

SYNOPSIS FOR DISSERTATION

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“Study on Enhancing Operating Theatre Efficiency Through Time Management and Workflow Optimization in KIMS - Kingsway Hospital, Nagpur”

Introduction: -

Efficient utilization of the Operation Theatre (OT) is essential for delivering timely and cost-effective surgical care. One of the critical indicators of OT efficiency is the turnover time—the interval between the end of one surgery and the start of the next. Prolonged turnover time can lead to reduced surgical throughput, increased waiting periods for patients, and underutilization of valuable hospital resources. This study aims to evaluate the turnover time between consecutive surgical procedures and identify key factors contributing to delays, with the goal of recommending strategies for optimizing OT workflows and improving overall operational efficiency.

Research questions: -

- What is the average turnover time between consecutive surgeries in the Operation Theatre?
- What are the common justifications provided by OT staff for time consumption during turnover periods?
- What avoidable factors are responsible for delays between surgical cases?
- What evidence-based strategies can be implemented to reduce unnecessary delays and improve OT efficiency?

Objectives: -

- To determine the average turnover time between consecutive surgical procedures in the Operation Theatre.
- To assess the contributing factors and justifications for time consumed in specific OT processes.
- To Identify and analyse the underlying causes of avoidable delays in surgical scheduling and turnover.
- To Propose evidence-based recommendations for enhancing the efficiency and workflow of the Operation Theatre.

Hypothesis: -

As this is a cross-sectional observational study, no experimental intervention is involved. However, the underlying assumption is that longer turnover times between surgeries are associated with modifiable operational factors such as staff availability, equipment readiness, and interdepartmental coordination. Recognizing and addressing these factors may contribute to improved Operation Theatre efficiency.

MATERIAL AND METHODS: -

Study Design: This research adopts a **cross-sectional observational study design** aimed at assessing the average turnover time between surgical procedures and identifying factors contributing to delays in Operation Theatre (OT) efficiency. A quantitative approach is utilized, supported by observational data, to evaluate modifiable operational processes influencing turnover time. The study does not involve any interventions but focuses on identifying associations between workflow components and OT utilization.

Study Setting and Population:

The study is conducted in the Operation Theatres of KIMS-Kingsway Hospital-Nagpur, a tertiary care hospital. The study population includes OT personnel involved in surgical procedures, including surgeons, anaesthetists, nursing staff, OT technicians, and housekeeping staff. Data is collected from multiple surgical departments to provide a comprehensive view of OT functioning.

Inclusion Criteria:

- Surgeries conducted during routine OT hours within the selected departments.
- Cases with complete documentation of surgery start and end times.
- Staff members directly involved in the turnover process between surgeries.

Exclusion Criteria:

- Emergency surgeries outside routine OT hours.
- Incomplete or missing time documentation for surgical procedures.
- Cancelled or postponed surgeries that did not proceed to completion.

Study Tools and Data Collection:

Data collection tools include:

- Structured observation checklists to record exact time intervals between surgical procedures.
- Turnover time recording sheets documenting the end of one surgery to the start of the next.
- Semi-structured interviews with OT staff to gather insights on reasons for delays and workflow issues.
- Secondary data from OT logs, scheduling records, and hospital management systems.

Duration of Study: April 2025 – May 2025

Sample Size: A total of **546 surgical cases** were observed during the study period

Sampling Technique: Purposive sampling was used to select surgeries across different departments during regular OT hours. Cases were included based on availability of complete time documentation and cooperation of OT staff for observational data collection.

Data Collection Procedure:

- **Primary data** was collected through structured observation checklists to record turnover time, including key intervals such as patient exit, cleaning start and end, next patient entry, and induction.
- **Secondary data** was retrieved from OT records and surgical logs to validate timing and scheduling information.
- **Semi-structured interviews** were conducted with OT staff to understand their perspectives on delay causes and workflow constraints.
- Data was collected over a defined period April-May, covering both major and minor surgical cases in Ots.

Operational Definitions:

- **Turnover Time (TOT):**
The time interval between the completion of one surgical case (patient exit) and the start of the next. It includes cleaning, instrument setup, patient shifting, anaesthesia preparation, and documentation time.
- **Operational Delay:**
Any non-clinically justified extension in turnover time caused by process inefficiencies, including delays in cleaning, poor scheduling, staff non-availability, or lack of readiness of instruments and consumables.
- **Semi-Structured Interview**
A qualitative method of data collection involving guided conversations with OT staff to explore their experiences, justifications, and perceived barriers related to OT turnover.

Data analysis plan:

Quantitative data (turnover time durations) were entered in Microsoft Excel.

Descriptive statistics such as mean, median, calculated for turnover times.

Categorical analysis was performed to examine delay frequencies across departments and OT types.

Thematic analysis was applied to qualitative data from interviews to identify common reasons and patterns of delay.

Ethical considerations:

Approval for the study was obtained from the Ethics Committee of KIMS-Kingsway Hospital, Nagpur.

Informed verbal consent was taken from all OT staff involved in interviews.

Patient data was anonymized, and confidentiality was strictly maintained.

No clinical intervention or patient contact was involved.

Implications of Research:

This study will provide actionable insights into factors affecting OT turnover time and identify avoidable delays. The findings can guide hospital administrators in streamlining surgical workflows, optimizing resource use, and improving staff coordination. Ultimately, it will support better surgical throughput, reduced patient wait times, and enhanced quality of care in tertiary healthcare settings.

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