

CHALLENGES AND SOLUTIONS TO MULTIPLE INDENTS GENERATION IN A HOSPITAL SETTINGS

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by

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Under the Supervision and Guidance of

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2025

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Soumak Banerjee**, Student at **IIHMR University, Jaipur** pursuing **MBA Hospital and Health Management**, has completed internship at **NH-Bangalore Cardiac, NH Health City, Bangalore** from **10th of March 2025 to 6th of June 2025**.

During his internship period he was assigned to **Material Management** in **Narayana Institute of Cardiac Science, Bangalore**. He has made noteworthy contributions on the topic assigned.

We wish him good luck in his future endeavors.

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A handwritten signature in blue ink, appearing to read 'Anpan'.

Faculty Guide
IIHMR University, Jaipur

Date 16/06/2025

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Challenges and Solutions to Multiple Indents Generation in a Hospital Settings** 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Soumak Banerjee
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Date *14/6/2025*

ABSTRACT

Particularly in the inpatient setting where treatment timing is crucial, effective drug delivery in hospital environments is mostly dependent on simplified pharmacy operations. One of the main difficulties in such systems is the regular generation of several indent—that is, the filing of repeated medication requests for the same patient within a limited period. Although maybe small, the issue can compromise patient care, affect working efficiency, cause inventory imbalance, and interfere with pharmacy operations.

In a tertiary care hospital, this study investigates the fundamental causes, frequency, and functional impact of several indent generation. Information was gathered from 350 critical care nursing staff using a descriptive, cross-sectional approach via a structured pretested questionnaire. The findings show that 84% of the subjects indicated that their main reason for raising indents on a regular basis was urgent patient requirements; 40.57% of the subjects raised indents on a regular basis. Especially, 49% reported stock-outs during indenting, and 42% acknowledged that occasionally delayed patient care resulted from several indents.

Slow system response (cited by 37.71%), stock shortages on a regular basis (39.14%), and stock delays in pharmacy fulfilment (also at 39.14%), are the three critical performance bottlenecks. While 41.14% focused on more stock planning, 34.86% also noted a lack of openness in the indenting process. With almost 46% of the nursing staff claiming inadequate instruction on using computer-based indenting systems such as HMIS, it is clear that continuous capacity-building initiatives are absolutely necessary.

The literature also validates these findings by highlighting areas of operational efficiency, especially in hospitals still running manual or semi-digital systems. According to the literature, multiple indenting results from poor communication, inconsistent SOPs, and staffing shortages. Using Automated Dispensing Cabinets (ADCs), as used in Saudi Arabian hospitals, has shown great promise for reducing needless indents and improving turnaround times.

Notwithstanding these observations, the problem of duplicate indent generation is under-researched in and of itself as a separate study subject. Most of the present studies refer to it at best as an offshoot or secondary effect of more general issues like medicine delay or manual intervention. By offering a comprehensive, fact-based analysis of the individual causes and effects of duplicate indenting within hospital pharmacy systems, this dissertation aims to close this gap.

Recommendations call for system updates to increase electronic platform responsiveness, better stock forecasting, dashboards for real-time monitoring, and consistent SOP training on indenting. The study also emphasises the need of front-line staff participation in process redesign to ensure useful, simple, practical solutions.

Although limited to one hospital, the findings have wider ramifications for healthcare facilities facing comparable problems. Not only is improving the indent generating process an operational need, but it also is an ethical one with direct effects on patient safety and treatment outcomes. Development of responsive and strong health systems depends on a staff-oriented, patient-centred, technologically enabled approach.

Key Words: Hospital pharmacy, indent generation, duplicate indents, patient care, stock management, HMIS, pharmacy workflow, medication turn-around time, healthcare operations, nursing staff, electronic indenting, system delays, SOPs, tertiary care.

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INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In hospitals, especially inpatient settings where time-sensitive treatment is absolutely vital, effective medication delivery mostly depends on simplified pharmacy operations. Among the operational challenges pharmacy departments encounter, multiple indent generation—repeated requests raised for the same medication or supply item—often for the same patient and within a limited time frame—which results in lower operational efficiency. Though on the surface these duplicates could seem minor, they can have a domino effect on workflow, resource use, turnaround times, and ultimately patient safety.

Many hospitals—especially those depending on manual or semi-digital systems—cause many indents by lack of visibility into previously raised indents, poor communication between shifts, delays in medication dispensing, or lack of clear standard operating procedures (SOPs). In high-dependency wards and critical care units, where staff members may re-raise indents under urgency of medication delivery without checking the status of past ones [1,2], the issue becomes more obvious. In addition to confusing pharmacy lines, this results in overstocking, duplicate of work, and possible medication waste [3].

Still common in many tertiary hospitals, the manual and non-standardized character of indenting makes tracking patterns or spotting inefficiencies in real time even more difficult. Often due to lack of training, rotational transfers, or system overload, a study done in Uttarakhand found that over 94% of ward nurses used manual indenting techniques without following hospital policy [1]. Similar results were recorded in a South Indian study where delays in medicine distribution caused repeated indents from nursing staff, so generating uncertainty and inefficiencies in turnaround time [2]. These several visits affect not only the pharmacy employees but also the tracking and documentation clarity.

On the other hand, hospitals with automated dispensing systems claim to have drastically cut such needless procedures. Following Automated Dispensing Cabinets (ADCs), one Saudi Arabian hospital virtually eliminated the need for multiple indenting due to real-time medication visibility and process automation, so reducing turnaround time [4].

Notwithstanding these developments, a review of the current literature reveals a clear research gap: while many studies address pharmacy delays, supply chain inefficiencies, and digitisation, very few specifically focus especially on the phenomena of multiple indent generation as a systematic problem with operational and clinical consequences [1–5]. Given that duplicate indenting not only wastes resources but also might cause accidental omissions or delayed treatment.

By exhaustively investigating the causes, effects, and possible remedies to several indent generation in hospital pharmacy systems, this dissertation aims to close that gap. This study intends to propose pragmatic, policy-driven recommendations that can be

used in both resource-rich and resource-constrained hospital environments by means of data analysis from real-world pharmacy operations, integration of field observations, and review of the present evidence basis.

1.2 AIM

To evaluate the difficulties related with several indent generation in hospital pharmacy systems and suggest sustainable solutions to lower duplicates, increase operational effectiveness, and improve patient care delivery.

1.3 OBJECTIVE

To determine the reason and frequency of multiple indent generation.

To find out the operational challenges leading to duplicate indent generation.

To find out the impact of multiple indents on patient care and pharmacy operation.

To evaluate staff training level, confidence on HMIS and indenting process.

To provide recommendation to streamline the indenting process.

REVIEW OF LITERATURE

2.1 INTRODUCTION

Although there is a lot of research on pharmacy turnaround time, inventory control, and medication supply systems, particular studies aimed at the problem of multiple indents are few. This dearth of targeted research reflects a deficiency in operational insights, particularly considering the major consequences of duplicate indenting on staff workload and medication delays.

2.2 REVIEW

Focussing on the impact of supportive supervision on stock management and indenting by senior nurses, Shukla et al. (2023) undertook a mixed-method study in a tertiary care hospital in Uttarakhand [1]. The findings indicated that while 94% of the employees did not adhere to institutional indenting procedures, hand systems were used on a large scale. Also referred to as primary causes for duplicate and incorrect indenting were inadequate training, over-reliance on manual records, and recurring staff transfers.

In one of the South Indian tertiary care hospitals, Shroff et al. (2019) examined online indents turnaround times [2]. Their study pinpointed some factors responsible for delayed medicine delivery, such as ineffective dispatch logistics, excessive inquiry calls, and improper sequencing. Particularly when there were delays, nursing personnel often re-submitted indents for the same product, thus clogging the queue of the pharmacy and redoubling efforts.

540 indents in a large hospital were presented by data from Adil et al. (2017). They also documented that 29% of general indents and 39% of urgent/emergency indents were delayed more than the acceptable level [3]. These delays resulted in repeat indenting, explaining stock fluctuations, drug wastage, and substitution issues. The research highlighted how the dependence on paper-based systems and a lack of real-time monitoring increase the likelihood of duplication and stock-outs.

Almalki et al. (2023) demonstrated a revolutionary response to such problems by implementing automated dispensing cabinets (ADCs) at a Saudi hospital [4]. Besides substantial cost reduction, the quality improvement program achieved an 83% reduction in turnaround time and a 72% reduction in drug returns. With real-time updates and direct nurse access to approved medications, the automation near-eliminated many indentings. This evidence corroborates the extent to which technology could minimize systematic inefficiencies.

Fonseca et al. (2023) investigated pharmacy staff decision-making on supply types and durations in English hospitals [5]. They found that in the lack of policies, staff members often made presumptions or took extra care, sometimes resulting in over-supply or duplication of orders. Their results imply that recurrent pharmacy-related inefficiencies

are mostly caused by unclear standard operating policies and inconsistent decision-making processes.

2.3 RESEARCH GAP

Notwithstanding these revelations, none of the above studies specifically look at the issue of multiple indent generation as a stand-alone operational concern. Most studies barely touch it, either as a result of manual systems, stockouts, or drug delays. Targeted study on the underlying causes, operational consequences, and mitigating techniques regarding several indenting inpatient pharmacy processes is obviously needed. This dissertation aims to close that gap by providing a thorough investigation supported by practice-based evidence.

METHODOLOGY

3.1 INTRODUCTION

Working in inpatient departments of a tertiary care hospital, nursing staff members underwent a descriptive, cross-sectional study. Evaluating patterns, challenges, and opinions about several pharmacy indents inside a hospital workflow environment was the main goal.

3.2 DEVELOPMENT OF INSTRUMENT

Development of the structured questionnaire for data collecting drew on results from institutional audits with an eye towards pharmacy indenting procedures. These audits found operational flaws including, repeated indenting, delay in receiving medicine, staff reluctant to check received items, indenting error and poor communication. A small group of nursing staff members pre-tested the instrument to guarantee its relevance and clarity. The questions' structure and language were improved by comments.

3.3 INCLUSION CRITERIA

All nursing staff who are working on inpatient area and indenting staff
Staff members in non-clinical roles or on leaves during the data collecting period were excluded.

3.4 DATA COLLECTION

Data were gathered applying the validated structured questionnaire. Participants were voluntary and anonymous. The study was explained before distribution, and consent was obtained.

3.5 ANALYSIS

Responses were entered into Stata statistical software after being scored. Participant demographics and the frequency distribution of important variables including indenting frequency, communication efficacy, system errors, and stock challenges were compiled using descriptive statistics

3.6 CONSTRAINTS

This study made use of self-reported data; hence response bias could be introduced. Furthermore, even if the sample was thorough inside the hospital, results might not be applicable outside of like operational environments.

RESULTS

4.1 OVERVIEW

A total 350 responses were taken from different critical care areas.

4.2 INTERPRETATION

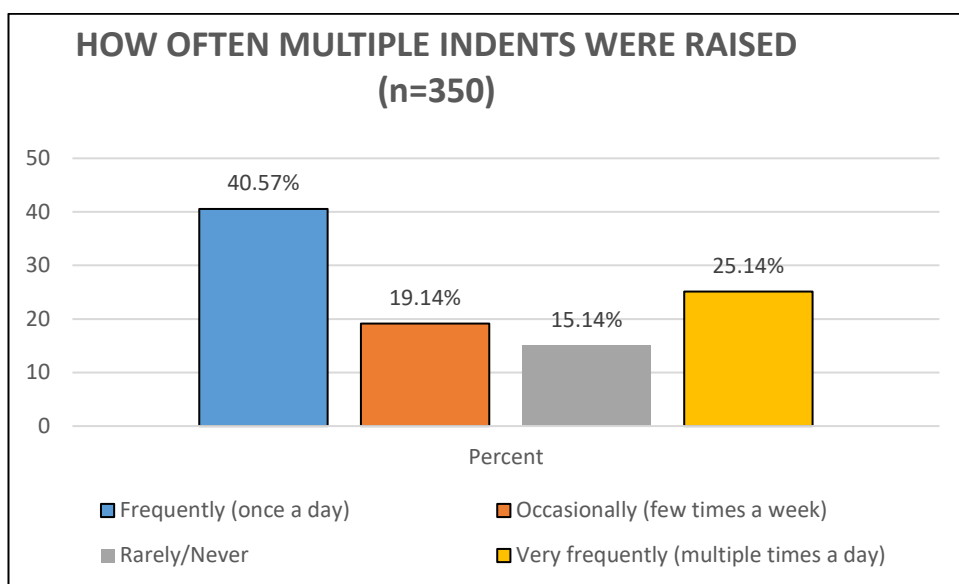


TABLE 4.1

The bar graph insights that 40.57% has responded they raised indents frequently, while 25.14% has responded they raised indent very frequently.

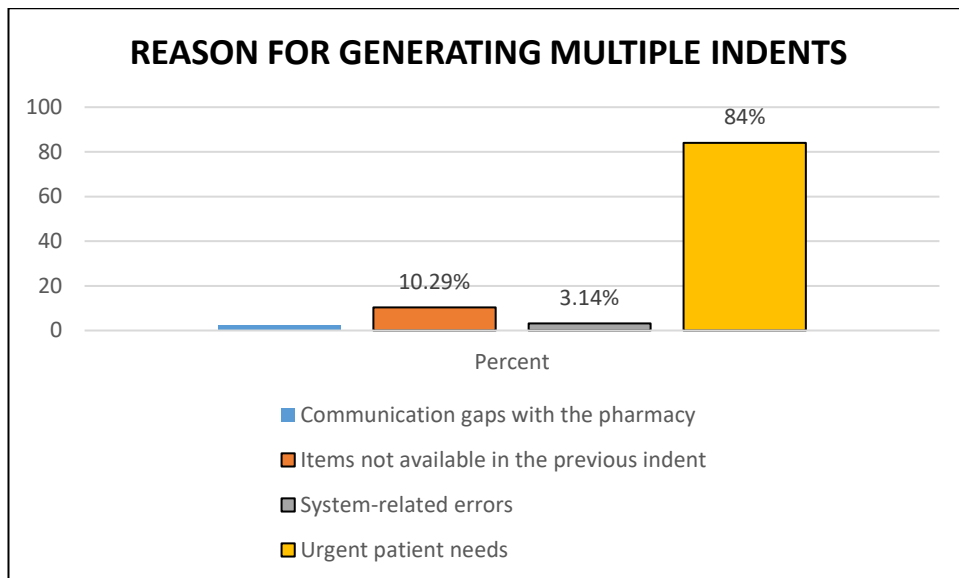


TABLE 4.2

This graph insights that 84% indents were raised due to urgent patient needs.

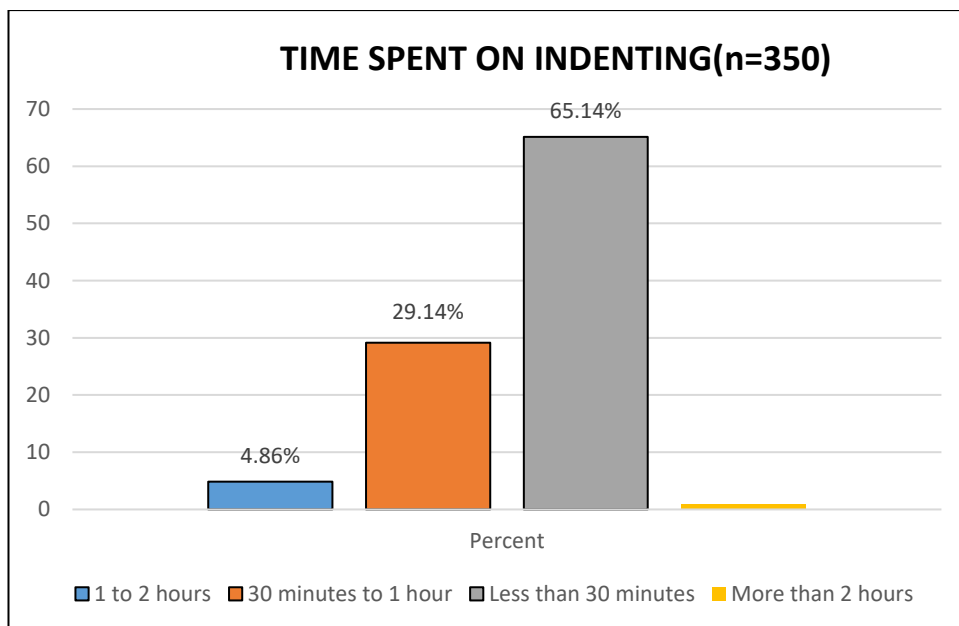


TABLE 4.3

It was observed that 65.14% of the staff takes less than 30 mins to indents whereas 29.14% takes 30 mins to 1 hour.

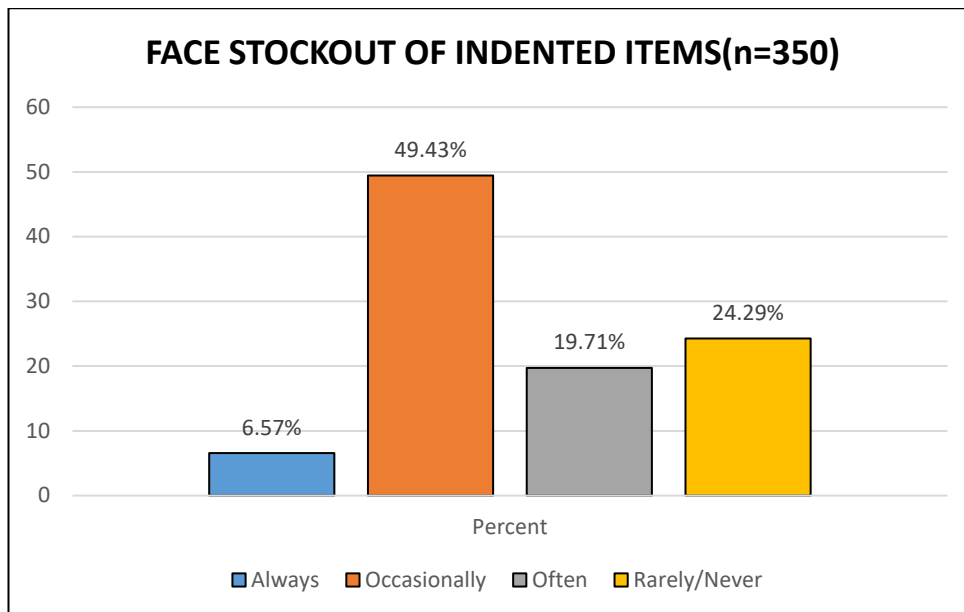


TABLE4.4

49.43% respondents have responded they face stock out of indented items while indenting.

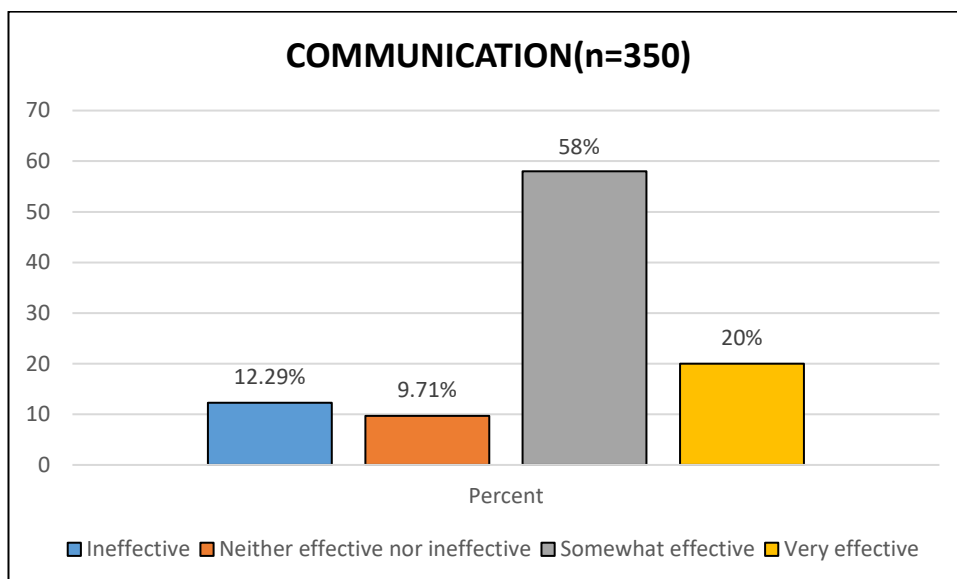


TABLE4.5

This graph insights that 58% of respondents believes that communication is somewhat effective with pharmacy while addressing issues related to multiple indents.

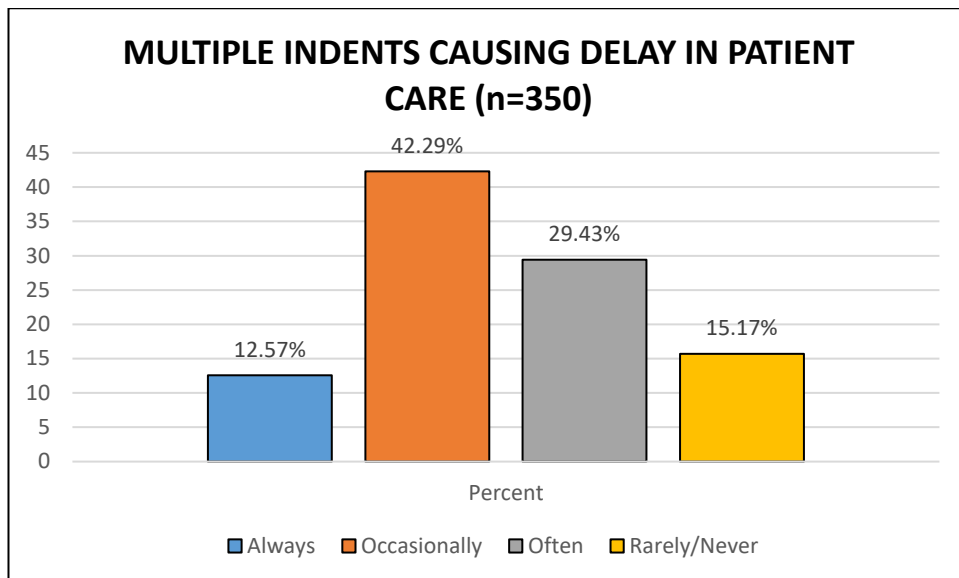


TABLE 4.6

It was observed that 42.29% respondents have observed that multiple indents cause delay in patient care occasionally while 29.43 % believes that the often it leads to delay in patient care.

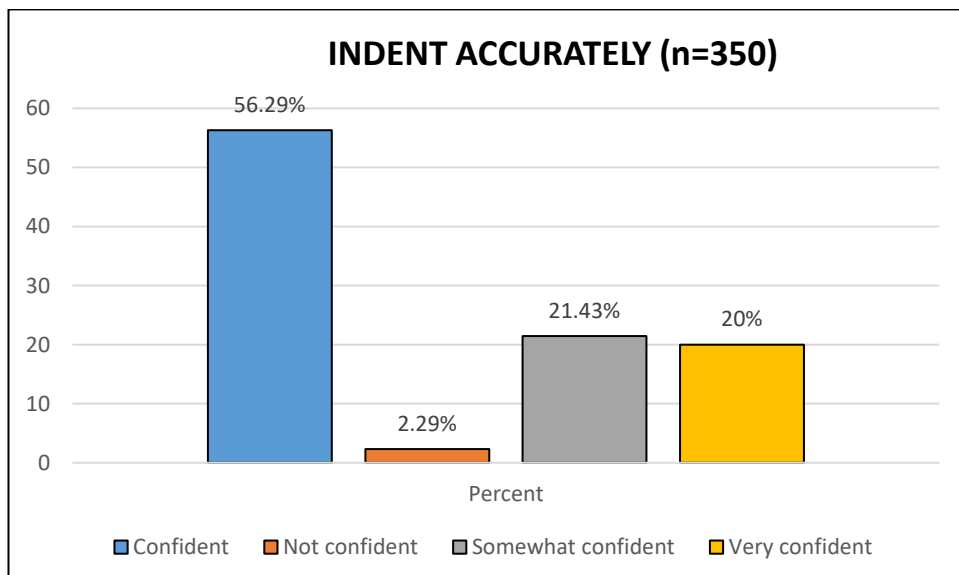


TABLE4.7

Around 56.29% staff are confident of raising indent accurately while 20% are very confident in indenting accurately.

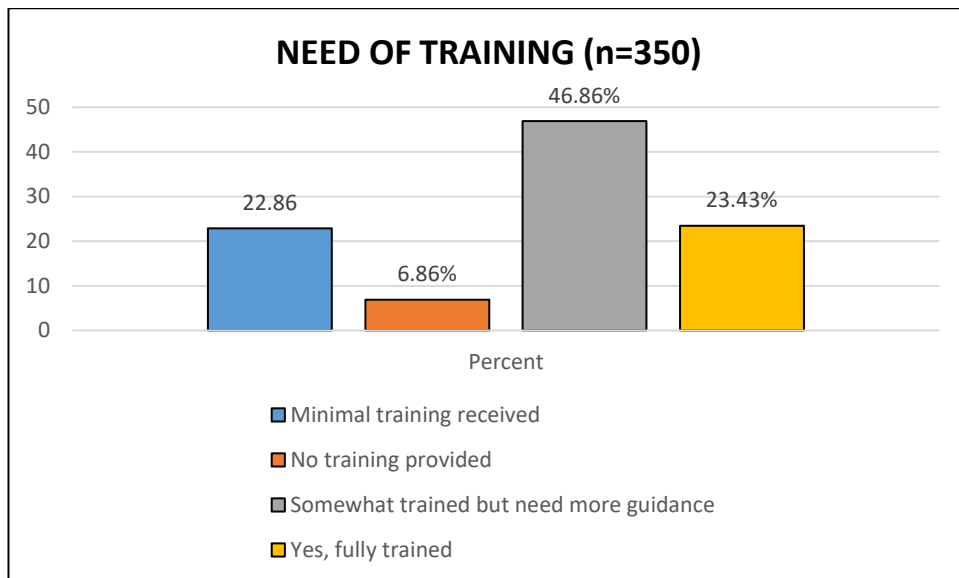


TABLE 4.8

Around 46.86% has responded that they are somewhat trained but need more guidance on indenting through HMIS.

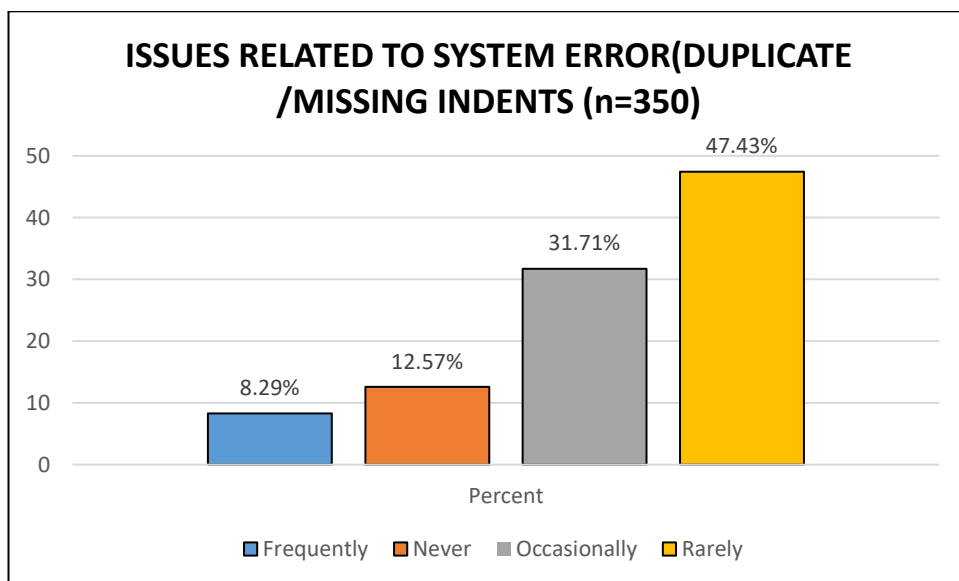


TABLE 4.9

47.43% respondents have responded that they rarely face any issues due to system error.

DISCUSSION

The following findings are observed while analysing the particular challenges:

During the indent generating process, the healthcare personnel recorded several operational difficulties:

Slow System Response: Indicating a need for IT performance enhancements, 37.71% of respondents suffered delays because of slow system response.

39.14% of the respondents said they experienced stock shortages during indenting, implying problems with inventory control or replenishment.

39.14% of respondents said they had delays in getting pharmacy items following indentation.

Lack of Process Clarity: 34.86% of respondents thought the indenting process lacked clarity, so stressing the need of improved SOP documentation or communication.

Identified Areas of Need for Enhanced Indent Process Improvement

Respondents also pointed out particular areas they think should be given top priority to enhance the indent process:

41.14% of respondents emphasised the need of better stock planning to prevent shortages.

Dealing with stock shortages: 60.57% underlined the need of making sure regularly used goods are available.

30.86% of respondents pointed out timely pharmacy action as a main area needing development.

Improving Process Clarity: 32.57% argued for more ordered, clear procedures to reduce mistakes and uncertainty.

CONCLUSION

5.1 OBSERVATION

Particularly from the perspective of frontline healthcare staff, this dissertation sought to examine the present situation, issues, and areas for development within the indent generation process in a hospital environment. Especially from the frontline healthcare workers' point of view.

The results revealed a number of challenges and bottlenecks associated with the indent creation process. Some of the most frequently cited issues were delay-related problems such as slow responses from the pharmacy.

These problems affect not only timely access to necessary drugs and supplies but also have a knock-on effect compromising patient care, raising staff workload, and lowering general efficiency.

Especially, slow system response caused delays reported by more than 37% of the respondents. This is a significant fraction that emphasises the need of strong IT infrastructure able to meet the high transaction volume and immediate needs in clinical environments. Comparably, about 39% of participants experienced delays getting prescription drugs from the pharmacy. This may be arise due to miscommunication, workload, or prioritising problems, this gap need to be filled for improved patient outcome and improve operational efficiency.

5.2 RECOMENDATON

The results of this study have major practical implications. Hospitals must change their indent procedures using a proactive, data-driven attitude. System improvements should first and most importantly be considered to lower latency on indenting systems. Technological advancement forms the basis of systematic reform regardless of whether it involves better load-balancing systems,

Second, internal monitoring systems should be used by pharmacy departments to track and maximise indent fulfilment turn-around times. A dashboard showing average response times, pending requests, and prioritising techniques might help to simplify the indent distribution and increase openness.

Lastly, training and set procedures help to solve the problem of process execution clarity. Staff members have to be routinely orientated on SOPs and indenting systems. Including front-line employees in the redesign of processes will also encourage responsibility and assist to produce more user-friendly procedures.

At last, building feedback loops—where users may document delays, propose fixes, or draw attention to reoccurring problems—will guarantee that the indent system stays dynamic and responsive to shifting requirements.

5.3 LIMITATION

This study has limits even if it offers insightful analysis. The results might not apply to all departments or other institutions; the sample size was limited to a few floors inside one hospital. Furthermore, the study made use of self-reported data, which naturally carries prejudices including subjective interpretation of delay severity or recall error.

5.4 FINAL REFLECTION

This dissertation explains the practical challenges healthcare staff face in managing this basic but underrated process. We begin towards developing safer, speedier, and quicker healthcare systems by understanding the root causes of inefficiencies and establishing practical priorities.

Reorganizing the indent process of producing depends finally on a patient-focused, technology-enabled, staff-engaging approach. Institutions must vow evidence-based changes, adaptive learning, and constant evaluation to ensure no patient waits for the treatment they need most urgently due to systemic delays.

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