

# A Descriptive Study on Inventory Management of Store Department in Multispecialty Hospital

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## ABSTRACT

### Background

Doctors, nursing staff and other staff are the backbone of the healthcare system. Recently, the healthcare industry has started using inventory management applications to achieve efficiency and effectiveness in its workflow. There is a rapid growth in the demand of medical & non-medical inventories within the healthcare industry.

### Methods

The present study was a descriptive observational study, which was conducted at MGM Hospital & Research Centre, CBD, Belapur. The study population comprised of 15 Doctors, 70 Nursing Staff and 30 staff were selected randomly from departments such as Billing, Reception, TPA, Accounts, MRD, Administration, HRM and Housekeeping in charge of MGM Hospital & Research Centre, CBD, Belapur. The staff was selected by method of convenient sampling. A predesigned and pre-structured Inventory turnaround time format checklist was used for data collection and questions were asked by primary investigator. The observational checklist included series of questions about the functioning of Store Department, working method and inventory management software. The biggest challenge for health care management is to manage inventory efficiently and keep up the satisfactory service level at the same time. In order to meet the increased demand of healthcare products, healthcare supply chain professionals must find efficient and effective ways to improve and optimize inventory. The current study on inventory management and gap among requisition from nursing station (Wards/ Departments) to store department and from store department to the nursing station (Wards/ Departments) in hospital are directly associated with the issues of inventory management.

### Result

The study deals with the analysis and interpretation of the data collected from 115 health care personnel in the MGM Hospital & Research Centre, CBD, Belapur. The purpose of the study was to find the time taken for indent requisition from nursing station (Wards/ Departments) to store department and from store department to the nursing station (Wards/ Departments). Data was collected by using pre-structured questionnaire, real time observations, inventory turnaround time checklist. The following step were undertaken for data analysis.

## INTRODUCTION

MGM Hospital & Research Centre, a MultiSpeciality Hospital at CBD, Belapur was established on 1st October 1986. The Hospital is NABH Accredited. It is 100 bedded Hospitals having adequate no. of

resident doctors, 160 Paramedical & other staff, over 70 specialists & super specialists on the panel who take care of patient on 24\*7 bases.

The nature of a hospital's stores can have an impact on how they are designed. The stores function is an important component of the entire public or private organisation. The store is the place of operation of material movement. <sup>(1)</sup> A store is an area where extra materials are maintained to be used as needed. Loss of objects, discrediting, disuse and undesirability [of what is stored compared to what is required]. To receive inventory, to protect them from damage and unauthorised removal while in storage, to issue the material in the right quantities, at the right time, to the right place, and to deliver these resources promptly and at the least cost. Hospital stores have several internal customers in their supply chain management. The main goals of the store are to provide a balanced and timely flow of all materials.

There are six m's of hospital venture's: -

- Money
- Manpower
- Machine
- Market
- Material And
- Management

A hospital management inventory is fundamental list or database of all the accessible medical supplies. The automated inventory management systems include technologies for tracking and tracing inventory and devices used in a healthcare setting on a daily basis. Inventory management is important in any facility or an organisation, but it is especially important in hospitals because inventory in hospitals is frequently used to save lives. As a result, it must be managed accurately and efficiently at all times. With today's inventory management trends, it's easier to maintain feasibility and avoid competition. For a busy hospital to efficient the hospital supply chain, computerized inventory management system is a requirement. While many hospitals have inventory management procedures in place, more than 50% of those surveyed were manually monitoring their inventory using simple Excel sheets before information technology (IT) began to work wonders regrettably, supply chain costs are predicted to surpass labour costs for the first time this year as the highest I cost to healthcare systems.

- Lower expenses
- Increase inventory turnover and improve inventory
- Improve service while maintaining a proper balance of high quality and low cost.
- Increased performance

Inventory management is critical in the healthcare industry, especially when lives are on the line. The Inventory Management Software provides detailed information on medication batches and stock levels. It is also very useful for keeping the doctor's equipment in good condition. Overall, it controls your inventory direction, procure, orders, payments, and so on. It protects your organisation against potential harm. Inventory management is critical for every organisation, whether it is a medical venture or a medical store. <sup>(3)</sup>

The stores department fulfils the requirement of non-medical & other general items like capital goods, stationeries, lines, consumables (Laboratory and radiology) surgical instruments and housekeeping items for the hospital. AMC (Annual Maintenance Contract) renewals of non-medical & IT equipment's. <sup>(4)</sup>

The study's significance is to improve the process of supervising and managing inventory, which would include real-time data about inventory status, so that businesses may realise inventory management

advantages. Receiving goods, purchasing materials on time, keeping track of transactions, reducing obsolescence, surplus, and scrap through proper identification and the use of appropriate preservation techniques, ensuring good housekeeping through accurately and promptly updated records, issuing receipts, ensuring issues with other documentation, and handling other issues with storage and cleanliness are all examples of good housekeeping.

In certain instances, the functions of stores are expanded to include the acquisition and optimization of inventory. For instance, the shop manager could be granted more authority to acquire things that are urgently needed.

The practise of monitoring stock levels and the flow of items, whether it is providing raw materials to manufacturers or satisfying orders for completed products is known as inventory management. Inventory management is a key element of supply chain management. Inventory control is a crucial component of longevity since it enables companies to reduce expenses, enhance cash flow, and increase profitability. The remainder of your supply chain will come together once your inventory is structured appropriately. Without it, you run the danger of making a long list of errors, including incorrect shipments, shortages, out-of-stocks, spoiling (when dealing with perishable stock items), overstocks, incorrect picking, and so on. <sup>(5)</sup>



In Inventory management system, Inventory models contain the different decision variables such as quantity ordering and stock. An inventory management problem is a decision making problem. On the other hand, the aim of an Inventory model is to obtain an optimal order request which minimizes the total inventory expense. i.e., an inventory problem deals with decisions that maximizes the total profit achieved while meeting the.

### **Economic Parameters**

In Inventory management system there are different economical parameters. The various economical parameters that are associated with the present work are given below: -

**Ordering Cost:** - Ordering costs are the costs related to the preparation of a supplier's order, including the cost of placing an order, inspection costs, documentation costs, and others. These expenses are independent of order quantity and are incurred each time a company places an order.

**Holding Cost:** - The holding expense is the cost of maintaining the stock. It is determined by the size of the inventory as well as the time when the item is placed in stock. This cost includes the cost of storage, interest on capital blocked on inventory purchases, insurance, deterioration, obsolescence, and

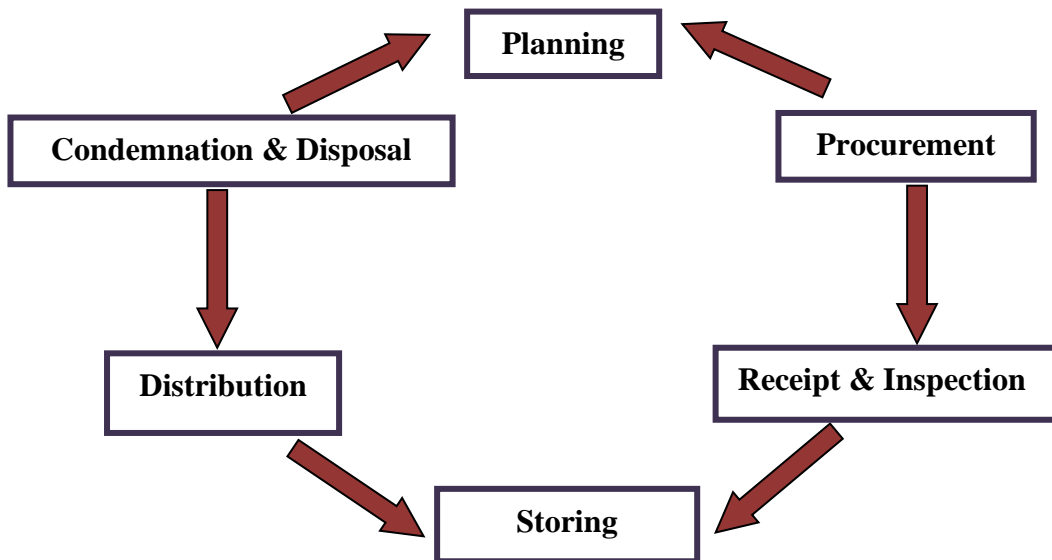
improvement, among other things. The holding expense may also include the cost of capacity, protection, and other factors that are proportional to the amount of stock held.

**Shortage Cost:** - The primary goal of inventory management is to keep enough inventory on hand to meet customer expectations while remaining cost-effective and avoiding out-of-stock situations. It also aids in determining the cost of goods in stock. Inventory management can be done either manually or automatically.

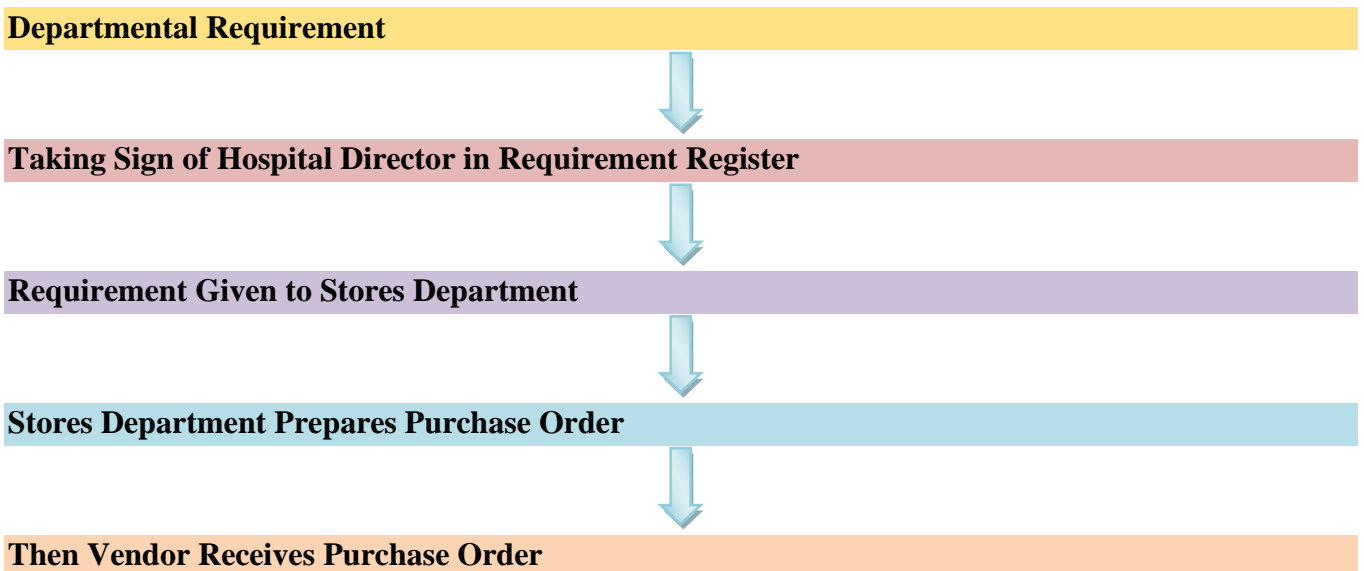
**Purchase Cost:** - The total cost of the item’s or service acquired, including taxes, shipping expenses, and other fees and contingencies, is referred to as the purchase cost. The purchase price is the most fundamental sort of inventory cost.

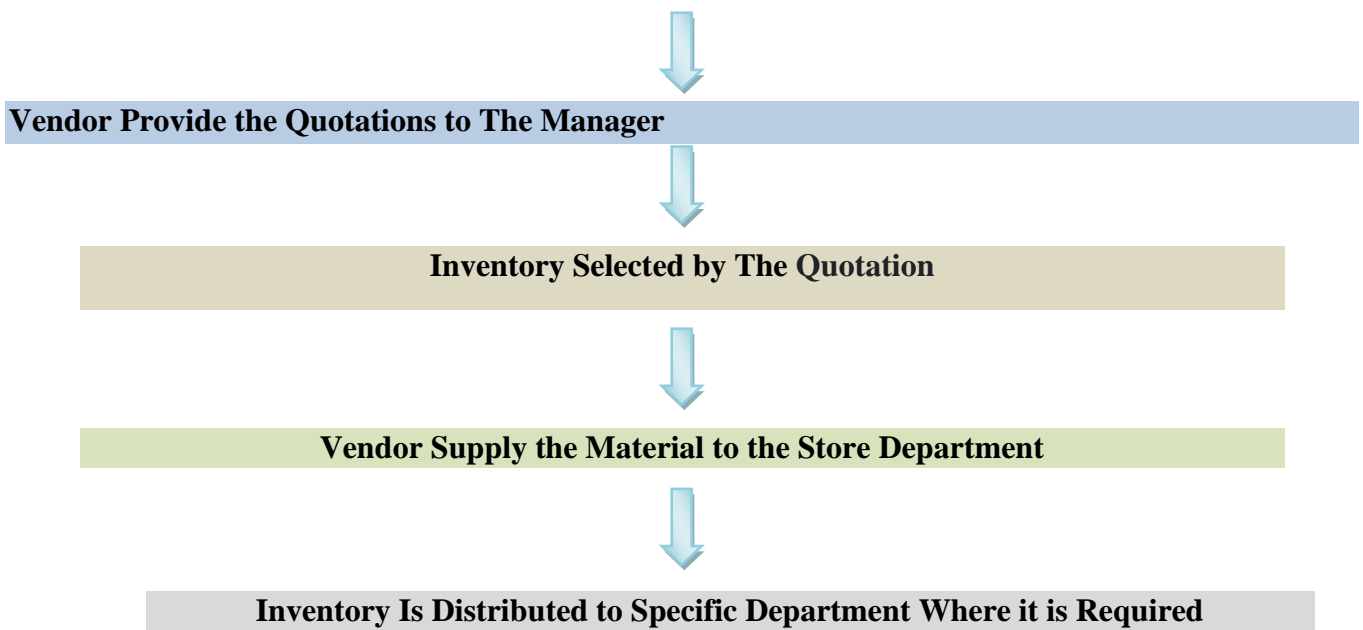
**Lead Time:** - Lead Time It is the time crevice between the submitting of a request and accepting of the stock is called lead-time. It may not be essentially a consistent.

**INVENTORY MANAGEMENT CYCLE**



**FLOWCHART ON PURCHASE PROCEDURE IN MGM HOSPITAL, BELAPUR**





## METHOD DESCRIPTION

1. Various departmental heads forward the requirements of medical & non-medical capital item to stores department in department requirement form (letter to stores).
2. After the requirement is approved by director, quotations for the same are invited from various suppliers (minimum 3).
3. Comparative statement is prepared giving information like quantity, specification, warranty, price, terms & condition of payment & after sales services.
4. Final selection of the supplier is made by the Director based on comparative statement.
5. Store-in-charge prepares Purchase Order as per format.
6. Then the Purchase order is mailed to vendor
7. After order received by the vendor
8. Equipment delivery is done by the vendor in 2-3days with attached of delivery challan.
9. Once the delivery is done, then security check the material n gives stamp on delivery challan.
10. Once the material received by the store department, then payment order is issued.
11. Payment order is signed by Hospital Director.
12. Then Payment order is forwarded to accounts department to clear the bills.

## AIM & OBJECTIVES

- To study the inventory allocation lead time.
- To evaluate the gap analysis and find recommendations to reduce the gap.

## REVIEW OF LITERATURE

In August 2020, According to MS. Nayan Chakarbarti, in the study title "A Methodology for Supply Inventory Management for Hospital Nursing Units" According to this study, they suggested workflow inconsistency with the actual working environment would be examined. A nurse capacity to perform their primary duties is limited if nursing staff is in charge of controlling inventories in the nursing unit. In that circumstance, a cost-effective inventory system must be developed to prevent supply shortages



for the nursing staff. The external supply chain and the interior supply chain are the two components of a hospital supply chain. Deliveries from central storage to internal hospital departments are handled by the internal supply chain, while deliveries to central storage are handled by the exterior supply chain. A large amount of cost savings may be achieved via effective inventory management. It is essential to put in place a successful strategy to lessen the possibility of a stock out happening in order to guarantee an appropriate service level. <sup>(6)</sup>

In June 2015, Duangpun Kritchanha, Watcharaphong Meesamut, in the study title “Developing Inventory Management In Hospital” they focuses only on medications with a high consumption value and occurred at a sizable public hospital in Thailand. According to each medication category best performance, the most suited policies are suggested. In addition to the demand features, the historical demand is divided into categories based on the pharmacological properties, consumer value, and therapeutic relevance, as well as demand characteristics. They used it and compared it to the present inventory policy (Min/Max) and inventory policies from prior research to determine the best inventory policy for each medication category and demand characteristic. According to the study, a single inventory management system cannot be used efficiently for all drugs. Because there are many types of drugs based on their value and therapeutic significance. This is known as the ABC/VEN categorization. Inventory management in hospitals should be tailored to drug categories and demand factors that are distinct in the healthcare supply chain and distinct from those used in general manufacturing. <sup>(7)</sup>

In this study, According to “Benjamin V. Neve & Charles P. Schmidt, the study title “Point-of-use hospital inventory management with inaccurate usage capture” Accuracy at the point-of-use can provide substantial operational challenges when attempting to save costs or maintain high service levels, which is something healthcare decision-makers take into account when determining inventory levels and the inventory systems that go along with it. In a hospital scenario where front-line patient care employees utilise an open-bin barcode or button-scan inventory system that is common in American hospitals and is also connected to patient billing, they offer two inventory decision models that take inaccuracy into account. They developed a solution technique that was used to determine the best base-stock policy for a specific counting cycle duration. They look for the best frequency of inventory counts in addition to selecting the ideal order-up-to level in order to reconcile false records. <sup>(8)</sup>

In this study, According to Sarah Archer, the study title “Hospital Inventory Management for More Efficient & Connected Hospitals”. The need for effective hospital inventory management has grown as delays and shortages in the hospital supply chain have become more frequent. Clinical staff and the supply chain are connected by important investments in hospital inventory management and asset monitoring. One notable trend that will gain popularity over time is the link between supply chain and therapeutic necessity. Real-time location systems (RTLS) for inventory management are becoming more prevalent in every area, whether clinical or nonclinical. <sup>(9)</sup>

In this study, According to M.R. Higgs & S.S. Grobbelaar & Van Eeden, the study title “Hospital Inventory Management” they study the majority of the inventory policies discovered through the systematic literature search were from first-world nations with quick lead times and regular, accurate evaluations provided by electronic systems. When Inventory levels seem low or even exhausted, doctors start to order more than is necessary, which results in overstocking and ultimately waste. <sup>(10)</sup>

Title of this study- “In this study, According to Lapierre & Ruiz (2007), the study title “Innovative approach to solve multi-item inventory replenishment problem in a hospital” they present an concentrating on inventory decisions, the model places a strong emphasis on scheduling decisions for

inventory acquisition and operations. Their method employs a tabu search meta-heuristic to resolve a non-linear mixed-integer issue. However, it is expected that the system's product demand is predictable and well-known. <sup>(11)</sup>

In 2009, According to Joana Isabel Baptista Nabobs, in the study title, “Inventory Management for the Health Sector ABC Analysis Approach”, they focus on ABC analysis as an optimization tool for the inventory management, control, and storage, this project intends to analyse a hospital's inventory management and give recommendations to enhance its practises. Other cost-cutting strategies are being researched in an effort to support appropriate control of clinical consumption materials. The main recommendations are widespread, effective use of information and communication technology (ICT), usage of periodic point models, change of warehouse layout, expansion of stock centralization of sophisticated warehouses, and consignment stock development. This study tries to give a contribution in order to understand inventory management systems in Hospital Santa Maria, improve them, and adapt different techniques provided by theoretical research. <sup>(12)</sup>

In this study, According to Tariq Hussain Sheikh, the study title “A Study of Inventory Management System”-Inventory management is a difficult component of the supply chain management challenge. In order to meet consumer demand, businesses must keep inventory in warehouses. However, keeping inventory costs money that is frozen and subject to loss. Finding the number of inventories that will satisfy demand while preventing overstocks is the goal of inventory management. This essay discusses an inventory management case study for the small-scale steel manufacturing business. Based on inventory days and return on asset (ROA) studies, the link between inventory management and corporate performance was established. <sup>(13)</sup>

In this study, According to Jonas, Lunds Universities [1999], the study title “Coordinated Multi-Stage Inventory Systems with Stochastic Demand”, this thesis is supported by six academic publications that offer various approaches to coordinated inventory control in supply chains. The major emphasis is on supply chains in relation to product delivery to customers. Consideration is given to two distinct issue areas. Coordination of local decision rule optimization by a central organisation is one area of interest. The assumption is that the decision-making process is centralised in the sense that the policies at the various sites may be assessed and improved centrally. One central warehouse, many merchants, and a two-level distribution system are all taken into account. Both the warehouse and the shops must deal with stochastic client demand as they restock their inventories. In turn, the warehouse has its goods restocked by a third party vendor. All facilities use ordering procedures that only rely on local inventory position data. Three papers specifically address this problem setting by evaluating general performance measures for various (R, Q) policies, evaluating policies in which warehouse deliveries to retailers are made in fixed delivery batches, and evaluating and optimising (S-1, S) policies in which customer demands are lost in the event of stock outs at the retailers. <sup>(14)</sup>

In 2018, According to Pradeep G. Pai, in the study title, “An Adaptive Inventory Management System for Hospital Supply Chain”, they study the many tiers of a hospital supply chain, including distributors, in order to meet the demand for an efficient and effective hospital inventory management system. They suggest a method that is divided into two parts: (1) system design and optimization, and (2) system monitoring, assessment, and forecasting. The system design and optimization methodology comprises a sim-heuristic approach to inventory level optimization and hospital operations. Control-chart-like procedures are used to monitor the key system performance measures across time as time passes. When major variances in system performance occur, the inventory decision factors and/or system activities are

re-evaluated in order to maintain an efficient inventory system. To decide the scope of the system's evaluation, a hierarchical procedure is applied. In this section, system description, modelling assumptions and research methodology being implemented are presented. System description discusses the daily operations and sequence of activities that takes place in a prototypical hospital. Overall, the research methodology detects the points for evaluation and the extent required when significant deviations are observed from optimal values caused by the dynamics of the system.<sup>(15)</sup>

In this study, According to Pallavi Bhatia, Kapil Bhatia, Binal Damania & Neelam Patil, in the study title “Study of Central Store Department Activities by Process Flow Mapping In A Tertiary Care Hospital” they focused on the products and services in the healthcare sector are seeing a dramatic price increase. Inventory control in hospitals has recently gained more significance. The actions involved in establishing what an organisational entity performs, who is accountable, to what standard organisational process should be accomplished, and how the success of an organisations process may be measured make up an organization's process mapping. This study focuses on the fundamental elements of the central store's supply chain operation to improve the effectiveness of medicine sales, distribution, and storage. The result was found that the 100 % in all the different processes like procurement process, internal quality checks, storage of drugs, ledger maintenance & documentation and maintenance of special drugs except GRN date which was 75.45%, storage of high risk medicine amounting to 81.82%.<sup>(16)</sup>

According to Dr Honey Agrawal, Dr. Divya Kapoor, in the study title “Inventory management in a Large Multiunit Hospital”, A retrospective investigation was conducted. The information was gathered by looking through the main pharmacy store's stock records and supply invoices. The statistics excluded pharmaceuticals for the sales counter, surgical items, disposables, and dressing items and only included medications that the hospital gave patients. A team of five medical professionals, including a doctor, surgeon, cardiothoracic surgeon, gastroenterologist, and cardiologist, was assembled to analyse the inventory of medications according on their criticality (VED analysis). Each team member received the inventory of pharmaceuticals that had been kept during the research period for the purpose of categorising the drugs based on VED analysis. The study examined the drug inventory in terms of cost and criticality. It is meant to aid management in delegating responsibilities to other officers and applying the "Management by Exception" principle. Furthermore, it will help management control costs and ensure the supply of crucial and needed commodities in the hospital, which will benefit both patients and the administration.<sup>(17)</sup>

In 2002, According to Lawrence Nicholson, Asoo J. Vakharia, S. Selcuk Erenguc, in the study title “Outsourcing inventory management decisions in healthcare: Models and application” This research addresses the issue of managing inventory costs in a healthcare setting. The specific problem addressed in this study is a comparison of inventory costs and service levels of an in-house three-echelon distribution network vs. an outsourced two- echelon distribution network. They compared inventory policies in both networks by focusing on non-critical inventory items. This study’s specific focus is twofold. •To create normative tools/methodologies for examining non-critical inventory item judgments within each network type. This would allow for a comparison of overall non-critical item-related inventory expenses across both networks in a variety of scenarios. The fundamental reason for this cost rise due to network size is that when the number of departments in a hospital or the number of hospitals increases, there is an increased demand that each system must accommodate.<sup>(18)</sup>



In 2011, According to M Bijvank, In the study title, "Inventory control for point-of-use locations in hospitals" A hospital's principal goal is to deliver high-quality health treatment. Sufficient medical supplies must be available to allow hospital employees to carry out their regular duties. When storage space is restricted, the goal is to maximize service level. This concept can be applied to a multi-item inventory control system with limited storage space. In the final setting they demonstrate the performance of the approximation procedure in more general settings. Therefore, they consider a cost objective and a lead time equal to two review periods. The inventory replenishment system at POU locations in hospitals can be classified as a lost-sales inventory system where the lead time is shorter than the length of a review period and the focus is on service levels.<sup>(19)</sup>

## MATERIALS AND METHODOLOGY

- **STUDY DESIGN:** The present study was a Descriptive Observational Study, which was conducted in the MGM Hospital & Research Centre, CBD Belapur.
- **SAMPLE SIZE:** Total number of users using electronic data base (Nursing staff, Doctor, MRD staff, Housekeeping in charge, Store department staff and other staff- that include Billing & Account staff, TPA staff).
- **Total Number of Users =115**
  1. Doctor's: - 15
  2. Nursing Staff: - 70
  3. Other Staff: - 30
- **METHOD OF DATA COLLECTION:** The data was collected through the Primary & Secondary sources.

### A. Primary Sources:

For a current research study, primary data was collected by the questionnaires from the required personnel.

A predesigned and pre-structured Inventory turnaround time format from requisition to the distribution and questionnaire will be used for data collection and questions will be asked by primary investigator. That was series of questions about the Store Department's functioning, working method and inventory management software.

### B. Secondary Sources:

Secondary data was gathered from previously sources such as books, journal's and the internet.

- **STUDY PERIOD:** 6 month
- **SAMPLING TECHNIQUE:** Random sampling technique. The in charge of the Store department and other employees of department, Doctor's and Nursing staff who were present at the survey.
- **SELECTION CRITERIA**
  - 1) **Inclusion Criteria:**
    - a) Employees who will be present during Data Collection
    - b) Stores department and their employees
    - c) All the hospital departmental staff
  - 2) **Exclusion Criteria:**
    - a) Employees who are not willing to participate
    - b) Healthcare worker and nursing staff who will be not present

**The Following Is the Medical & Non-Medical Inventory List which selected randomly:**

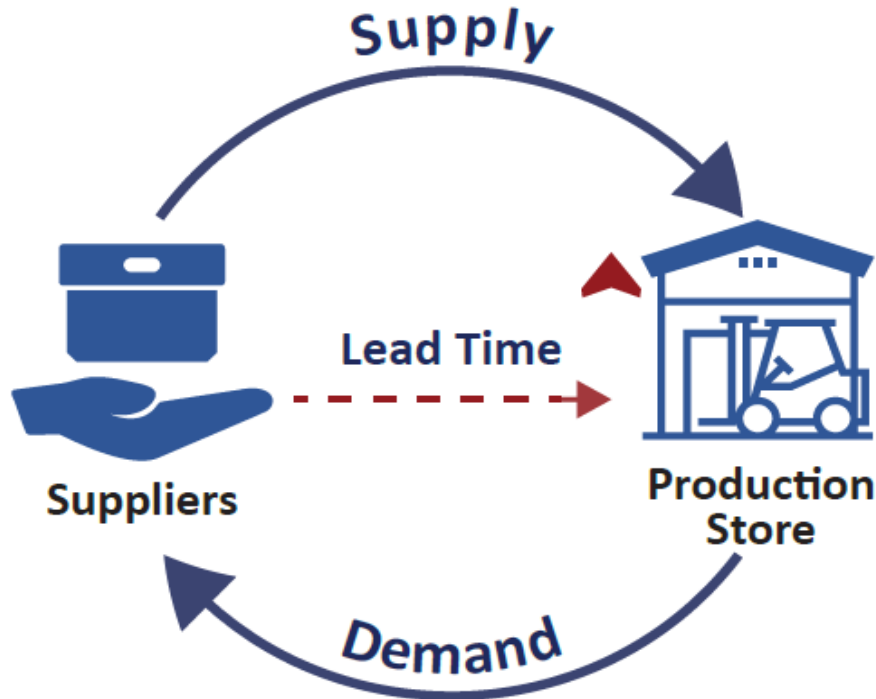
Sr. No.	Medical	Non-Medical
1)	X-Ray Film	Barcode Computer Label
2)	ABG Test Kit	Mortuary Sheet
3)	2d Echo Colour Doppler	X-Ray Dispatch Register
4)	ECG Jelly	Torch Pencil
5)	Defibrillator	Stamp Pad
6)	ECG Roll	Cartridge
7)	ECG Machine	Red Code Bags
8)	SGPT Kit	CD Cover
9)	Diabetic Chart	Puncture Proof Container
10)	Ampule Cutter	Histopathology Form
11)	HIV Test Letter	Surgical Safety Checklist
12)	Covid Rapid Antigen Test	Ct Scan Form
13)	Dental X-Ray Film	High Risk Consent
14)	Albumin Pack	Critical Care Flow Sheet
15)	Centrifuge Tube	Blood Bank Consent Form
16)	Cholesterol Code-Cell	Neodisher IP Spray
17)	Malaria Rapid Test	Black Cartridge
18)	Calcium Red Cells	Intake Output Chart
19)	CRP Test	Id Band
20)	D-Dimmer Test	TPR Chart
21)	HBAIC Test	Box File Voucher
22)	Vitamin D Test Kit	Continuation Sheet
23)	Medical Easy Electrolyte Solution	MLC Form
24)	HCV Spot Test Kit	Daily Census Register
25)	Distilled Water	Prescription Pad
26)	Sterile Transport Swabs	CT Scan Dispatch Register
27)	Tournicates	IPF Charity Form
28)	ACT Machine	Thrombolysis Consent Form
29)	Laryngoscope with 4 blades	Labeling Machine
30)	ET Tube	Physical Restraint Form

**Lead time:**

In inventory management, lead time is the period of time between when an order is placed and when it is received. The amount of item's corporation must hold at any one moment is affected by lead time.

Lead time has a direct impact on your total inventory levels. The greater your lead time, the more stock you'll need to keep on hand. Longer lead periods make delivery more uncertain and compel a corporation to place orders based mainly on demand estimates. After calculating your lead time, the next stage is to implement corrective steps to shorten it. The organization must keep adequate stock on hand to complete orders during a delay if a supplier is unable to deliver a buy order on time, failing to do so

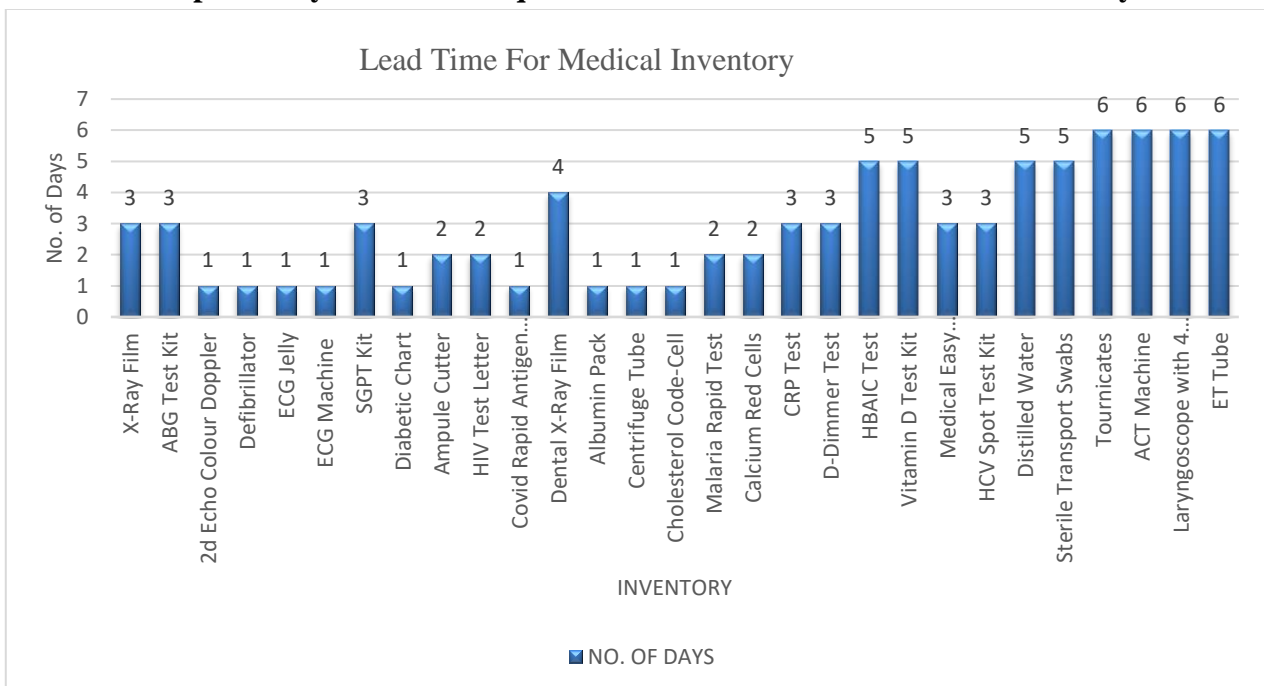
would result in a loss of income. Understanding lead time is crucial because you can use it to estimate sales, boost customer happiness, and increase productivity in your operational workflows. Lead time describes the amount of time needed to perform a procedure from start to finish. Lead time in manufacturing frequently refers to the amount of time it takes to produce a product and deliver it to a customer.



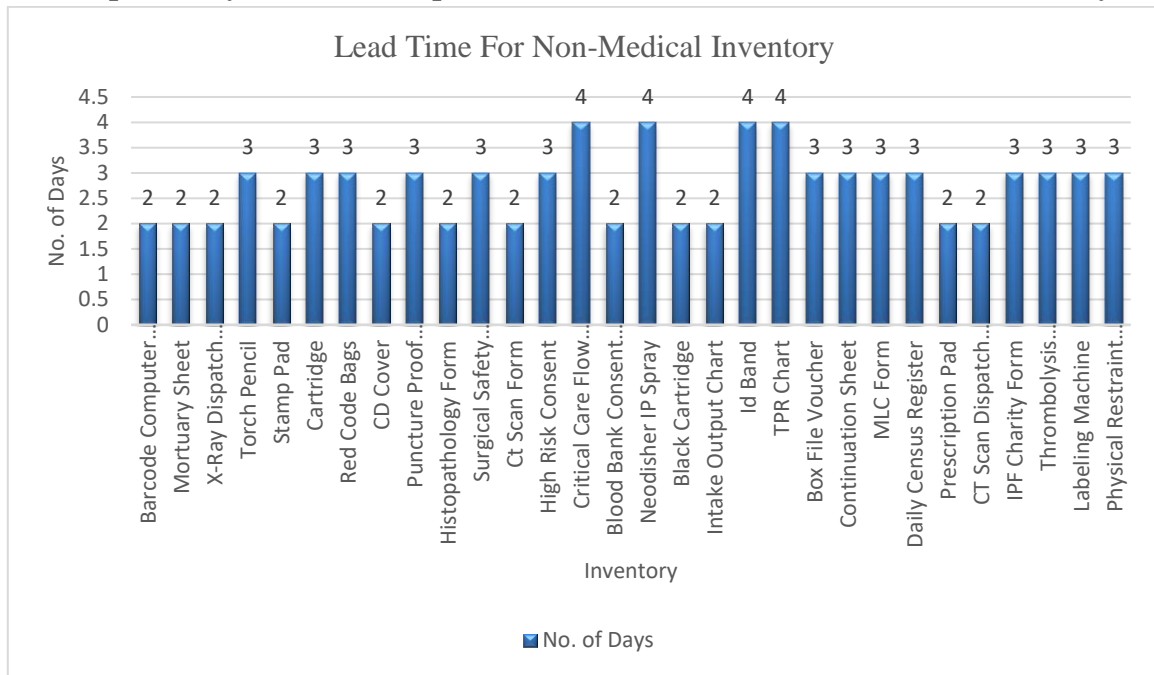
**RESULT**

**Lead time Formula:** - Manufacturing Day + Processing Day + Distribution Day

**Graph 1: Days taken for requisition to distribution for medical inventory**



**Graph 2: Days taken for requisition to distribution for non-medical inventory**



Graph 1 and 2 showed that the maximum number of days for requisition to distribution of medical and Non-medical inventory was found to be 6 days and the least number of day found was 1 day. It means Lead time directly affects on total inventory levels.

**ANALYSIS:**

**TABLE NO 1**

**All inventories receiving & distributing order are completely prepared & recorded on timely basis?**

Designation	N	Yes	No	Maybe	Total
Doctors	15	15(100%)	0	0	15(100%)
Nurse	70	20(28.58%)	50(71.42%)	0	70(100%)
Other Staff	30	20(66.67%)	10(33.33%)	0	30(100%)
<b>Total</b>	<b>115</b>				

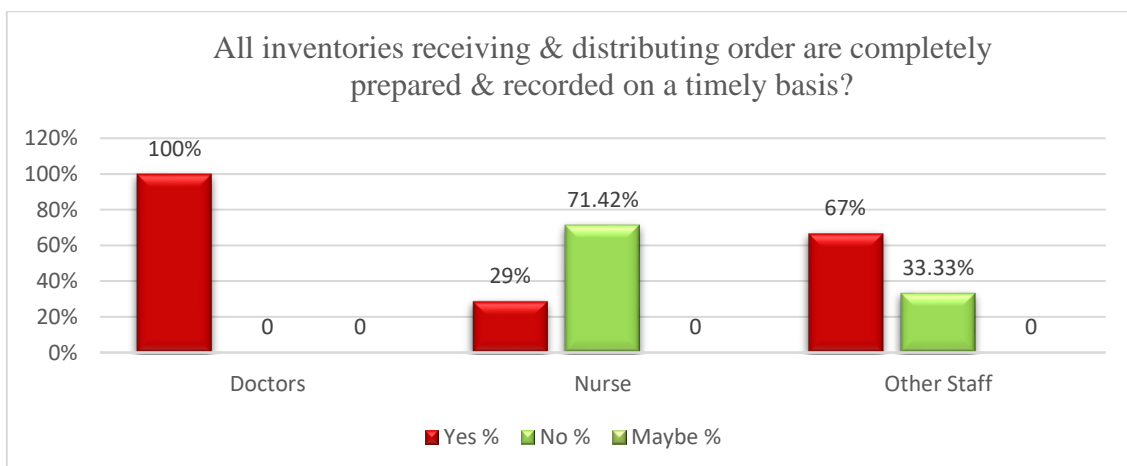
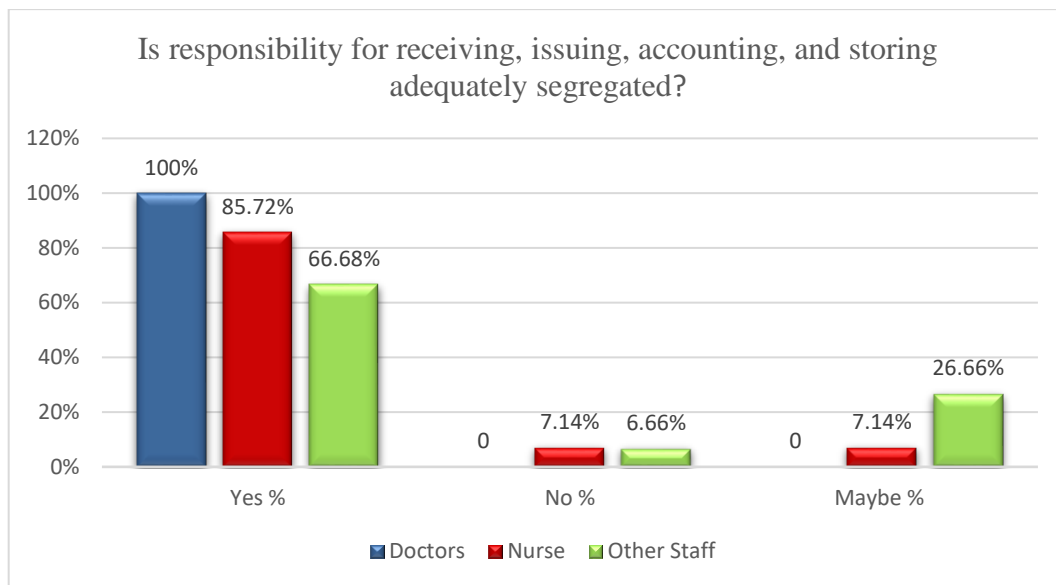


Table No. 1 Showed that the 100% Doctor’s, 28.58% Nursing Staff and 66.67% Other staff agreed to inventories receiving & distributing order which are completely prepared & recorded on timely basis.

**TABLE NO 2 Is responsibility for receiving, issuing, accounting, and storing adequately segregated?**

Designation	N	Yes	No	Maybe	Total
Doctors	15	15(100%)	0	0	15(100%)
Nurse	70	60(85.72%)	5(7.14%)	5(7.14%)	70(100%)
Other Staff	30	20(66.68%)	2(6.66%)	8(26.66%)	30(100%)
<b>Total</b>	<b>115</b>				



**OBSERVATION**

1. 100% Doctors, 85.72 % Nursing staff and 66.68 % Other staff are receiving, issuing, accounting, and storing proper segregated inventories.
2. 7.14% Nursing staff and 6.66% Other staff are not receiving, issuing, accounting, and storing proper segregated inventories.
3. 7.14 % Nursing staff and 26.66% Other staff are not sure about segregation of inventories.

**INTERPRETATION**

table no 2 Showed that the 100% Doctor's are receiving, issuing, accounting, and storing proper segregated inventories.

**TABLE NO 3**

**Whether the store and purchase department keep records electronically?**

Designation	N	Yes	No	Maybe	Total
Doctors	15	10(66.67%)	2(13.33%)	3(20%)	15(100%)
Nurse	70	50(71.43%)	15(21.43%)	5(7.14%)	70(100%)
Other Staff	30	20(66.68%)	5(16.66%)	5(16.66%)	30(100%)
<b>Total</b>	<b>115</b>				



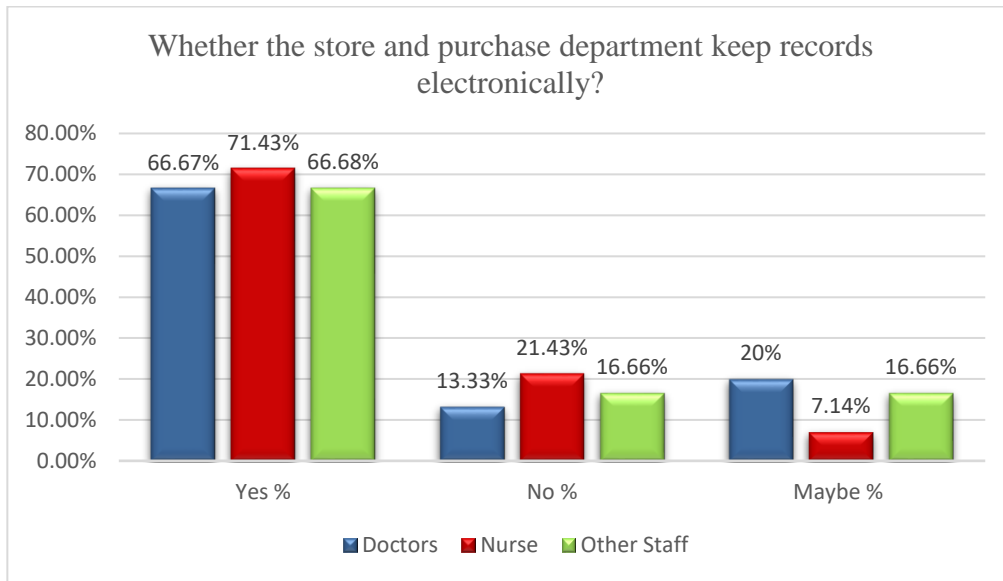


TABLE NO. 3 Showed that the 66.67% Doctor’s, 71.43% Nursing staff and 66.67% Other staff agreed to the store and purchase department for keeping records electronically.

**TABLE NO 4**

**Does everyone know about hospital management software for using inventory management?**

Designation	N	Yes	No	Maybe	Total
Doctors	15	10(66.67%)	0	5(33.33%)	15(100%)
Nurse	70	60(85.72%)	0	10(14.28%)	70(100%)
Other Staff	30	20(66.67%)	0	10(33.33%)	30(100%)
<b>Total</b>	115				

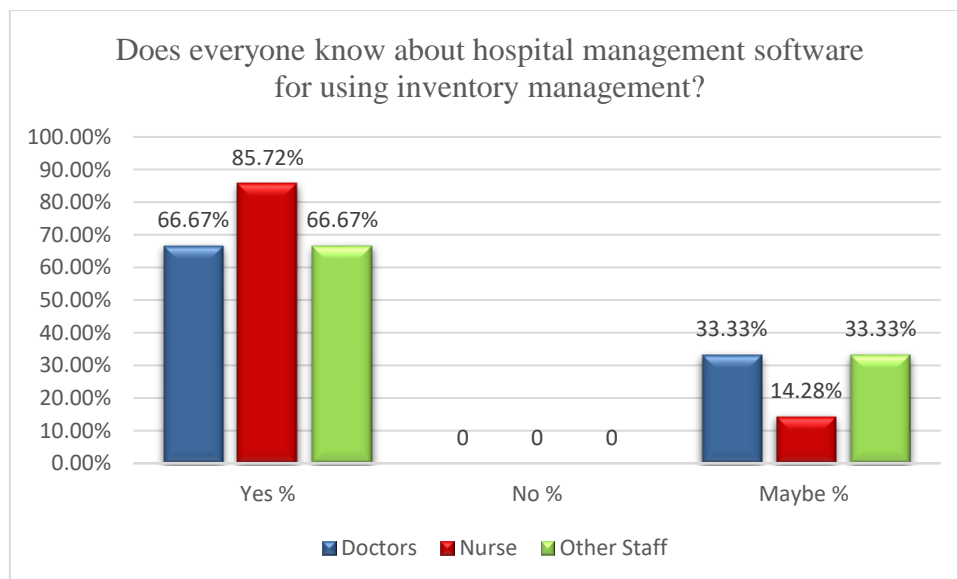


TABLE NO. 4 Showed that the 66.67% Doctor’s, 85.72% Nursing staff and 66.67% Other staff are aware about the hospital management software for using inventory management.

**TABLE NO 5**

Whether the procedure is carried out in accordance with the store department's SOP (standard operating procedure)?

Designation	N	Yes	No	Maybe	Total
Doctors	15	15(100%)	0	0	15(100%)
Nurse	70	50(71.43%)	5(7.14%)	15(21.43%)	70(100%)
Other Staff	30	15(50%)	5(16.67%)	10(33.33%)	30(100%)
<b>Total</b>	<b>115</b>				

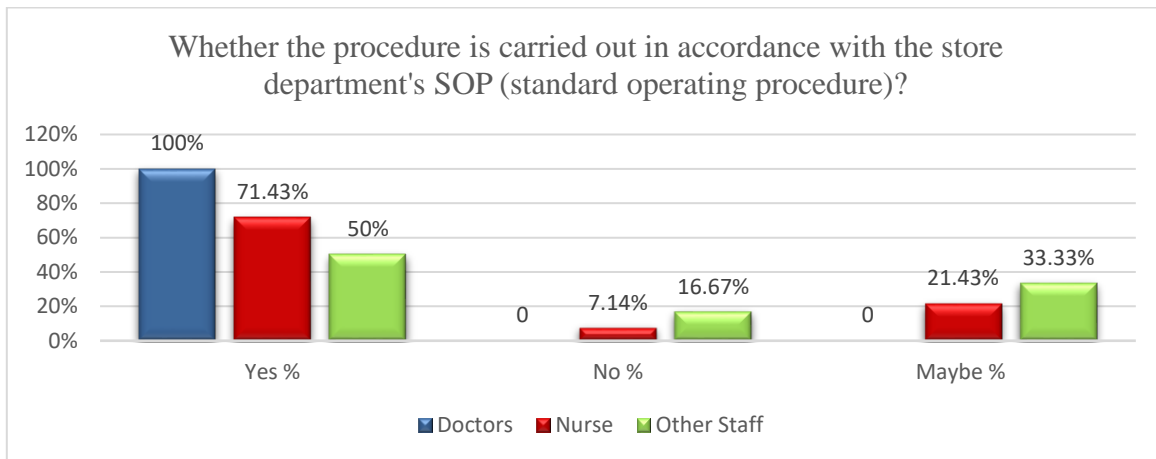


Table No. 5 Showed that the 100% Doctor's, 71.43% Nursing staff and 50% Other staff are agreed to the store department's procedure is carried out in accordance with the SOP (standard operating procedure).

**TABLE NO 6**

Are the records for spare inventory maintained in the store department?

Designation	N	Yes	No	Maybe	Total
Doctors	15	5(33.33%)	5(33.33%)	5(33.34%)	15(100%)
Nurse	70	45(64.28%)	20(28.58%)	5(7.14%)	70(100%)
Other Staff	30	10(33.33%)	10(33.33%)	10(33.33%)	30(100%)
<b>Total</b>	<b>115</b>				

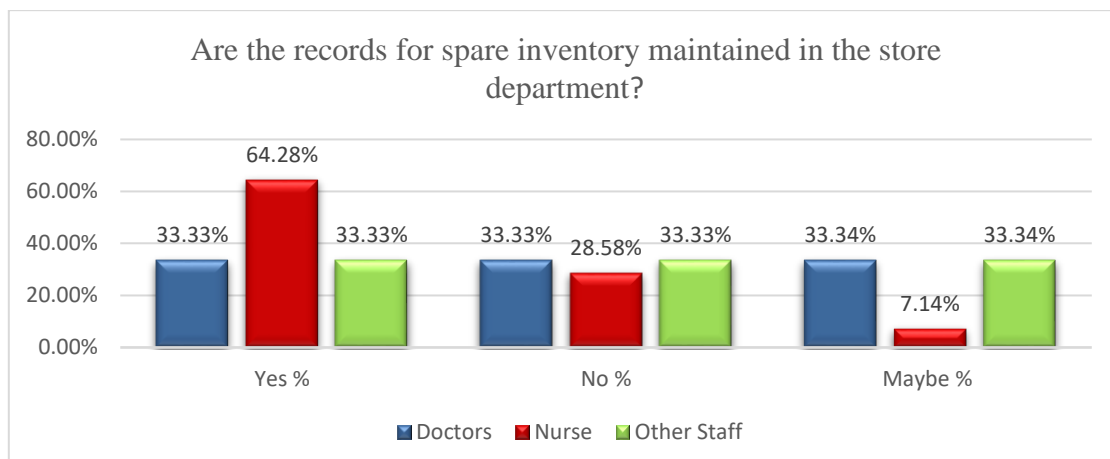


Table No. 6 Showed that the 33.33% Doctor’s, 64.28% Nursing staff and 33.33% Other staff are agreed to the records for spare inventory maintained in the store department.

**TABLE NO 7**

Whether employees attend any training program for inventory management software?

Designation	N	Yes	No	Maybe	Total
Doctors	15	5(33.34%)	0	10(66.66%)	15(100%)
Nurse	70	40(57.15%)	0	30(42.85%)	70(100%)
Other Staff	30	10(33.33%)	0	20(66.67%)	30(100%)
<b>Total</b>	<b>115</b>				

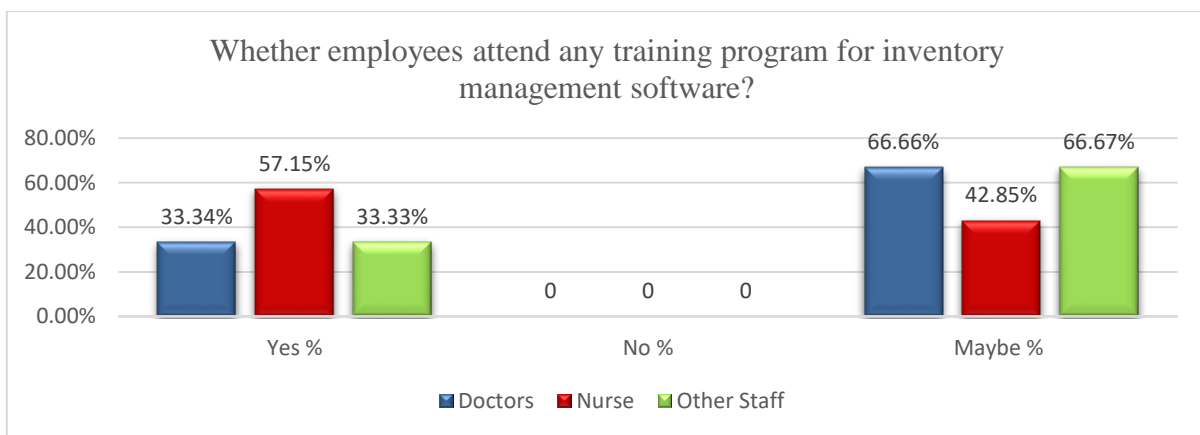


Table No. 7 Showed that the 33.34% Doctor's, 57.15% Nursing staff and 33.33% Other staff attended training program for inventory management software.

**TABLE NO 8**

Does inventory software capable of producing receipt and inventory distribution report?

Designation	N	Yes	No	Maybe	Total
Doctors	15	5(33.33%)	7(46.67%)	3(20%)	15(100%)
Nurse	70	50(71.42%)	10(14.29%)	10(14.29%)	70(100%)
Other Staff	30	15(50%)	5(16.66%)	10(33.33%)	30(100%)
<b>Total</b>	<b>115</b>				

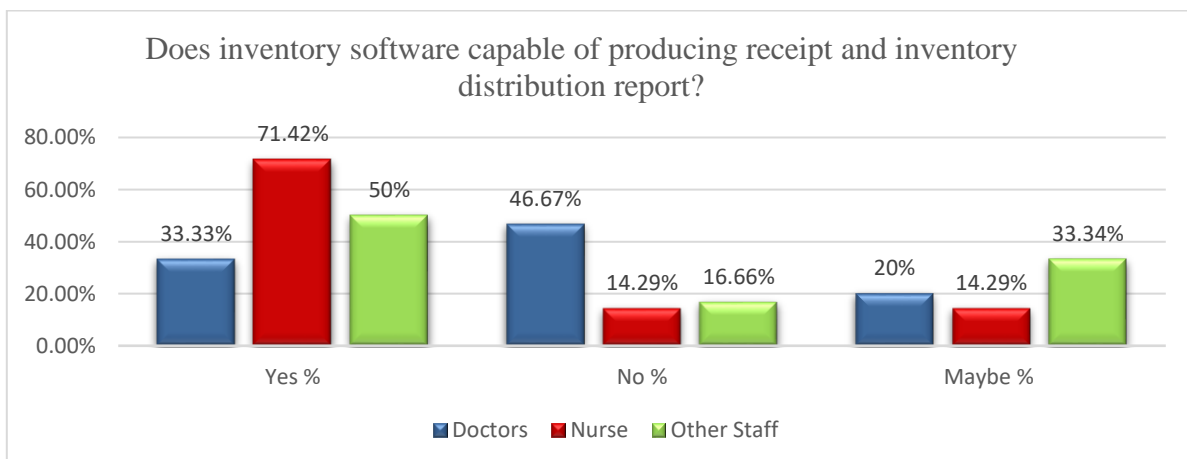


Table No 8 Showed that the 33.33% Doctor's, 71.42% Nursing staff and 50% other staff agreed that the inventory software capable of producing receipt and inventory distribution report.

**TABLE NO 9**

As part of a continuous improvement approach, is the ideal order or production frequency calculated on a regular basis?

Designation	N	Yes	No	Maybe	Total
Doctors	15	3(20%)	2(13.34%)	10(66.66%)	15(100%)
Nurse	70	40(57.14%)	10(14.28%)	20(28.58%)	70(100%)
Other Staff	30	10(33.33%)	10(33.34%)	10(33.33%)	30(100%)
<b>Total</b>	115				

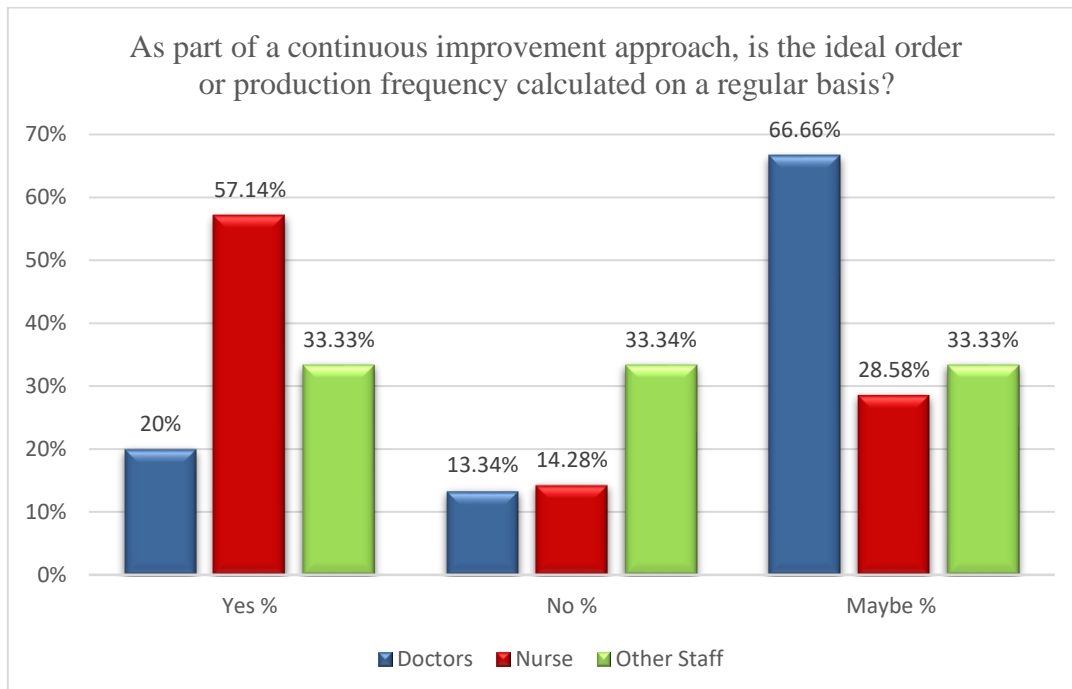


Table no 9 showed that the 20% Doctor's, 57.14% Nursing staff and 33.33% Other staff agreed that the ideal order or production frequency calculated on a regular basis.

**TABLE NO 10**

Do you know what the importance of lead-time in inventory process?

Designation	N	Yes	No	Maybe	Total
Doctors	15	15(100%)	0	0	15(100%)
Nurse	70	50(71.42%)	10(14.29%)	10(14.29%)	70(100%)
Other Staff	30	20(66.66%)	5(16.67%)	5(16.67%)	30(100%)
<b>Total</b>	115				

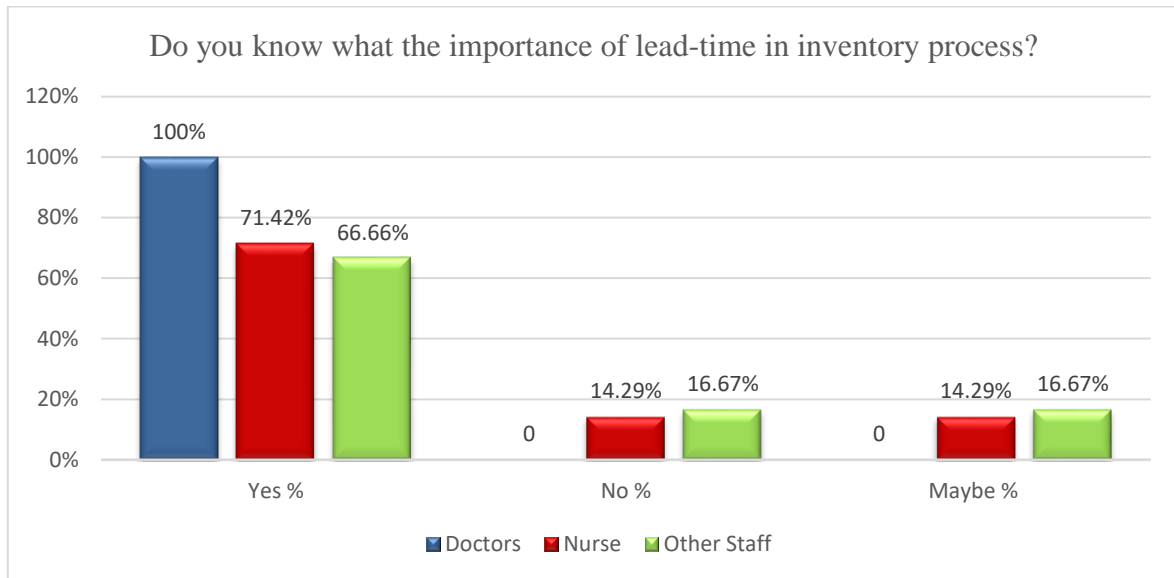
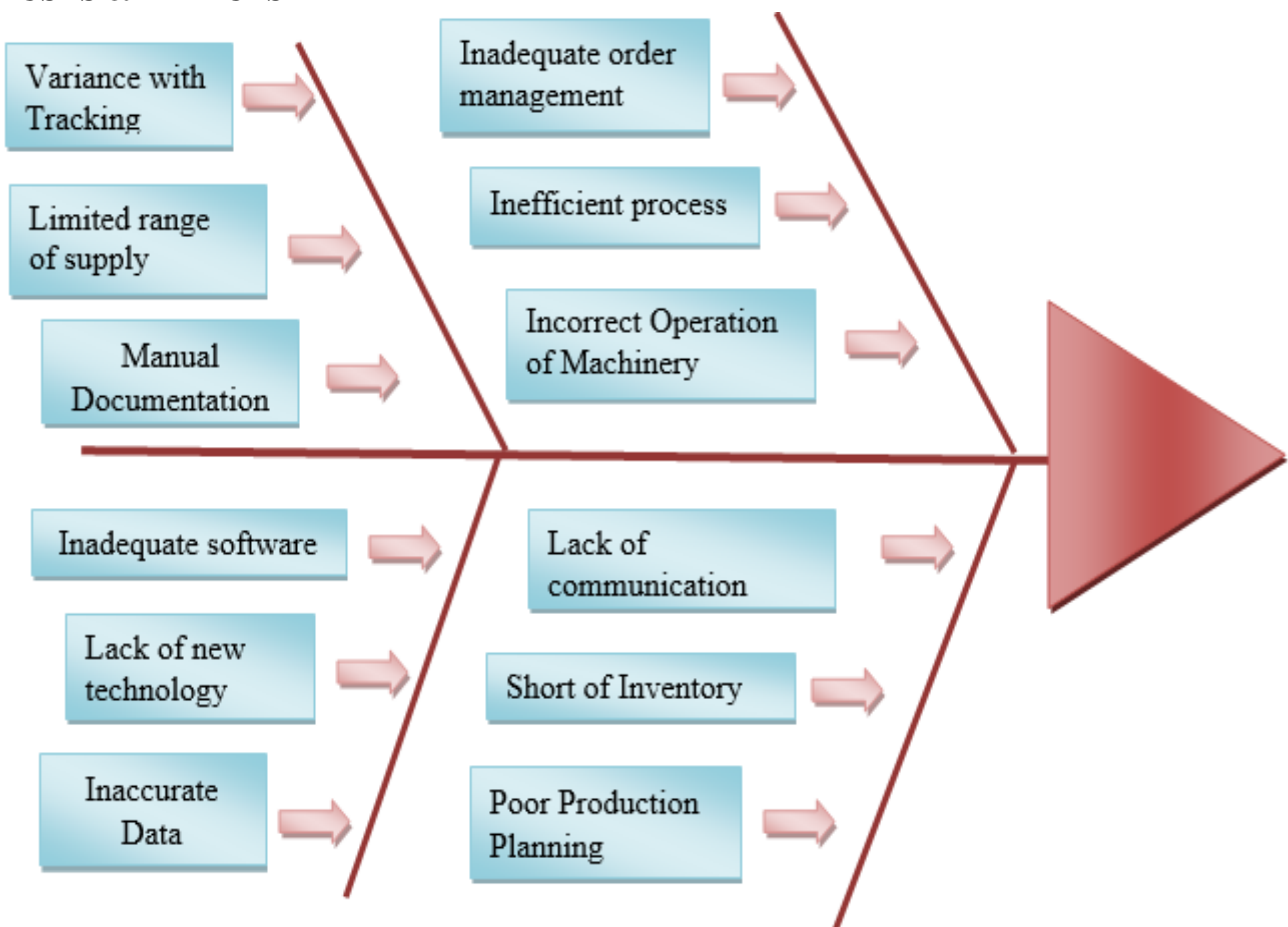


Table No. 10 Showed that the 100% Doctor’s, 71.42 % Nursing staff and 66.66% Other staff are aware about the importance of lead-time in inventory process.

**CAUSES & EFFECTS**



**DISCUSSION**

The present study, was a descriptive observational study, which was conducted at MGM Hospital & Research Centre, CBD, Belapur.



In the present study showed that the 100% Doctor's agreed to inventories receiving & distributing order which are completely prepared & recorded on timely basis while 71.42% nursing staff and 33.33% other staff was said no.

Inventory is simply stock of physical asserts having some economic value. It is an idle resource as long as it is not used. It may be used as those goods that are stored and used for day to day working of an organization. 100% Doctors, 85.72 % Nursing staff and 66.68 % Other staff are receiving, issuing, accounting, and storing proper segregated inventories. 7.14% Nursing staff and 6.66% Other staff are not receiving, issuing, accounting, and storing proper segregated inventories. 7.14 % Nursing staff and 26.66% Other staff are not sure about segregation of inventories.

The store and purchase department keep records electronically It helps in proper and efficient running of organization Showed that the 66.67% Doctor's, 71.43% Nursing staff and 66.67% Other staff agreed to the store and purchase department for keeping records electronically.

In The present study the store department should focus on the Inventory Management system and the Inventory Control Process to provides information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities, and communicate with other staff that creating the smooth workflow of inventory allocation.

In this study 33.33% Doctor's, 64.28% Nursing staff and 33.33% Other staff are agreed to the records for spare inventory maintained in the store department. According to the research shown below, the organization should take precautions to maintain adequate spare parts and inventories in order to prevent frequent machine breakdowns.

Lead times for a inventory management will also depend on the number of suppliers it has. It is always challenging to estimate the delivery time from the suppliers accurately and this, in turn, makes it difficult to coordinate production. Though a organization could stock excess inventory, it raises the cost and leads to wastage as well. To overcome this issue, a store department can adopt a lead schedule. It assists the proper inventory allocation. It not only reduces lead time but also shipping and receiving costs.

Hospital inventory management software assists in tracking the consumption of all items inside the healthcare institution, 20% Doctor's, 57.14% nursing staff and 33.33% other staff agreed that the ideal order or production frequency calculated on a regular basis. Auditing inventory must verify not only the amount of inventory but also its quality and condition to see whether the value of the inventory is fairly represented in financial records and statements.

## CONCLUSION

The conclusions drawn from the study are as follows:

1. In the present study, it showed that the 100% doctors opinion was yes to all inventories receiving & distributing order are completely prepared & recorded on timely basis while opinion from 71.42% nurses was no.
2. 100% doctors are receiving, issuing, accounting and storing adequately segregated inventories while 7.14% nursing staff and 6.66% other staff are not receiving, issuing, accounting and storing proper segregated inventories.
3. In this study showed that the 85.72% nursing staff are aware about the inventory management software. Highly trained inventory management software will help to maintain data accurately, to save time and effort.

4. Inventory management has to do with keeping accurate records of medical & non-medical inventories that are ready for distribution.
5. The study concludes that long time taken for processing inventory distribution, that include delay in the procurement of inventories, frequent stock, poor inventory management.

## RECOMMENDATION

### Recommendations by researcher:

1. To maintain a record of product details for each item in inventory.
2. The physically present inventory and the inventory software status maintained should tally.
3. The delivery patterns of the suppliers should be tracked to avoid unnecessary delays in the supplies and root cause for the same should also be ruled out.
4. The inventory management software should be made accessible to other staff so that they can also keep a track of available inventories.
5. Store department can maintain focus by using tools like purchase order systems and mobile scanners.
6. Create a proper framework for HIMS software where only specific users are allowed to update the criteria and such modifications must go through an approval route.
7. Upgradation HIMS for faster speed.
8. Training for staff and in charges for operating HIMS software.
9. With Inventory Management software you can watch and forecast sales. By tracking your inventory, you can anticipate how much inventory you'll need on hand at different times of the year. This prevents you from manufacturing or ordering too much or too little.
10. Highly trained inventory management and high quality software will help to maintain data accurately.
11. All the data that enters the system should have a reliable backup copy and be protected from unauthorised infiltration attempts or possible leakages.

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