Appendix B: Cover Page

BEYOND MEDICAL NECESSITY: EVALUATION OF THE FACTORS INVOLVED IN THE DELAY OF THE DISCHARGE PROCESS IN A PRIVATE HOSPITAL IN HYDERABAD

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

ARCHNA KUMAR

Under the Supervision and Guidance of

Dr. NEETU PUROHIT

2023

Appendix C: Title Page

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Appendix D: Declaration by Student

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Beyond Medical Necessity: Evaluation of The Factors Involved In The Delay of The Discharge Process In A Private Hospital In Hyderabad** is the bonafide record of my original researchwork. 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 Information derived from the published or unpublished workof others has been duly acknowledged in the text.

ARCHNA KUMAR

Appendix E: Completion Certification

KIMS HOSPITALS™

Dt: 26-05-2023

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Archna Kumar, ID No: 90402944** has undergone the **Internship** in the department of **Corporate Projects** at **Krishna Institute of Medical Sciences** from **27-02-2023** to **26-05-2023.** During the course of her work, found to be good.

We wish her all the best for her future endeavors.

KIMS is 750 bedded, Multi-Specialty hospital. This is accredited with NABH, NABL & ISO 9001:2015 certified.

For Krishna Institute of Medical Sciences Ltd.

CH. Koteswara Rao

KRISHNA INSTITUTE OF MEDICAL SCIENCES LTD. Secunderabad

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Appendix F: Certificate from Faculty Guide and School Dean

CERTIFICATE

This is to certify that dissertation titled is a record of the research **Beyond Medical Necessity: Evaluation Of The Factors Involved In The Delay of The Discharge Process In A Private Hospital In Hyderabad** work undertaken by ARCHNA KUMAR in partial fulfillment of the requirements for the awardof 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.

Faculty Guide
IIHMR University, Jaipur
Date

School Dean
IIHMR University, Jaipur
Date

ABSTRACT

Background: The discharge process helps the mangers to keep a track of the occupancy and the data collected can help in further admissions in the hospital. The entire discharge process involves the interaction of other departments like the pharmacy. OT, Cath lab and the insurance backend team which keeps a track of the insurance approval of the patients. Any deviation or lag in the system leads to patient dissatisfaction. The discharge process can involve many bottlenecks that occur in the process flow and thereby affects the efficiency of the hospital. Hence a study was conducted to identify the contributing factors involved in the discharge process in a private hospital in Hyderabad and making suggestions on improving the discharge process.

Material and Methods: A descriptive cross-sectional time and motion study was conducted in a 250-bedded private hospital in Hyderabad from March to May 2023. A proforma was made with different parameters involving TAT of nursing, pharmacy clearance, Discharge summary and closure of bills.

Results: The analysis revealed that a delay in the discharge process was due to delay in the discharge summary, delay in the nurse initiating the discharge flag, delay by the nurses in indenting drugs to the pharmacy and delay in pharmacy clearances.

Conclusion: The study conducted in a 250 bedded hospital in Hyderabad thus helps us identify the various contributing factors involved in the discharge process in the hospital. The discharge process is an important area that needs improvement in the hospital. Through this study the hospital management can closely look into the bottlenecks especially related to discharge summary approval and delay in the closure of the bills which play a pivotal role in the discharge process for both cash and insurance patients and thus based on the suggestions can implement various strategies to decrease the delay in the discharge process and increase patient satisfaction.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF GRAPHS

ABBREVIATIONS

IPD: Inpatient Department

ER: Emergency Room

TAT: Turn Around Time

DI: Discharge Initiation

OT: Operation Theatre

DS: Discharge Summary

IA: Insurance Approval

EHR: Electronic Health Record

LOS: Length of Stay

ADT: Admission, Discharge, Transfer

RN: Registered Nurse

NABH: National Accreditation Board for Hospitals and Healthcare

LAMA: Leave Against Medical Advice

TPA: Third Party Administrator

CHAPTER 1

INTRODUCTION

Discharge process involves a set of activities that includes an interdisciplinary team approach that includes the patients, nurses, billers, and consultants from various departments. They together help in the transfer of patient from an environment of hospital back to their stable environment in their home.[1] The discharge process usually starts after the consultant gives an approval regarding the condition of the patient and ends after the patient leaves the hospital. The entire process of discharge is indeed a lengthy affair and the time taken for the entire procedure directly impacts the patient satisfaction. The reputation of the hospital is dependent on the satisfaction of the patient while he was getting discharged from the hospital. The entire process is assumed to be in a smooth planned manner with less hindrances encountered both for the patient and the hospital staff. So also, the admission of other patient is dependent on how fast the patient has released the bed. Delay in the discharge process increases the pressure on beds of hospitals and effects the revenue of the hospital.

According to the NABH guidelines an ideal time of 180 minutes is suitable for completion of the discharge process. The timing set gives a challenge to the organization to complete the process in an efficient manner. The discharge process helps the mangers to keep a track of the occupancy and the data collected can help in further admissions in the hospital. The entire discharge process involves the interaction of other departments like the pharmacy. OT, cath lab and the insurance backend team which keeps a track of the insurance approval of the patients. Any deviation or lag in the system leads to patient dissatisfaction. The discharge process can involve many bottlenecks that occur in the process flow and thereby affects the efficiency of the hospital. So also, an important quality indicator involves efficient discharge process and patient satisfaction. The delay in discharge also effects the patients' health as he is prone to more hospital acquired infections.[1]

There are several factors contributing to the delay in discharges, the pertinent ones being waiting for the consultant's opinion, tests and procedures, pharmacy clearances etc. Delayed discharges imply that the patient is medically fit to be transferred back home but there is

pertinent disruption in process flow which involves more time taken for the various steps involved in the discharge process. Discharge planning has a lot to do with the proper communication between various departments. The initial step involves the interaction of the nurse and consultant, thereby interaction of the inpatient pharmacy with the nurse who indents the medicines and returns them to the pharmacy followed by billers' communication with the OT pharmacy, updating of the services in the system and the insurance team. It is also dependent on vivid organizational factors.[2]

The discharge summary plays an important role while a patient is getting discharged from a hospital. It acts a communication link between various staff members of the hospital including the nurses and the consultants of the hospital. The insurance companies also require a well-made discharge summary so that they can give the final insurance approval for the patient. It has been seen that a delay in writing the discharge summary disrupts the process flow of discharge in the hospital. The information provided in the discharge summary is thereby important for the final checkout of the patient as the nurses and the consultant decision making skills are reflected in the making of the discharge summary. The summary contains certain important parameters like the clinical condition of the patient, the investigations advised by the physician, medicines prescribed, follow up care needed by the patient. Any lacunae found in the discharge summary parameters can become a hindrance in the insurance approval and reflects poor decision-making skills of the consultant. The insurance company based on the summary comes to a consensus if the treatment plan was valid and is in line with the medical norms. There is indeed a time duration for sending the discharge summary. A delay in the discharge summary may lead to a claim denial henceforth the patient may not get the insurance benefits and the sum assured for that particular treatment that he has undertaken in the hospital. Henceforth it is necessary to complete the discharge summary, get timely approval of the summary and have a speedy submission of the discharge summary at the insurance company for easy claims settlement. So also, proper compliance of the various requirements be made regarding the discharge summary being prepared by the consultant or the medical officer on duty in some hospital. In the end we can say that the discharge summary plays an important role in the discharge process in the hospital.

There is yet an important parameter that needs to be considered while studying the discharge process in the hospital. The nurses play an important role while discharging the patients in the hospital. It has been found that the nurse's interaction with the patients eases the checkout of the patient. A holistic approach of the nurse's involvement in the discharge improves the

continuity of care of the patient to a vast extent. It is indeed an interdisciplinary team approach between the nurses, consultants', pharmacy and the patients. The nurses ought to have proper awareness and knowledge regarding the steps involved in the discharge process. They are the ones who are at the forefront in taking care of the patients' needs as the patient is in direct interaction of the nurse since the time of his admission in the hospital. However, it has been observed that there may be gaps in the organizational structure, different work ethics that may impact the discharge outcome in a hospital as related to nurses being involved in the discharge. A robust discharge planning, coordination among team members is required for proper discharge of patients. There should be proper allocation of work among the team members and a well-organized discharge communication between various departments like the pharmacy, Cath lab, OT pharmacy because it is seen that the nurse is required to get information from these departments before raising the discharge flag in the hospital. Any bottlenecks observed in the steps involved in the discharge process will impact the patient satisfaction which will ultimately impact the reputation of the hospital. Henceforth measures be taken in a such a manner that the operational efficiency of the hospital is enhanced and there is no scope of dissatisfaction from the patients end related to the discharge.

The clearances from the Pharmacy is also an important aspect in the discharge process. The pharmacy is responsible for giving clearances of the drug returns send by the nurse during the discharge. It also ensures that the right medicines are dispensed to the patient with right dosage that is written by the consultant. Some hospitals have incorporated the Clinical Decision Support System tool in their software to nullify the scope of giving wrong medicines to the patients. For this an efficient teamwork is required that helps in ensuring an efficient discharge process in the hospital. The pharmacy needs to keep a proper documentation that can help in reducing the medication errors in the hospital. The medicines dispensed by the pharmacy are well explained by the nurses for post follow-up. Hence the pharmacy can be said to play a pivotal role since the time of admission of a patient to the time of post discharge from the hospital.

The bills closure is vastly dependent on the above factors that may play an important role in the discharge process. The bills closure is done by the involvement of the billers nevertheless there need to be an efficient support from the insurance backend team who prepares the final bills after seeing the inclusions and exclusions according to the hospital policy and the insurance company. The bills are finally handed over to the patient at the time of discharge. The amount reflected in the bills should be transparent enough as it helps the patient to get the

claims and the reimbursement of the various services they have undergone in the hospital. The bills should ideally be closed fast without acting as barrier in the discharge. Delay in the billing leads to patient dissatisfaction to a vast extent. An unsatisfied patient may spread a negative word of mouth about the hospital and may impact the reputation of the hospital. The revenue management system is maintained by having proper settlement of the bills. This ultimately imparts the operational efficiency of the organization.

PROBLEM STATEMENT:

There are many issues related to discharge process as seen in the hospitals. Due to increased waiting time, there is a delay in the discharge process for patients admitted in a hospital. This results in patient dissatisfaction and decreases the operational efficiency of the hospital. There are many steps within a discharge process which can contribute to the delayed discharge of the patients. Henceforth it is important to carefully examine these factors and based on the bottlenecks observed proper implementation of the various strategies should be adopted by the hospitals.

Therefore, the main issue of this study aimed to investigate, identify and thereby analyse the factors that may cause an increase in TAT (turnaround time) that eventually leads to delayed discharges. An identification of the same until closure of bills shall surely have a positive impact in the mind of the patient and raise the reputation of the hospital.

AIM OF THE STUDY:

The aim of the study is to study the contributing factors towards the delay in discharge process until the closure of the bills in a private hospital in Hyderabad.

OBJECTIVES

- To study the process flow of discharge in the hospital
- To find out the reasons for delay in discharge patients including both cash and insurance patients until closure of bills
- To devise suggestions to improve the delay in the discharge process.

CHAPTER 2

LITERATURE REVIEW

Sunil Shobhita *et.al* (2015) in a study, analysed the time taken for the discharge process which was conducted in a tertiary care hospital in Bangalore. The aim of the study was to evaluate the major factors that led to the discharge process and how the gaps found can be mitigated by using various strategies as adopted by the hospital personnel. The average time taken for the various steps involved in the study was analysed after collecting the data of the patients who were undergoing the discharge process in MS Ramaiah hospital in Bangalore. There were many parameters included in the study such as the administrative responsibilities, the various medical procedures given by the consultants, communication involved between various staff members in the hospital.

There authors used various statistical tools for analysis of collected data. These included regression analysis, correlational analysis and it was through these statistical tools that a relationship between the factors involved and the waiting time for discharge by the patients was studied elaborately. The study reported that a proper teamwork, interdisciplinary team approach and above all proper documentation could help in reducing the waiting time of patients for the discharge in the hospital. The study can thus help the hospital managers and the organization as a whole to improve the patient satisfaction and thereby increase the operational efficiency of the hospital. [3]

Senu Thomas *et. al* (2017) conducted a time motion study in order to analyse the time taken for various steps in the hospital discharge process. The study took place in a 256 bedded hospital that had quaternary services for the patients in Chennai, India. The study involved various sub steps involved and for each step involved the average time was noted henceforth it was a time motion study. It was observed that there were many steps that took a lot of time and impacted the discharge process in the hospital. Various parameters involving administration, communication between various departments, proper documentation was studied, and based

on the deviation in the process flow and the time taken various strategies and suggestions were made by the authors who were involved in the study. So also, the sample comprised of patients who were both insured cash patients as well. There were two types of research i.e., primary and secondary included in the study. The respondents were mainly adult cardiac patients. The study also included a questionnaire related to the sociodemographic status of the patients. Time taken for discharge and patient satisfaction.

The main suggestions found in the study that with proper communication and efficient teamwork the process flow can be maintained and thereby the delay in discharge of the patients can be reduced to a vast extent. So also, by studying the various bottlenecks in the discharge process one can effectively identify the potential areas which have a greater scope of improvement in enhancing the discharge process in the hospital. The delay in the discharge process can easily be studied by identifying the average time taken as done in the study. Adequate use of technology has also been emphasized in the study. Proper documentation by the use of EHR can help in reducing the delays especially related to the discharge summary. Discharge planning should involve proper communication, teamwork and coordination among various departments involved in the discharge process in the hospital. So also, the study can help the hospital administration to combat the issues related to discharge process in the hospital especially issues related to patient satisfaction and operational inefficiency which may impact the revenue management system of the hospital. So also, proper discharge planning involving cooperation and collaboration with other departments was well suggested at the conclusion part of the study.[4]

Revathi K, Suji U (2020) in an extensive study identified the various reasons for delay in a hospital at Tanjore. The hospital had multispeciality services for the patients admitted in the hospital. The sample size was 169 based on random sampling technique. The researchers of the study incorporated a checklist which included various parameters like the patients UHID No, the doctors name, entry time of the patient, discharge summary completion, settlement of the bills etc. The study was analysed using simple average percentage. The study found various disruptions in the process flow of the discharge process in the hospital. It was observed that the billing process was delayed to a large extent which delayed the discharge process in patients who were mainly admitted under acute conditions. So also, the general ward patients especially those who were female took longer time for discharge as compared to other patients.

The study observed that the nurses involved in the discharge process were not well aware of the procedure. Henceforth proper training and guidance of the same be given to the nurses to improve the process flow of discharge in the hospital. The billing time was lengthy due to presence of just one billing counter. It was suggested that with a greater number of billing counters one can help to mitigate the delay in billing and thereby will improve the discharge process. There was a delay observed in Insurance approval due to delay in discharge summary approval. It was advised that if the consultants would send the summary online to the insurance team, it will save less time and hence there will be timely approval of the final approval. The pharmacy clearances were not being met because of the lack of proper staff in pharmacy. Increase in manpower may aid towards the decrease in waiting time for pharmacy clearances and thereby decrease the delay in the discharge process.

Aarthi, Divya (2020) in a study identified the reasons for delay in a hospital in Tamil Nadu. The study took place for a period of 3 months. The study included both cash and insured patients. There were many steps included in the discharge process and the time taken for the steps involved was analysed. The various parameters were included in the step including billing, pharmacy clearances, insurance approval and completion of discharge summary. The statistical tool used in the study was simple average, simple percentage and cause and effect analysis. The study revealed that billing took a lot of time in the discharge process. So also the insurance approval would take a lot of lot of delay thus delaying the entire discharge process leading to patient dissatisfaction. The delay in pharmacy clearances was also said to be responsible for the delay process in the hospital. Another major finding in the study was delay in vacating room for by the patients. This led to the pressure in a bed allotment for other patients. So also the nurses failed to put the vacant bed status in the HIMS as result the admission of other patients was hindered in the study. It was suggested that proper training be given to nurses regarding the updation of details in the HIMS so that timely information can be known by the hospital management. So also there should be a waiting room where the patients can wait for their vehicles and vacate their rooms for other patients. Above all an interdisciplinary team work be required with effective collaboration and coordination between various departments in the hospitals for improved discharge process in the hospital. [6]

Kaur, Dilawari (2017) conducted a study to assess the efficiency of discharge process in inpatient, cause of discharge delays and their impact on increase average length of stay. The study was conducted at Fortis Escort Hospital Amritsar including different specialities. It was found the study highlighted the importance of teamwork, integrity, innovation and compassionate patient care which helps save the lives of patients. The study approach included data collection which comprised of a questionnaire random sampling was done where patients feedback was assessed. Various other factors led to the delay in discharges which included incomplete paperwork, coordination problem among the staffs of the hospital, this hampered the patient satisfaction. It was concluded that the delayed discharge due to pharmacy delays, inability of the nurses to explain the medicines to them. Henceforth, it was recommended that a proper discharge planning should start before the admission which reduces errors and thereby reducing pressure on the beds of the hospital.[7]

In another study conducted by Mundodan et.al (2019) factors contributed into delayed discharge process in a teaching hospital in South India were examined. The study was time motion study where the outcome variable was the total time involved in the discharge process as well as time taken for individual step. In order to reduce the overall turnaround time it was necessary to identify the bottlenecks and the root causes involved in the discharge process. Statistical tools used were t test and analysis of variants. It was found that the mean time for the discharge process was around 5 hrs. Only 13 patients (18.8 percent) were discharged according to NABH guidelines. A Performa including various departments such as pharmacy, billing, insurance was included in the study. Discharge summary was found to be the main reason for delay in discharge. The other bottlenecks found in the study included time taken for picking the chart from ward for billing, communication gap related to final bill, closure of the bills and the final checkout. Delay in discharge process caused patient dissatisfaction. Other factors that could cause the delay included administrative reasons, documentation issues, communication gaps and coordination among the team members of the hospital. It was also found that by identifying these factors various strategies can be devised to streamline the discharge process and increase patient satisfaction which has an impact on the overall hospital efficiency. [8]

Niloy Sarkar, Tatini Nath (2016) analysed in a study, the patient waiting time for hospital admission and discharge process, The study examined both hospital admission and discharge process with an aim to find the root cause delay in discharge process. The study was conducted in apollo hospital for a period of 3 months, The study emphasized that long waiting time was an indicator of poor quality henceforth it was important to identify the gaps and recommend strategies to enhance the hospital operational activities. The study was a case-based time motion study which involved continuous observation of the task using a time keeping device so also process flow of various activities was observed in the study. The data was divided into cash and non-cash patient and included both walking and booked patient. Statistical analysis like regression and corelation were used to test the statistical significance of association. A fish bone diagram was used to identify the cause and effect for delay in the discharge process. To assess the delay in discharges the overall time taken at admission counter, insurance, cash counter, bed allotment was calculated. In the study various bottlenecks were found which included delay in discharge process, delay in completion of discharge summary, delay in separation of final bill, delay in financial clearance. It was concluded that by identifying various gaps involved in a discharge process provided some valuable information for improvement and streamlining the admission and discharge process and optimizing patient care.[9]

In a study conducted by Hisham et.al (2020) various factors influencing the discharge process turnaround time was observed by the application of predictive modelling. The study involved mapping of discharge process in cardiology department inpatients in tertiary care hospital. With this method of TAT prediction various opportunities can be found to enhance the quality of services given in a hospital. The statical tool involved in the study was Annova and multiple linear regression. This helped in addressing various operational inefficiencies that was present in the hospital, By observing the TAT for each step involved in the discharge process the hospital staff can devise strategies to improve other dependent functions such as housekeeping, maintenance and sterilization of patient foods. It can also help in various applications that are involved in administration such as planning, resource allocation etc. It was thereby concluded that a delay in various factors that involved assessment, cross consultation, summary preparation, billing and vacating of room by the patient led to operational efficiency and patient dissatisfaction. [10]

Mehta et.al (2015) studied the role of discharge Planning and other determinants in total discharge time at a large tertiary care hospital. The study aimed to analyse the factors like clearance time and other patient related factors that were involved in the discharge process in the hospital. The cross-sectional study was conducted for a period of two months where data was collected for various steps that were involved in the discharge process. There was classification of discharges as planned unplanned and patients were categorized as insured and uninsured statistical tools like t test and label of significance was used for this study. It was found that the mean discharge time for various planned discharges were significantly lower than unplanned discharged. The study also involved clearance charts as a tool to keep a track related to discharge initiation, pharmacy clearances and involved a team of doctors, nurses and biller of various departments in the hospital. Time taken for discharge summary was also involved in the study. The results of the study helped identify the various factors involved in the discharge process. It was thus concluded that planned discharges had a pivotal role in reducing the TAT involved in pharmacy clearances and for bill closures for both paid and insured patients. With the information provided in the study duty doctors were encouraged to promote discharge summary making for insurance patients at a faster pace so that they can avail insurance.[11]

In order to investigate the concept of delayed releases in intense medical care settings, Alexander (2020) led an extensive writing survey. The study sought to define delayed discharge, examine its causes and effects, and investigate potential interventions to lessen their impact. An extensive writing search yielded a sum of 26,248 records. 64 research articles were included in the scoping review based on inclusion and exclusion criteria and PRISMA guidelines. The study determined that patient age, inadequate discharge planning, transfer of care issues, and poor organizational management were the primary causes of delayed discharges. Bed blockage, stuffing in A&E divisions, and monetary ramifications for medical services offices were among the impacts of deferred releases.

A couple of interventions were perceived to address conceded discharges. Examples of these interventions included the "discharge before noon" strategy, the use of tools to facilitate discharge, the implementation of mechanisms to track discharge delays, and the involvement of social workers and general practitioners in the discharge process. The study added to the existing body of knowledge by providing a research-based perspective on the conceptual and

operational definitions, causes and effects, and interventions associated with delayed discharges. The definitions and findings of the study thus served as a foundation for additional investigation into this topic.[12]

Abiramalakshmi, Soundara Raja (2017) in a study observed the cause of delay in discharge process. The study took place in the inpatient department with the prime objective to check the patient satisfaction. Based on the findings certain suggestions were made to identify the gap analysis and execute solutions for the delays in the discharge process in the hospital. The main reasons that were responsible for the delay were delay in discharge summary, delay in pharmacy clearances which ultimately led to patient dissatisfaction. The study also focussed on the cause-and-effect analysis for the contributing factors and suggested solutions for the delay in discharge.[13]

Aggarwal, Pandey (2018) conducted a Comparative assessment for the discharge procedures according to the NABH guidelines in tertiary hospitals of India. The study involved patients that were taken from General medicine and general surgery department. The process flow of discharge was examined according to NABH AAC 13 and 14. The discharge procedures for various hospitals in Hyderabad, Srinagar, Pune, and Ludhiana involving TAT via NABH Standards was studied to improve patient satisfaction. Data collected was both qualitative as well as quantitative and the finding suggested that discharge procedure if done according to organized guidelines of NABH improves patient satisfaction. This study also highlighted various steps involved in discharge process such as billing which was different for both cash and insured patients. Reduction in the overall TAT involved in the discharge process enhances the hospitals revenue and improves the hospital operational activities.[14]

Singh et.al(2019) in the study tracked the time taken for discharge process involving the insured patient with the main aim of finding the delay reasons involved in the discharge process and finding solutions for reducing them, The study was cross sectional that took place over 3 months and a systematic random sampling technique with an unadjusted linear regression was adopted to find out the various sub process affecting the discharge process time. Pareto analysis was used to address the various queries as send by the TPA department. The variables included

in the study were time taken for discharge summary to reach the TPA department and its approval after the discharge summary was submitted to them, the findings revealed. The other major cause of delay in the discharge process was time taken for discharge summaries and the time taken by the TPA department to give approval once the final bill is submitted.[15]

Krook et.al(2019) studied the discharge pross from the patient's perspective. The study was conducted in a Swedish healthcare system at a university hospital to analyse and describe the various experiences of a patient during a discharge process. The experiences reported by the patients helped in understanding the gaps which was seen in the discharge planning. The results revealed that accessibility proper, information, strong communication between departments and equal participation by all staff members played an important role in discharge process. The importance of discharge communication was emphasised in the study specially the interaction of a nurse with the doctors at various times of the discharge process. The summary focuses on having a individualised and person centred approach which can improve the discharge process regarding the patients experience in the hospital.[16]

CHAPTER 3

MATERIAL AND METHODS

- **STUDY DESIGN AND SETTING:** A descriptive cross-sectional time and motion study was conducted in a 250- bedded private hospital in Hyderabad from March to May 2023.
- **STUDY POPULATION:** The study population comprised of individuals admitted in the hospital and undergoing the discharge process.

Inclusion criteria:

- Patients who have been advised discharge by the consultants.
- Patients of all ages
- Both cash and insurance patients shall be taken into consideration for the study
- Patients of all types of medical admissions

Exclusion criteria:

- All day care cases shall be excluded from the study.
- Patients going on LAMA (leave against medical advice)
- Patients transferred to other hospitals.

Study tools: The time and motion study comprised of checklist that was framed, and time taken was recorded from discharge initiation time, discharge summary preparation, pharmacy clearance, LAN bill closure. The tool used for developing the format and entering the data was Microsoft Excel**.**

DURATION OF THE STUDY

The study was done for a duration of 3 months (March to May 2023)

SAMPLE SIZE

A suitable sample size of around 160 patients was collected from patients admitted in the IPD of the hospital and undergoing discharge process as asked by the consultants of various specialities in the hospital.

SAMPLING TECHNIQUE

A Convenience sampling which is a non-probability sampling technique was used by the researcher of the study. The time frame of the study was of almost 3 months hence due to practical constraints and depending upon the availability of the resources, the researcher decided to select the sample from those patients who were readily available and accessible and whose discharge process until closure of bills could be easily tracked physically while undergoing the study. The researched henceforth collected the data only from those patients who were readily available and all set for the discharge when they were found to be physically fit and allowed by their respective consultant's treating them in the hospital.

DATA COLLECTION PROCEDURE

Data was divided into cash and insurance patients. The minimum time required for each step involved was recorded and any deviation from the said time according to policy was considered as delay. The time taken for discharge from physician writing orders on the case sheet to completion of billing process in all the departments was observed and measured using a checklist, on which the time was recorded. The pro forma included the details such as the patient's hospital number, department/ward, type of payment, pharmacy clearance and LAN bill closure. The outcome variable in the study will be the time needed for the discharge process—in total after closure of LAN bills as well as for each individual step.

OPERATIONAL DEFINITIONS

DISCHARGE PROCESS: Set of activities that are needed to prepare the patient for discharge such as discharge initiation time, pharmacy clearance, LAN bill closure etc.

DISCHARGE PLANNING: It is an invasive process whereby a patient is admitted in a hospital and checked out from the hospital in a systematic manner having proper collaboration and coordination among various departments in the hospital.

DELAYED DISCHARGE: When there is increase in waiting time for the patients to get discharged from the hospital and a delay in discharge process due to various factors like delayed pharmacy clearances, delay in insurance approval etc.

DISCHARGE SUMMARY: A formal documentation of various information related to the patient such as medical condition of the patient, investigations and test reports, post followup instructions given to the patient.

DATA ANALYSIS PLAN

The collected data was analysed using simple percentage and simple average analysis and quality tools such as pareto and fishbone diagram to establish cause and effect analysis. From the study, percentage of delay in each process and average time taken for cash and insurance patients was calculated and recommendations were further given to improve the operational efficiency of the organization.

The proforma included:

Patient Name

IP Reg no

Payer type

Name of consultant

Name of Department

Discharge initiation Time

Pharmacy returns send by nurse

Pharmacy returns received by pharmacy

Discharge summary approval time

LAN Bill closure

Delay reason for each step if observed in the discharge process

The calculations included:

TAT (turnaround time) for nursing activity= Difference in time between sending the drugs returns to pharmacy and the time discharge was initiated

TAT for pharmacy clearance= Difference between the time taken by the pharmacy to approve the drugs returns and the discharge initiation time

TAT for summary approval: Difference between the time taken for summary approval and the discharge initiation

TAT for bill closure: Difference between the time taken for bill closure and the discharge initiation time.

CHAPTER 4

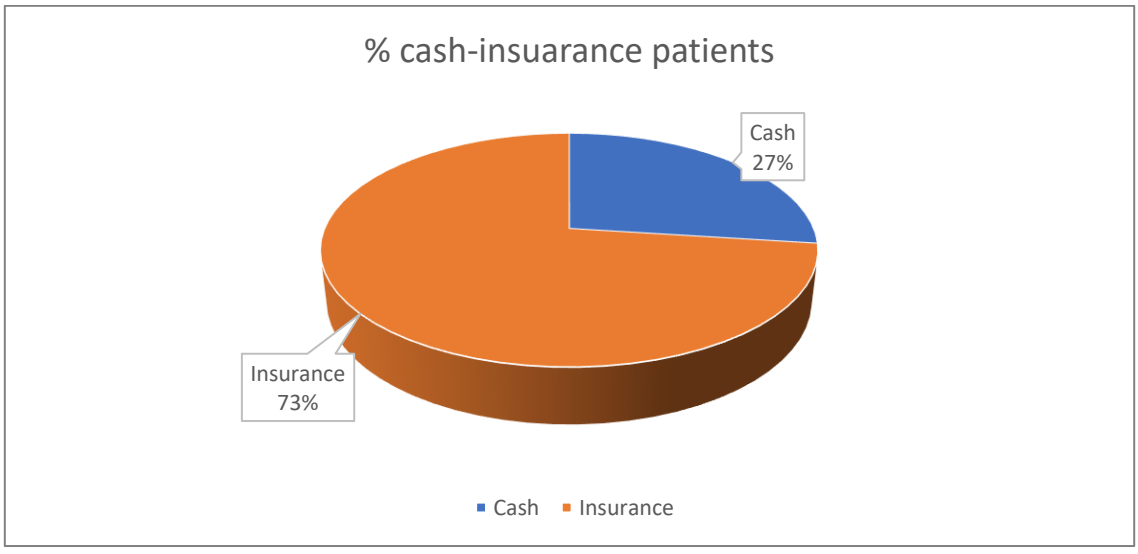
RESULTS AND DATA ANALYSIS

The study included closely monitoring the discharge process flow in the hospital. It incorporated both cash and insurance patients. There were various steps included in the discharge process and along with it the time involved for various steps were noted in a checklist that included the patients name, IP No, payer type, doctors name and department. The steps included in the discharge process were raising the discharge flag i.e., discharge initiation by the nurse, Discharge summary approval by the consultants, indenting drugs returns by the nurse, sending the drugs to the pharmacy, and closure of the bills from the billers end of the patients undergoing discharge process in the hospital. The data collected was then analysed based on simple percentage, average time time for completion of the steps. The results are found to include graphs and tables:

The results in the study were as follows:

1) **<u>Findings related to cash and insurance patients in the hospital</u>**

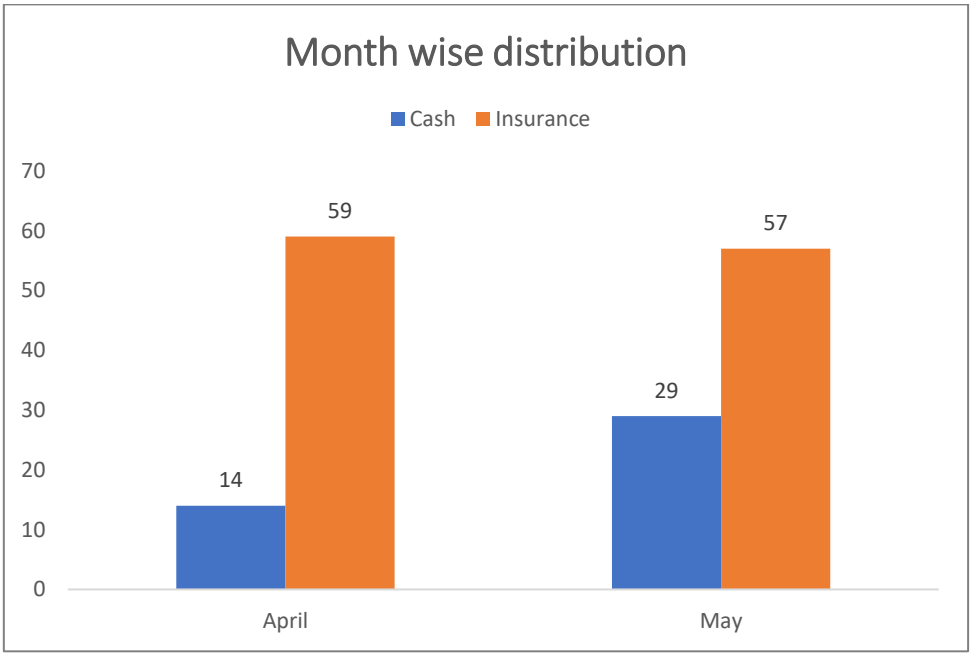
a). Percentage distribution of cash and insurance patients



GRAPH 1: DISTRIBUTION OF CASH-INSURANCE PATIENTS

Graph 1 depicts that the insurance patients occupy a greater percentage (73%) as compared to cash patients (27%) as found in our study. It was observed that due to larger tie-ups of the hospital with various insurance companies and the hospital being in the urban area of Hyderabad, the services were easily accessible to the people of Hyderabad.

b) Month wise distribution of cases depending on payer type(cash-insurance)

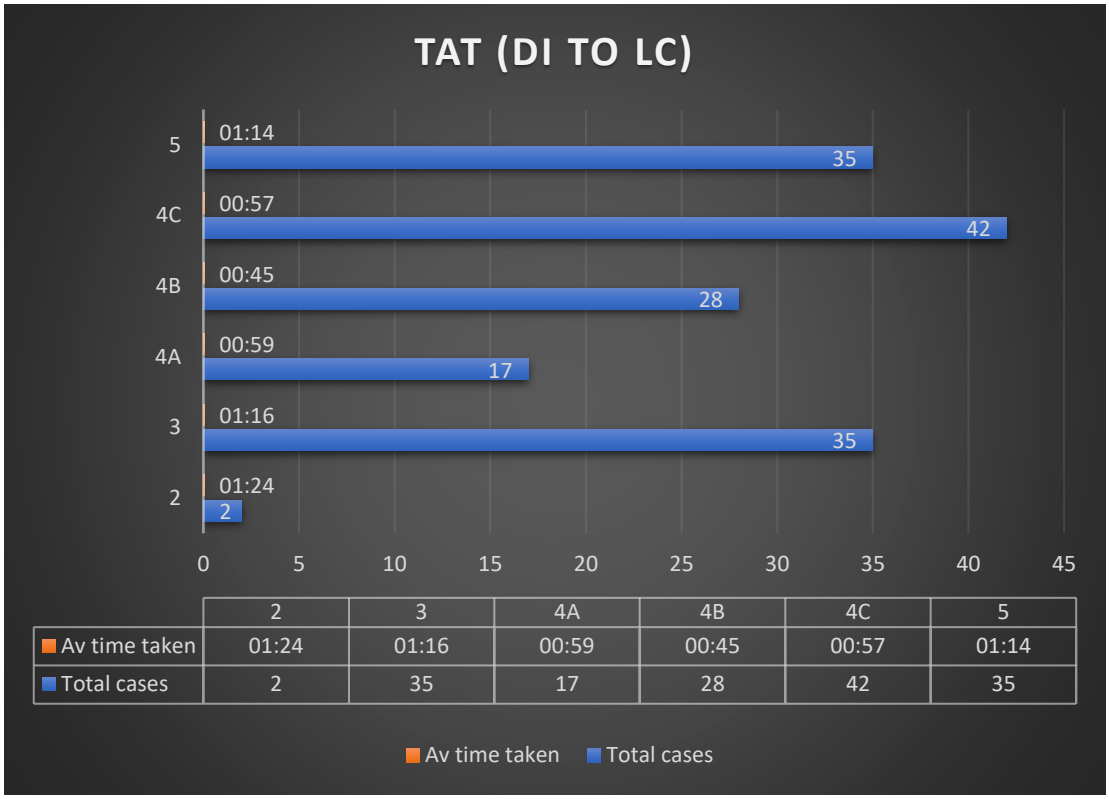


GRAPH 2: MONTH WISE DISTRIBUTION OF PAYER TYPE

Graph 2 depicts the month wise distribution of cash and insurance patients, and it was observed that in the month of April the insurance patients had almost 4 times greater percentage (80%) as compared to cash patients (19%). Although the patients of insurance were higher than cash patients in the month of May however the number of cash patients had increased from 19% to 38%. This helps us understand that the hospital services were equally acceptable by people who were ready to pay in cash(self-payment) as well as having insurance.

2) **Results Related to Billing:**

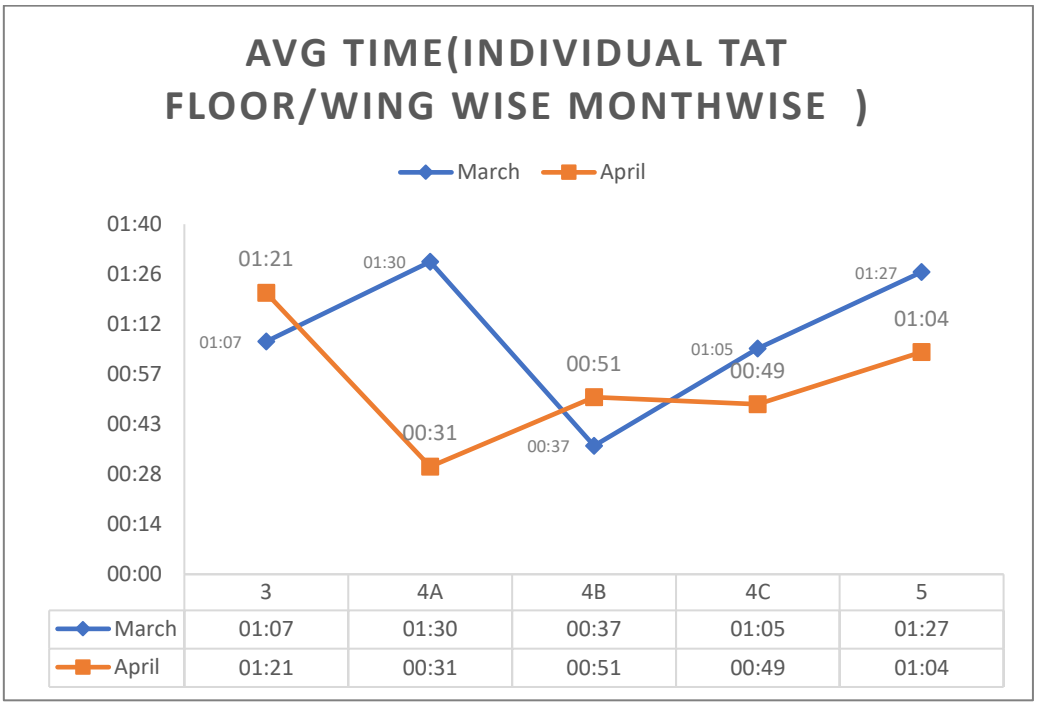
a). Total no of cases with average time (TAT until bill closure i.e taken from discharge initiation DI to time taken for billing)



GRAPH 3: TOTAL NO OF CASES WITH AVG TIME (TAT UNTIL BILL CLOSURE)

Graph 3 gives us an understanding of the average time taken by individual floors until the closure of bills. The hospital is well divided into 3 floors with 4th floor having 3 wings-A, B, C from where the billers get discharge case sheets. The second floor saw the least number of cases for the current timeframe of study, but the average time taken for this floor was highest (01:24) as compared to other floors with 4B floor taking the least time for closure of bills. The second floor comprised of ICU cases apparently such cases take more time for closure as many services need to cross confirmed from the biller's end.

b) Month wise distribution of average time taken until bill closure along with floor and wing wise time taken for discharge



	3	4A	4B	4C	5
March	01:07	01:30	00:37	01:05	01:27
April	01:21	00:31	00:51	00:49	01:04

GRAPH 4: TOTAL NO OF CASES WITH AVG TIME (TAT UNTIL BIL CLOSURE MONTHWISE)

Graph 4 depicts the average time taken monthwise by the respective floors and it was seen that except for 4C (01:05 to 0:49 mins) and 5th floor (01:27 to 01:04 mins) the other floors took more time as compared to the previous average time taken. Since there was not a massive difference seen in the values indicated the little difference can be attributed to the type of cases admitted in the respective floors which take lesser time in the closure of bills and the improvement in some cases of process flow and efficiency of floor billers. However, in depth analysis can separately made in further studies taken by the investigator of the study.

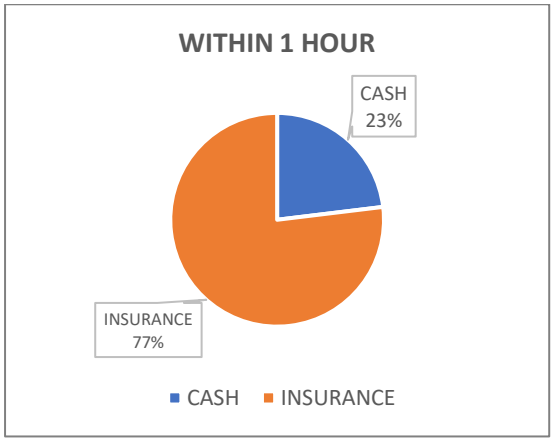
c) The average time taken for closure of bills according to various payer type criteria: cash and insurance

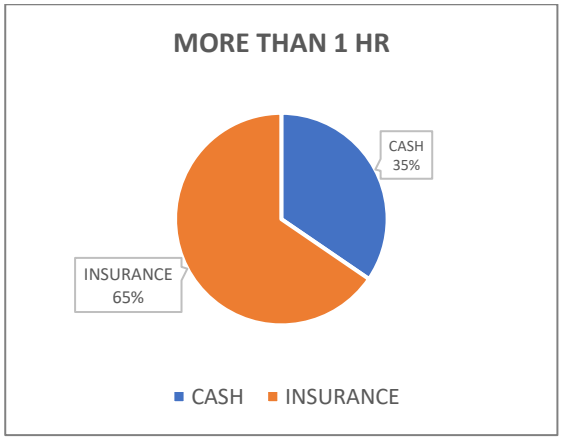
PAYER TYPE	AVG TIME
CASH	**01:10**
INSURANCE	**01:06**

TABLE 1: AVG TIME TAKEN (TAT FOR LAN CLOSURE-PAYER TYPE)

Table 1 reveals the average time taken for closure of bills for the cash and insurance patients. For the data collected, settlement of bills for both the payer types is almost consistent with each other however for insurance cases studies report that the time taken to close bills is more as the hospital has to depend on the final approval of the TPA's, so also the backend team has to reply to certain queries as asked by the insurance companies.

d). The percentage distribution of cases of cash and insurance whose bill closure i.e billing took place more than 1 or within I hr duration.





GRAPH 5: BILL CLOSURE-PAYER TYPE NO OF CASES

Graph 5 reveals that Insurance bills (44%) were getting closed in more than 1 hr as compared to cash bills (56%) as from Table 1, Graph 1 it is easily confirmed that the hospital has a greater number of cases of insurance as compared to cash patients admitted in the hospital.

e). Department wise distribution of cases and completion of billing with the time frame of 1 to 12 hours.

TAT FOR BILL CLOSURE							
HOURS/MINS	**00**	**01**	**02**	**03**	**04**	**05**	**12**
DEPARTMENT							
breast onco	1						
cardio	10	7			1		
ent	1						
gastro	5	2					
gen med	19	5		1			
gynae	5	4					
Med gastro	1						
nephro	3	1				1	

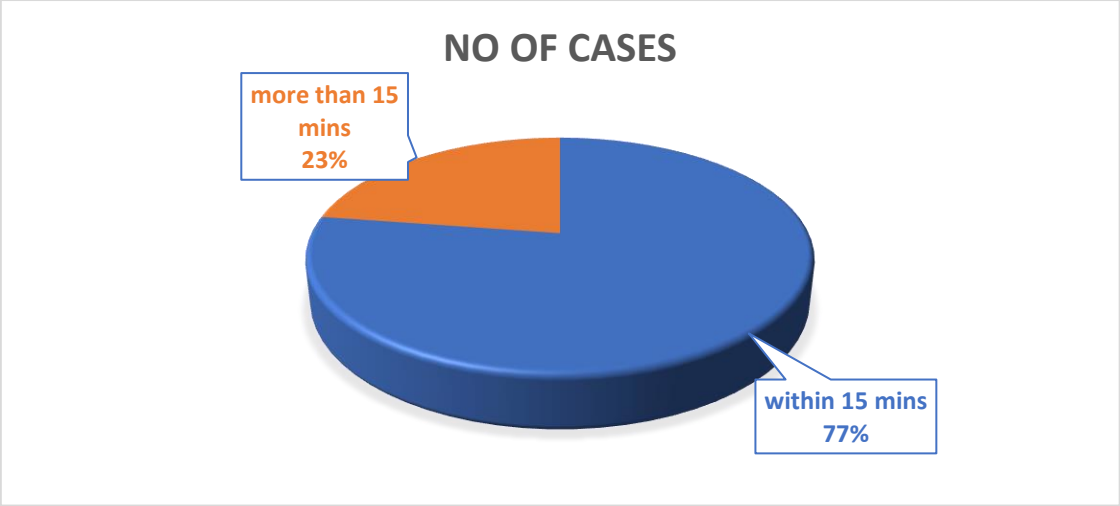
neuro	6	1	1				
onco	1						
Ortho	26	11		1	2	1	1
paeds	12	1					
plastic surgery		2					
pulmonology		5		1			
spine		1					
surg gastro	8	3			1		
uro	5		1				
vascular surgery	1						
Grand Total	**104**	**43**	**2**	**3**	**4**	**2**	**1**

TABLE 2: DEPARTMENT WISE TAT FOR BILL CLOSURE

Table 2 interprets that in parallel to the discharge summary the time taken for closure of bills was maximum for ortho, gen med and cardio departments and least for the oncology department.

3). **Results related to Nursing.**

a). % of cases which took time more than 15 mins and less than 15 minutes (discharge initiation to indenting the drugs returns in the pharmacy)



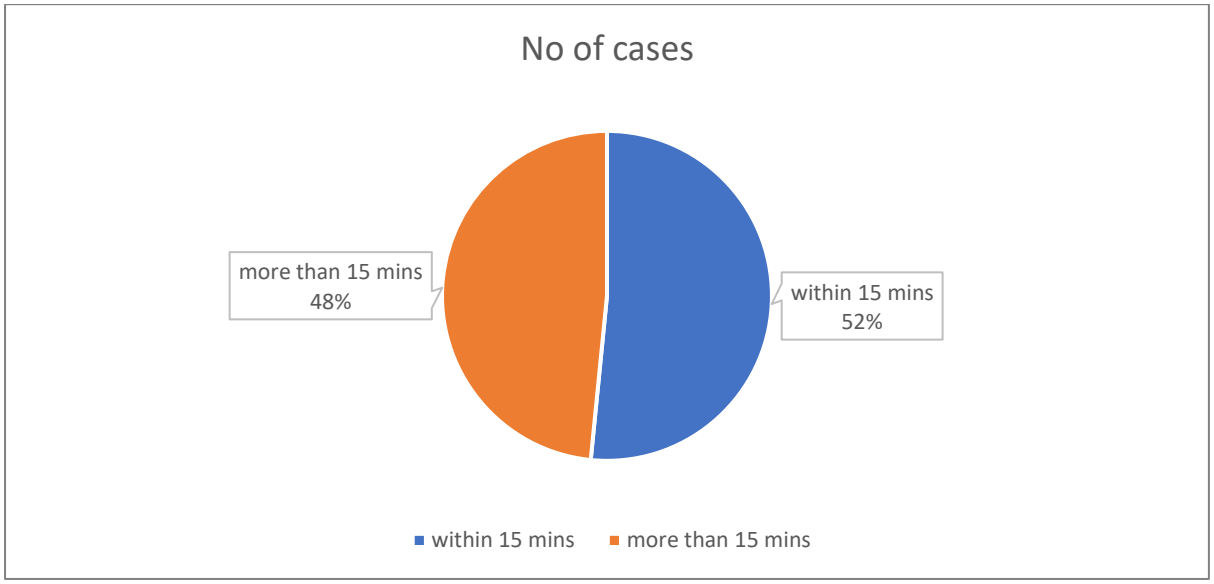
GRAPH 6: NURSING TAT (CASES MORE THAN 1 HR TO WITHIN I HR)

According to hospital guidelines it was informed that ideally the nurses should not take more than 15 mins in raising the discharge flag and indenting the drug returns to the pharmacy for clearance. Graph 6 well justifies the above point as 77% of the cases were completed within 15 mins by the nurses as compared to 23% of the cases which took more than 15 mins. The

finding can be suggestive of good awareness of nurses in DI and sending drugs to pharmacy for returns in the hospital where the study took place.

4). **Results related to Pharmacy.**

a) % distribution cases taking more than 15 mins and completing within 15 minutes (From DI to drugs received by the pharmacy for giving pharmacy clearances)

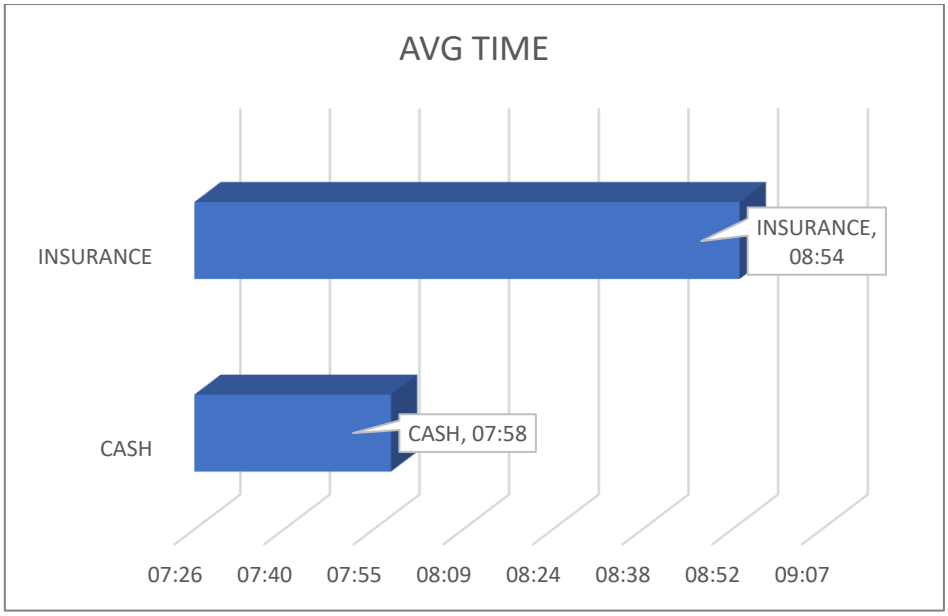


GRAPH 7: PHARMACY CLEARANCE TAT
(NURSE SEND DRUG RETURNS TO PHARMACY TO DRUGS RECEIVED BY PHARMACY)

The results of pharmacy clearance TAT in Graph 7 indicate that 52% of pharmacy returns were done within 15 mins while 49 % of them took more time than 15 mins. The results may also be dependent on the previous criteria of nurses clearance because sooner the nurses indent the drug returns in the pharmacy the lesser time it will take for the pharmacy clearance as seen in the study.

5). **Results related to Discharge summary approval.**

a). The average time taken in the approval of discharge summary by the consultant (from DI to summary approval time) according to the payer type(cash-insurance)



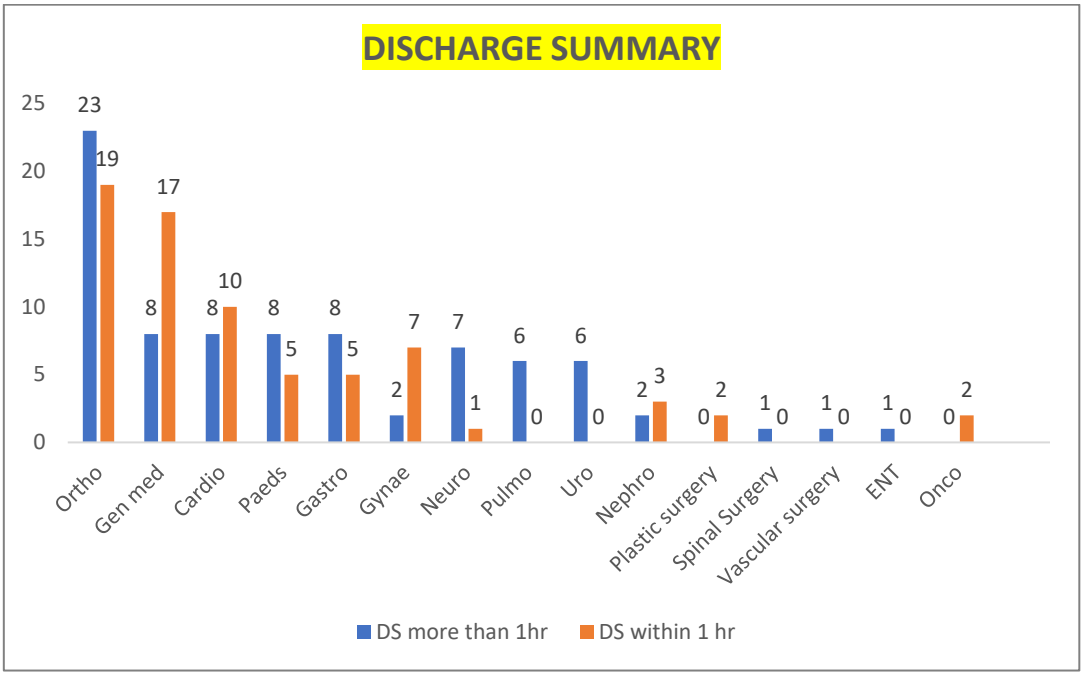
GRAPH 8: TIME TAKEN FOR DISCHARGE SUMMARY (PAYER TYPE)

Graph 8 reveals that the average time taken for discharge completion is more (08:54 mins) than cash patients (07:58). The discharge summary as observed during the process flow was also sent late by the consultants for insurance approval by the insurance companies.

b). Department wise distribution of cases with time taking of more than 1 hr or within 1 hr in discharge summary approval by the consultant.

	DS more than 1hr	DS within 1 hr	Grand Total
Ortho	23	19	42
Gen med	8	17	25
Cardio	8	10	18
Paeds	8	5	13
Gastro	8	5	13
Gynae	2	7	9
Neuro	7	1	8
Pulmo	6	0	6
Uro	6	0	6
Nephro	2	3	5
Plastic surgery	0	2	2
Spinal Surgery	1	0	1
Vascular surgery	1	0	1
ENT	1	0	1
Onco	0	2	2

TABLE 3: DISCHARGE SUMMARY COMPLETION (DEPARTMENT WISE)

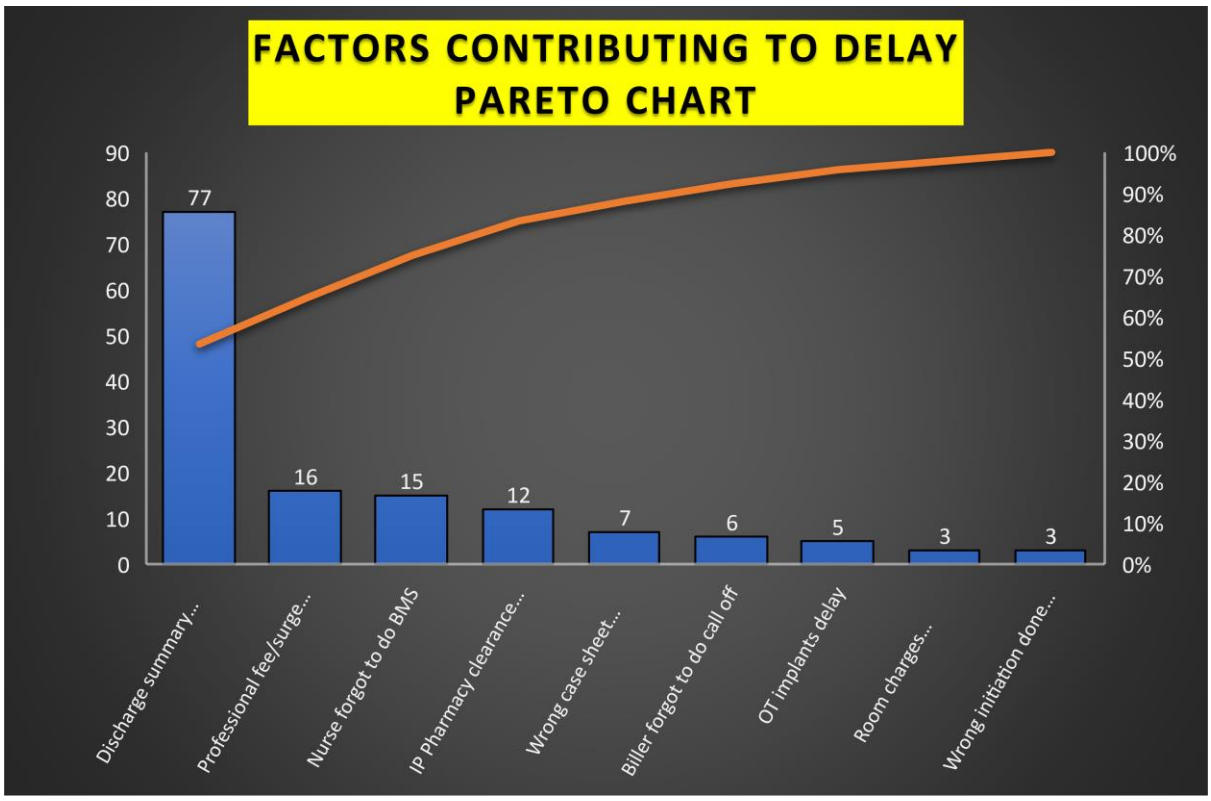


GRAPH 9: DISCHARGE SUMMARY COMPLETION (DEPARTMENT WISE)

Table 3, Graph 9 represents the findings related to discharge summary. The delay in discharge summary completion and approval was the largest for the department of Orthopaedics (23 cases took more than 1 hour), followed by cases of General medicine, Paediatrics (8 cases respectively) while ENT, Oncology discharge summary cases were completed within 1 hour. Apparently, it was observed in our study that the Department of Ortho and Gen med had maximum number of cases, so also the consultants were too busy to prepare it on time.

DELAY REASONS	F	CF	%
Discharge summary delay	77	77	7.1
Professional fee/surgeon fee to be added	16	93	8.6
Nurse forgot to do BMS	15	108	10.0
IP Pharmacy clearance delay	12	120	11.1
Wrong case sheet handed to biller	7	127	11.7
Biller forgot to do call off	6	133	12.3
OT implants delay	5	138	12.8
Room charges confirmation delay	3	141	13.0
Wrong initiation done by nurse	3	144	13.3
		1081	100

TABLE 4: DELAY REASONS FOR DISCHARGE



GRAPH 10: DEALY REASONS FOR DISCHARGE

Table 4, Graph 10 depicts the pareto analysis which is based on 80/20 principle. It helped us to identify the contributing factors which led to the delay in the discharge process until the closure of bills in our study. It was found that maximum delays (77%,16%15%) are pertaining to delay in discharge summary approval, billers not being able to get information on professional fee of the consultant and delay from the nurses end to do BMS(Bed board management), however only 3% reasons were mainly due to delay in confirmation of room charges and sending of wrong case sheets to the billers by the nurses. As more than 90 percent of the times, delay in discharge summary and delay in closure of billing due to updation of professional fee in the bills was observed, through this analysis the hospital administrators can devise strategies to mitigate the delay in discharge process and thereby increase the operational efficiency of the hospital.

CHAPTER 5

DISCUSSION

Discharge process in the present study starts with the consultant giving approval for discharge of the patient after seeing the health condition of the patient. This is soon followed by the nurse raising the initiation flag in the hospital information management system. For settlement of the bills there is a policy to seek pharmacy, OT and Cath lab clearance. The nurse indents the drug returns to the pharmacy, send it to the pharmacy and the pharmacy receives and gives approval for the requests. The case sheet then goes to the biller where he checks for the pending dues of the patients. He cross matches the services offered to the patient, the professional fee and consultation fee of the doctor concerned, checks the type of payer type. For insurance patients after close ng the bills he sends the IP approximate bill to the insurance backend team. It the backend team that tracks the post auth submission details of the patient, replies to the pending queries and finally prepares the final bill and submits the documents.

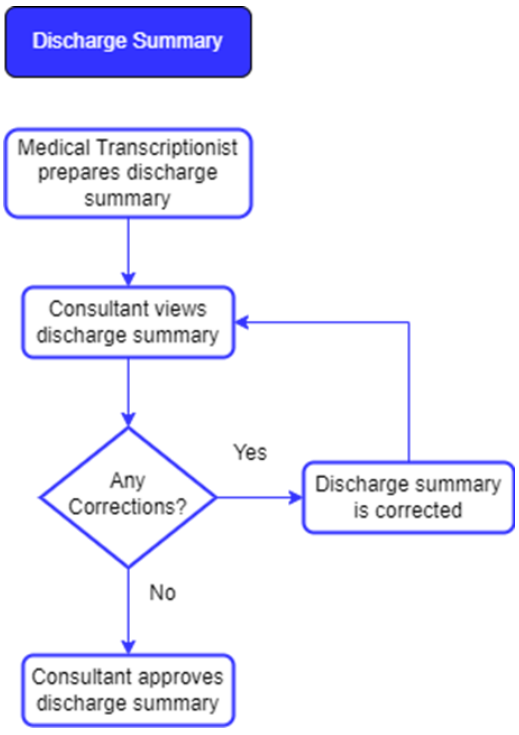


FIGURE 1: Process flow of discharge summary approval

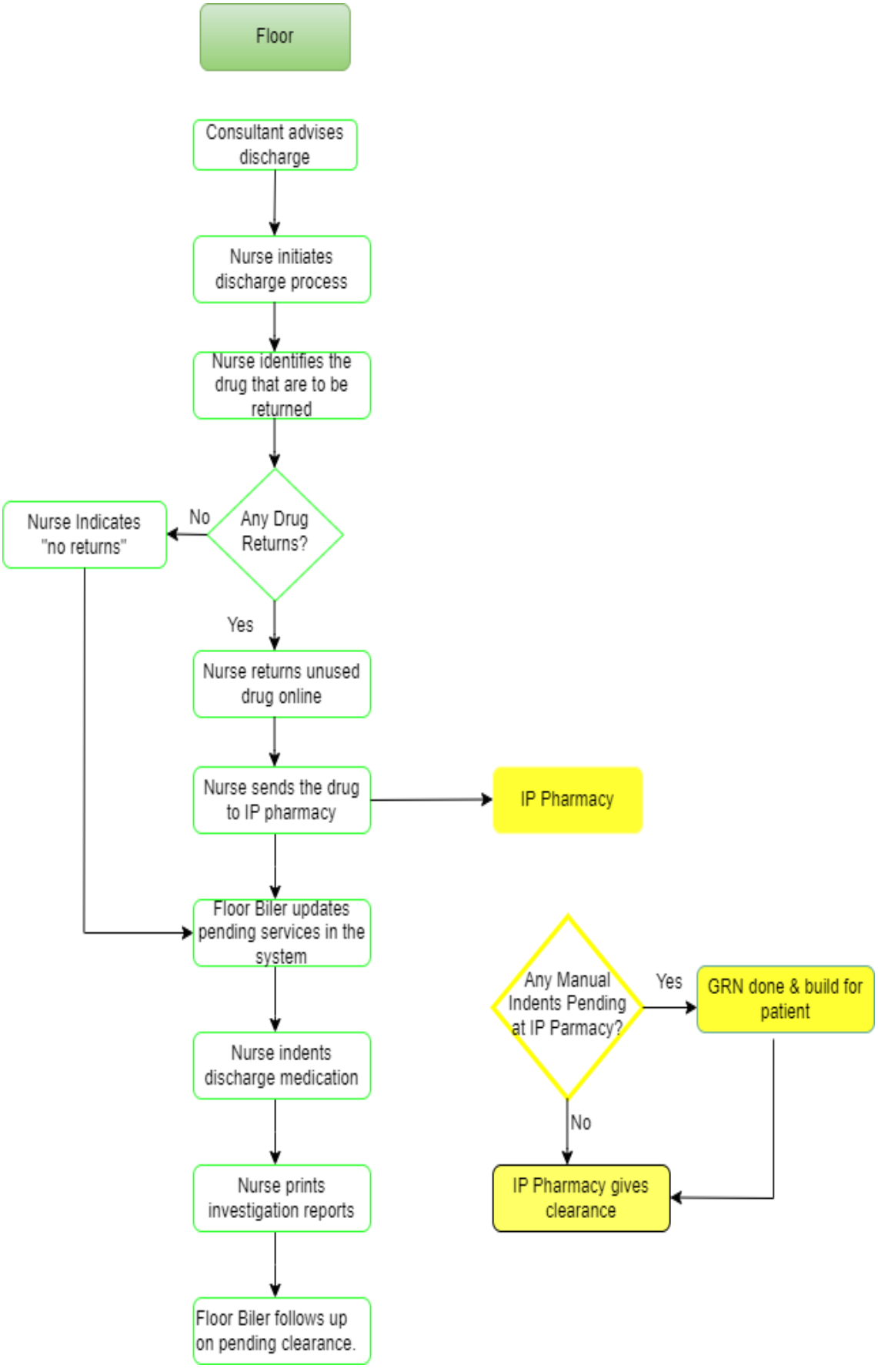


FIGURE 2: Process flow of discharge

The present study saw more number of insurance cases (73%) as compared to cash patients (27%). The number of cash patients however increased to 38% in the month of April. The cash patients took around 1 hr 10 mins for closure of the bills while insurance patients took 1 hr 06 mins for settlement of the bills. The findings are similar to a study conducted by Akansha Agarwal (2020) where the cash patients took around 278 minutes while time taken for bills closure for insured patients was 337 patients in a hospital in Pune. Insured patients discharge however takes longer time because it requires the approval of the authorization by the insured company. The study also noticed the delay in the billing process like Agarwal et.al (2020). It was henceforth observed that efficiency in billing is also dependent to a vast extent to other departments as well as required training of the healthcare workers in the hospital. Since billing requires proper information of the services availed by the patient during the stay in the hospital patient feedback is also important. The final amount is deposited by the patient to the financial counsellor hence the patient and his attendant need to be informed about the updated amount each day. So also the hospital administrator should take active participation to keep tracking the discharge process and observe the delays thereby find solutions for the delay in discharge of the patient.[14]

The count of insured patients was more in the study as the organization had quite vast tie ups with insured companies (TPA) like Aditya Birla General Insurance Co. Ltd, Bajaj Health General Insurance Co. Ltd, Chola General Insurance Co. Limited, East West Assist Insurance, Ericson Insurance TPA Pvt. Ltd, Family Health Plan TPA Pvt Ltd (FHPL) etc. The study's findings are similar to a study conducted by Senu Thomas (2017) where majority of the cases were insured patients (56.6%) as compared to the cash patients(46%). In the above study it was observed that billing of insured patients was 455 minutes while cash payments was 410 mins. Accordingly in our study the discharge summary completion took more than i.e., 8 hrs 54 mins in insured patients while 7 hrs 58 mins for cash patients admitted in the hospital similar to the findings of Senu Thomas (2017) where summary was completed in 490 minutes in insured patients while 440 mins for cash patients. The delay in discharge summary can be attributed to the fact that consultants take a longer time to approve the summary that is prepared by the DMO in the hospital as often times discharge cases are not planned, and the doctor is involved in other procedures. Our findings in the study are well supported by the work of Aarthi, Divya (2020) where they found that delay in the discharge summary hampers the entire process of discharge. It was observed that the discharge in insurance patients take longer time if discharge

summaries are not made on time. It is believed that making planned discharges, proper documentation, and efficient use of the EHR can help rectify the delays of discharge summary.[6]

Another major finding in our study was that the billing completion time took longer time for ortho, and Gen med cases followed by Paeds and Obs patients. This was in coherence to the findings by Shobhita Sunil et al (2016) where billing took longer time in Gen medicine patients and patients for Obs department as compared to other departments. The delay was found to be mainly due to delay in discharge summary approval by the consultant. It is thereby suggested that by having ward incharges (peer champions) in the departments proper tracking of the discharge summary completion can take place which can help improve the billing process as well. Proper staff allocation can help in the delay of discharges as the various steps are involved in the discharge process and communication between the departments can improve the process flow of the discharge process. The study by Shobhita et al(2016) also observed that billing process is the most elaborate one and the TAT if increased delays the discharge process. Th results are parallel to the findings of our study where it is find that billing procedure involves the clearance of the pharmacy, Blood Bank, Cath lab hence proper staffing can help in reducing the billing closures in the hospital. The increase in floor billers can also help in giving the right information to the patients about their outstanding bills. It is noted that it is the responsibility of the billers to hand over the final IP bill to the patients so that they can inform them with the clarity and transparency of the services availed by them during their stay in the hospital and so also intimate them of their insurance approval given by the companies. In a nutshell we can conclude that the billing process is the most important step involved in the discharge process and any delay in the process hampers the physical checkout process of the patient from the hospital.[3]

The nurse's role pays an important part in the entire discharge process. In our study it was noted that the nurses are involved for various discharge procedures and are in constant interaction with other departments of the hospital especially the pharmacy department for drug clearances, the housekeeping department to facilitate the transfer of the patient to his home and preparing the room for the next patient. In our study it was noted that nursing TAT i.e the time taken by the nurses in raising the discharge initiation to sending the dugs returns to the pharmacy within 15 minutes was 77% while only 23% of the cases took more than 15 mins of time to start off with the discharge initiation and seek pharmacy clearance. The nurses henceforth have a pivotal role in the discharge initiation process. The results are in similar to the work by Marianne E. Weiss et. al (2015) where they observed that for effective discharge preparation should start

since the time of the admission of the patient and should be continued till the time the patient is released from the hospital.[17]

Our study also found delay in discharge process also was due to delay in getting the pharmacy clearance. According to the hospital policy the time taken for pharmacy clearance is within 15 minutes. 52% of the cases had pharmacy clearance within 15 minutes while 49% took more than 15 minutes of time in approval for the same. A study by Aarthi. Divya (2020) found that the delay was mainly due to the lack of manpower for the discharge. It thereby suggested that proper allocation of duties to the pharmacist, proper training can fasten the pharmacy clearance process in discharge of patients.[6]

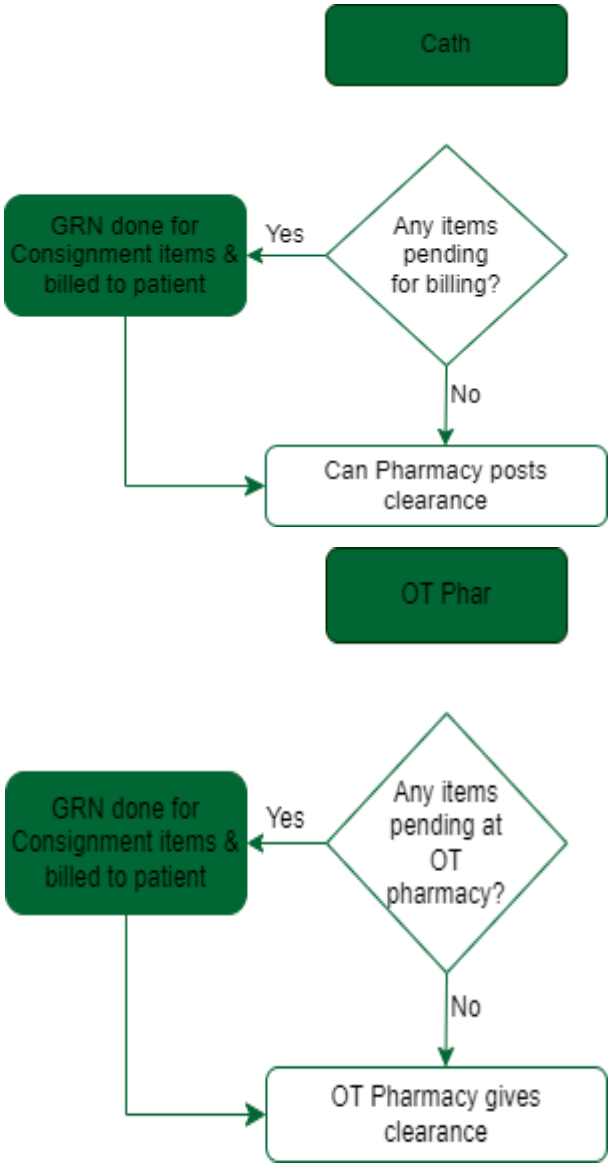


FIGURE 3: Process Flow of OT, Cath Clearance

The major finding in our study through the pareto analysis that delay also occurred due to nurses taking more time in bed management system (16%), initiating wrong cases(3%). The findings are parallel to the findings of Revathi, Suji (2016) where it was found that delay can also occur when new nurses are not given proper training and henceforth the discharge process is hampered. It is thereby suggested that having proper training and guidance can eliminate the delays caused by wrong initiation of the discharge, sending wrong case sheets by the nurses.[5]

Insured patients have a major number in our study, and it has been observed that delay in interim bill preparation took more than 1hr. The results are similar to the findings of Niloy, Tatini (2016) where it was found that interim bill preparation time contributed to 33.56% to the total time taken for discharge process preparation. For both of the studies the contributing factors are mainly due to nurse's delay in initiation of the discharge flag, delay in updating notes of the doctor, medicines given, delay in sending the drugs to the pharmacy and delay by the billers in updating the services taken by the patient. The interim bill should be made on time because this is what is handed over to the patient for final checkout from the hospital.[9]

The clearances obtained from the pharmacy took an average of 1 hr 54 mins which was higher than the time taken for clearance in a study by Shweta et al (2015) where pharmacy clearance took only 67 mins. In order to stop the delays in the discharge one ought to have more focus on the planned discharges. By having planned discharges, burden of work involving drug returns indented by the nurse, pharmacy clearances and settlement of bills by the billers shall be lowered to a vast extent which shall reduce the delay in the discharge process.[11]

CHAPTER 6

CONCLUSION

The entire process of discharge is indeed a lengthy affair and the time taken for the entire procedure directly impacts the patient satisfaction. The reputation of the hospital is dependent on the satisfaction of the patient while he was getting discharged from the hospital. The entire process is assumed to be in a smooth planned manner with less hindrances encountered both for the patient and the hospital staff. So also, the admission of other patient is dependent on how fast the patient has released the bed. Delay in the discharge process increases the pressure on beds of hospitals and effects the revenue of the hospital. The study emphasized on the importance of the interdisciplinary team approach. The various collaboration between departments like the nursing, pharmacy, insurance backend team helps in delaying the discharge process. So also, there ought to be interaction between specialist, nurses and patients. The increase in TAT in the above procedures as found in our study can be rectified by having planned discharges. The delay in the discharge summary as seen in the study can be improved by making the doctors, DMO undertake analysis of the patient condition in a robust manner and thereby having documentation of the notes in the EHR.

Henceforth the improvement in the discharge process can add upto patient satisfaction. The process of discharge starting from the initiation of discharge from the nurses end to the settlement of bills by the billers and the insurance team must include time to time interaction with the patient, Patient feedback is mandate as the operational efficiency in the discharge process can be improved and one can easily identify the bottlenecks and devise recommendations for the same. Our study can thus help the hospital administrators in assessing the gap analysis and in evaluating the contributing factors that are involved in the discharge process and find potential solutions to increase patient satisfaction.

RECOMMENDATIONS AND SUGGESTIONS

Based on the study we can suggest that since discharge process involves various steps it is important to have a discharge planning checklist and clearance charts for each department so that the delay encountered during various steps can be reduced. It had been observed that delays in discharge summary was a major contributing factor for the overall delay in the discharge process as the activity begins only after the consultant announces discharge of the patient. In order to combat this issue, the following suggestions can be considered:

- More attention to planned discharges be given by the consultants.
- Regular updating of notes in EHR should be monitored.
- Real-Time Documentation is important as it helps in time-to-time management of cases.
- Implementation of decision support tools within EHR systems can be incorporated to improve the operational efficiency of the discharge process and shall enhance the decision-making skills of the staff members of the hospital.

Another major factor that led to the delay in discharge until closure of bills was related to Nursing and Pharmacy clearances. It had been observed during the process flow of discharge that the nurses were are at times not aware of pending clearances and without proper clarity they raise the initiation flag or at times take time in indenting the drugs returns and sending it to the pharmacy. To improve the discharge process proper training and continuous education be given to the nurses, more staff can be provided for pharmacy clearances. So also, as related to billing, there should be proper communication between various departments so that the biller can easily update the services in the bill and handover the final bill to the patient. The incorporation of a few of the suggestions can thereby improve the discharge process and help in increasing patient satisfaction in the patients.

LIMITATIONS OF THE STUDY

Since the study was a descriptive observational quantitative study there was no causal relationship established although there could be a scope for identifying how the factors involved in discharge process affected the patient satisfaction. Questionnaire pertaining to the perception of nurses regarding discharge was thought to be included for the study but since the time frame was of just 3 months the above criteria could not be considered while evaluation of the factors involved in the discharge process. So also, the sample size was limited due to time constraints. Nevertheless, the study shall be continued to be explored from the various aspects of variables included in the study in the upcoming time to have an extensive view of impact of factors in discharge process.

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ANNEXURE:1

FORMAT OF CHECKLIST USED FOR DOCUMENTATION

Patient Name	IP No	Payer Type	Depart	DI	DS approval	Nurse send to pharmacy	Received by pharmacy	Bill closure

ANNEXURE:2

NURSING TAT	PHARMACY TAT	BILL CLOSURE TAT