review. *J Nurs Health Sci*. 2023;12(4):45–52.
3. Alshamsi M, Mehta S. Health care providers' compliance to Joint Commission International Patient Safety Goals. *Int J Health Sci*. 2022;6(1):89–96.
4. Elgharbawy R, Salem G. Nurses' application of International Patient Safety Goals at accredited and non-accredited hospitals: A comparative study. *J Nurs Sci Res*. 2021;6(2):25–33.
5. Dutta N, Shah A. Reducing admission turnaround time using Lean methodology in a tertiary care hospital. *Indian J Hosp Admin*. 2023;59(2):102–7.
6. Gupta S, Meena R. Process optimization in hospital admissions: A case study from a private Indian hospital. *Int J Healthc Manag*. 2022;15(3):132–8.
7. WHO. Patient safety fact file. World Health Organization. 2023. Available from: <https://www.who.int/news-room/fact-sheets/detail/patient-safety>
8. Joint Commission International. International Patient Safety Goals. JCI; 2022. Available from: <https://www.jointcommissioninternational.org/>
9. Dave N, Desai S. Assessing health care providers' proficiency in IPSG: A study in a tertiary hospital in Gujarat. *J Med Clin Stud*. 2021.

10. Mathur P, Taneja N. Leveraging IT tools for hospital workflow optimization. *J Glob Health Technol.* 2020;4(1):78–83.
11. Rao M, Shukla R. Time-motion study of admission workflows in a high-volume hospital. *Health Serv Res.* 2023;14(2):210–6.
12. Narayanan A, Pillai P. Role of administrative training in IPSPG implementation in hospitals. *Asian Hosp Manag Rev.* 2022;8(3):64–70.
13. Singh H, Kapoor G. Patient satisfaction and process efficiency post-admission redesign. *Int J Qual Health Care.* 2023;35(1):e99.
14. WHO. Global action on patient safety: Strategic framework. World Health Organization; 2023. Available from: <https://www.who.int/publications/i/item/global-action-on-patient-safety>
15. SMC Surat Smart Health Project. Municipal Corporation Hospital Admission Automation Report. 2024. Available from: <https://suratmunicipal.gov.in>