

# A Study on the OPD Linen Inventory at Christian Medical College, Vellore

E. Meraclingethciyal<sup>1</sup>, Ruth Mary<sup>2</sup>

<sup>1</sup>MBA, Department of Business Administration, Auxilium College (Autonomous), Vellore

<sup>2</sup>Assistant Professor, Department of Business Administration, Auxilium College (Autonomous), Vellore

## Abstract

The outpatient department (OPD) of Christian Medical College, Vellore's linen management system is evaluated in this paper. CMC, recognized for its superior medical care, maintains strict patient care guidelines. With more than 50 years of experience, the laundry department guarantees immediate distribution of clean linen. Thorough data gathering, which involves observations and interviews, examines current inventory management procedures. There are differences between approved and current linen stocks, according to the research. The main goals of the recommendations are to guarantee proper supply and enhance inventory control. Issues with operations such as overstocking and stockouts are addressed. The study is to improve healthcare quality at CMC, Vellore and optimize resource usage.

**Keywords:** Outpatient Department (OPD), Linen management, Healthcare quality, Patient care, Inventory management, Resource optimization, Overstocking, Stockouts.

## Introduction

Christian Medical College (CMC) is a leading medical institution in India. CMC renowned for its dedication to quality in both healthcare and education. CMC is actively involved in medical research, focusing on meeting regional healthcare needs and supporting international health programs. CMC upholds the standards of excellence and service in the medical industry while glowing as an inspiration of hope and healing.

## Laundry

Department of laundry services has been offering dependable, on-time, less expensive laundry service with the high level of patient care to our institution and surrounding. They are committed to minimize the expenses and increasing the linen life while focusing on cost containment and the optimum use of linen.

## Machineries are

- Washer Extractors- 5
- Two Roller Ironer- 3
- Folding Machine- 2
- Tumble Dryer- 3

The operating philosophy of the Laundry Department are in conformance with the goals and objectives of CMC Hospital that is Excellence in patient care, Excellence in clinical care and Excellence in service.

**Centralized Hospital laundry**

All the linen is processed in the hospital at the centrally located laundry and issued to the user departments.

**Soiled linen**

It includes both dry and wet linen. This includes linen which is used by patients in the wards and also by doctors and nurses in OR.

**Linen condemnation**

Procedure for removing linen from active circulation, which has become unusable due to stains, wear and tear, etc.

**Linen replacement**

New linen is issued by central linen stores in place of linen condemned.

**Departmentalized linen services**

Linen using area has its own supply of linen, which is distinguished by specific marking and is returned by laundry to the specific department after processing.

**Laundry service**

Laundry service must not be simply an adequate service instead it must be a complete linen and laundry service. The task includes sorting, washing, drying, ironing, folding and delivery. The term "Hospital Linen" includes all textiles. Operation theatre linen materials need special care, it has to be washed and sterilized carefully.

**Linen Inventory**

Linen inventory is a systematic record of all the linen products used for patient care, infection control, and everyday operations. Various linen varieties, including bed sheets, pillowcases, blankets, towels, surgical gowns, and curtains, are usually included in this inventory. Strict procedures are followed throughout the collection, sorting, and the washing process of dirty clothing in order to completely eliminate bacteria and viruses and maintain hygienic standards. After that, clean sheets are either properly stored or contributed returned to use.

**Objectives of the study**

- To understand various linen management practices / process followed at OPD, CMC Vellore (Main Campus).
- To identify the existing linen stock and the minimum requirement of each OPD.
- To provide suggestions to improve the service.

**Review of Literature**

**Esther Laurinda Akomaning et al (2024)** described the Upper East Region of Ghana's star-rated hotels' linen care practices were the subject of the investigation. 52 hotel staff members from 24 venues participated in the poll, which revealed that most hotels maintained their own on-site laundry systems without outsourcing. Irons, drying lines, and washing machines were among the laundry supplies

available, however several necessary items were absent. This result recommends better training courses for hotel employees to improve linen care procedures, which will help hotel operations and sustainability. **Gurmeet Singh Sarla (2023)** has stated about the hospital linens, which include a wide range of textiles such as mattresses, pillowcases, blankets, bed sheets, towels, curtains, screens, and aprons, are vital elements of healthcare facilities. Hospital laundry services require handling linens stained with bodily fluids, their environmental effects differ from those of the hospitality industry. Hospitals typically use a white color scheme to represent peace and cleanliness, with the intentional use of green to help detect blood stains.

**Geraldine G. Nerona et al., (2023)** determined that the Cadet Mess Supply Room at the Philippine Military Academy (PMA) was challenged by issues such as inadequate inventory control, disorder, and concerns regarding safety. A methodical strategy was used to solve these problems through case study analysis. Significant progress was made as a result of these efforts, and functioning evaluations went from "moderately satisfactory" to "excellent" and "very satisfactory". While 5S methods encouraged neatness and order, the new arrangement enhanced productivity.

**Hamid Fraz Rao et al (2023)** stated that the leading materials manufacturer Gul Ahmed encountered major challenges with inventory control, including overuse of fabric and garment rejections throughout manufacturing, which resulted in excess inventory and warehouse space shortages. The case study emphasizes how important it is to prepare ahead in order to avoid inventory-related problems down the path. It emphasizes how, in order to optimize processes, patterns of raw material usage must be examined and corrected. Gul Ahmed wants to strengthen its position in the textile business while moving past its inventory management challenges with strategic planning and execution.

**Hendi Hendi and She Lee Susanti (2023)** stated that the moment, Center Laundry uses documents with handwriting, which are inaccurate and make it difficult for the owner to assess the company's financial situation. The primary objective of this method is to help the owner manage their cash more skillfully. Creating accurate and thorough financial reports that include trial balance, statement of financial status, purchases, sales, remaining inventory, and profit and loss is the ultimate objective. The goal of this project is to improve Center Laundry's operational effectiveness and financial management capabilities by improving its financial monitoring and decision-making procedures.

## Research Methodology

Research Methodology is to investigate research questions or test hypotheses, quantitative or qualitative data must be gathered, analysed, and interpreted using a systematic, scientific procedure known as research methodology.

### Data collection

#### Primary data

Data collected through cross checking the linen to find out the current inventory.

#### Secondary data

Data that is gathered by a party other than the primary user is referred to as secondary data.

## Research Design

The overall methodology or plan for carrying out a research study is referred to as the research design.

### Descriptive Research Design

A population, circumstance, or phenomena is to be precisely and methodically described through descriptive study.

### Sample Design

A defined strategy for selecting a sample from a specific population is known as a sample design. A sample is a subset of the entire population or universe. This study focuses will utilize a selective sampling strategy to choose a broad group of nurses with varying departments and degrees of expertise.

### Tool used for data collection

- Interview method
- Observation method
- Data analysis

### Data Analysis and Interpretation

#### Stock of OPD block Basement and Ground floor

The overall Linen stock in OPD block basement and Ground floor. It contains two department.

**Table 4.1 OPD block Basement and Ground floor**

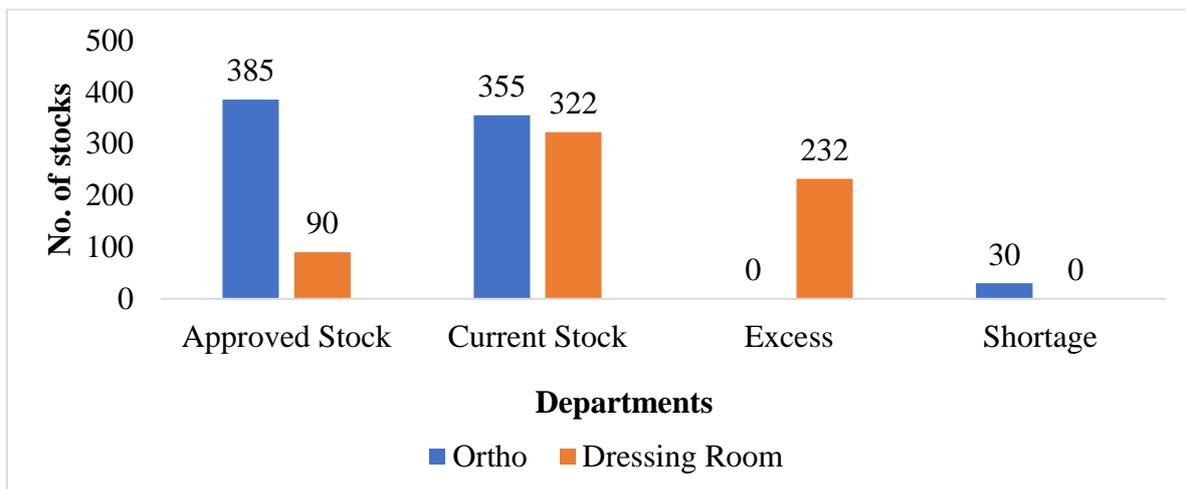
Departments	Approved Stock	Current Stock	Excess	Shortage
Ortho	385	355	0	30
Dressing Room	90	322	232	0
<b>Total</b>	<b>475</b>	<b>677</b>	<b>232</b>	<b>30</b>
		<b>202</b>	<b>202</b>	

Source: Primary data

#### Interpretation

From the above table 4.1 shows the overall stocks in OPD block Basement and Ground floor. It involves Ortho and Dressing Room. Approved stock is 775, Current stock is 747, 67 excess of stock and 67 shortage of stock.

**Chart 4.1 OPD block Basement and Ground floor**



**Stock of OPD block First floor**

The overall Linen stock in OPD block First floor. It contains Five departments.

**Table 4.2 OPD block First floor**

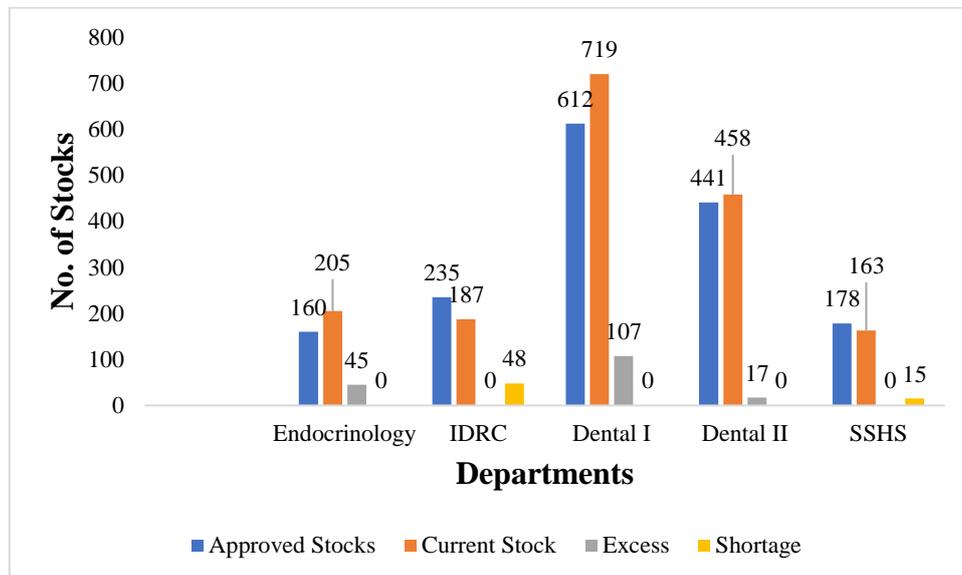
Departments	Approved Stock	Current Stock	Excess	Shortage
Endocrinology	160	205	45	0
IDRC	235	187	0	48
Dental I	612	719	107	0
Dental II	441	458	17	0
SSHS	178	163	0	15
<b>Total</b>	<b>1626</b>	<b>1732</b>	<b>169</b>	<b>63</b>
	<b>106</b>		<b>106</b>	

Source: Primary data

**Interpretation**

From the above table 4.2 shows the overall stocks in OPD block First floor. It involves Endocrinology, IDRC, Dental I, Dental II and SSHS. Approved stock is 1626, Current stock is 1663, 194 excess of stock and 134 shortage of stock.

**Chart 4.2 OPD block First floor**



**Stock of OPD block Second floor**

The overall Linen stock in OPD block Second floor. It contains two departments.

**Table 4.3 OPD block Second floor**

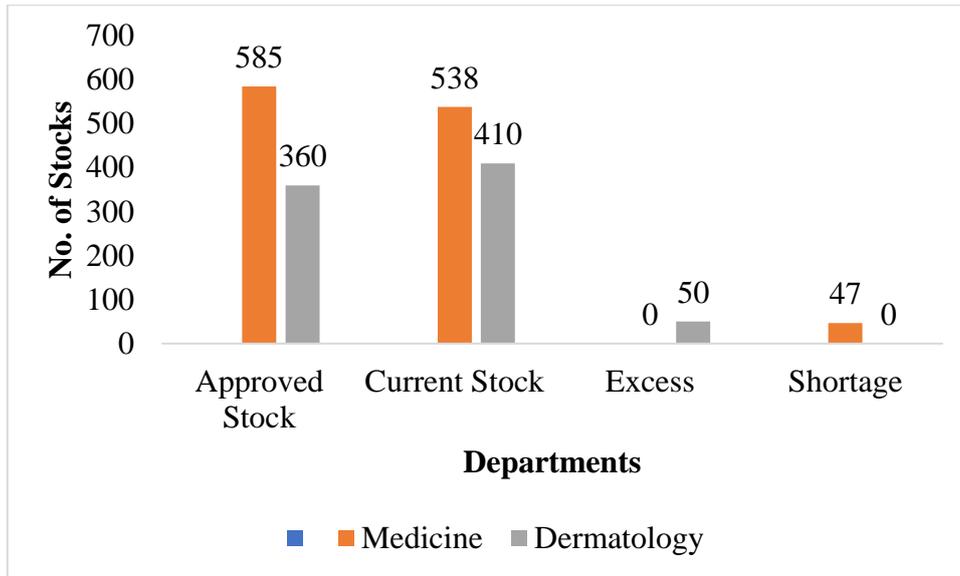
Departments	Approved Stock	Current Stock	Excess	Shortage
Medicine	585	538	0	47
Dermatology	360	410	50	0
<b>Total</b>	<b>945</b>	<b>948</b>	<b>50</b>	<b>47</b>
	<b>03</b>		<b>03</b>	

**Source:** Primary data

**Interpretation**

From the above table 4.3 shows the overall stocks in OPD block Second floor. It involves Medicine and Dermatology. Approved stock is 1135, Current stock is 951, 46 excess of stock and 230 shortage of stock.

**Chart 4.3 OPD block Second floor**



**Stock of OPD block Third floor**

The overall Linen stock in OPD block Third floor. It contains six departments.

**Table 4.4 OPD block Third floor**

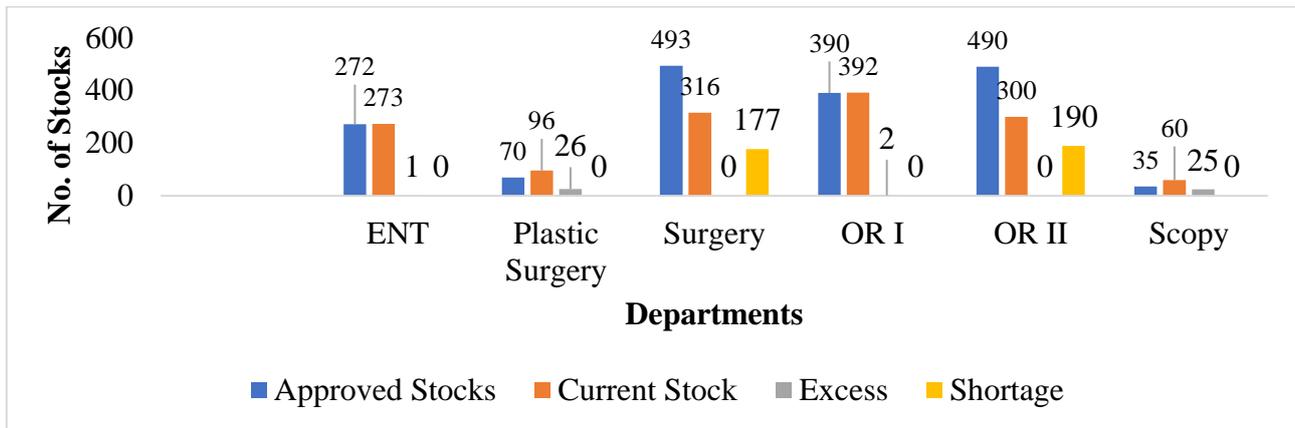
DEPARTMENTS	Approved Stock	Current Stock	Excess	Shortage
ENT	272	273	01	0
Plastic Surgery	70	96	26	0
Surgery	493	316	0	177
OR I	390	392	02	0
OR II	490	300	0	190
Scopy	35	60	25	0
<b>Total</b>	<b>1750</b>	<b>1437</b>	<b>54</b>	<b>367</b>
	<b>313</b>		<b>313</b>	

**Source:** Primary data

**Interpretation**

From the above table 4.4 shows the overall stocks in OPD block Third floor. It involves ENT, Surgery, Plastic Surgery, OR I, OR II and Scopy. Approved stock is 1710, Current stock is 1318, 159 excess of stock and 471 shortage of stock.

**Chart 4.4 OPD block Third floor**



**Other Blocks**

The overall Linen stock in Other blocks. It contains six departments

**Table 4.5 Other Blocks**

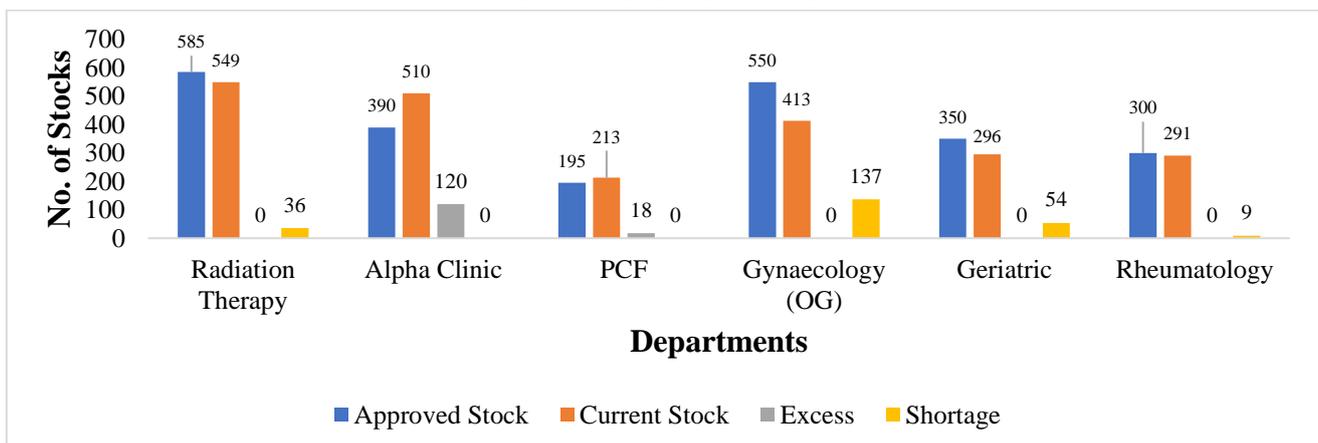
DEPARTMENTS	Approved Stock	Current Stock	Excess	Shortage
Radiation Therapy	585	549	0	36
Alpha Clinic	390	510	120	0
PCF	195	213	18	0
Gynaecology (OG)	550	413	0	137
Geriatric	350	296	0	54
Rheumatology	300	291	0	09
<b>Total</b>	<b>2370</b>	<b>2272</b>	<b>138</b>	<b>236</b>
		<b>98</b>		<b>98</b>

Source: Primary data

**Interpretation**

From the above table 4.5 shows the overall stocks in Other blocks. It involves RT, Alpha Clinic, PCF, Obstetrics and Gynaecology, Geriatric, Rheumatology. Approved stock is 2370, Current stock is 2272, 198 excess of stock and 216 shortage of stock.

**Chart 4.5 Other Bocks**



**Stock in Ortho OPD**

Items used: Blue sheets, Hand towel, Pillowcase.

Frequently used items: Blue sheets, Hand towel, Pillowcase.

35 beds are there and each bed needs 1 pillowcase, 1 sheets and 1 towel.

**Table 4.6 Excess or Shortage of stock in Ortho**

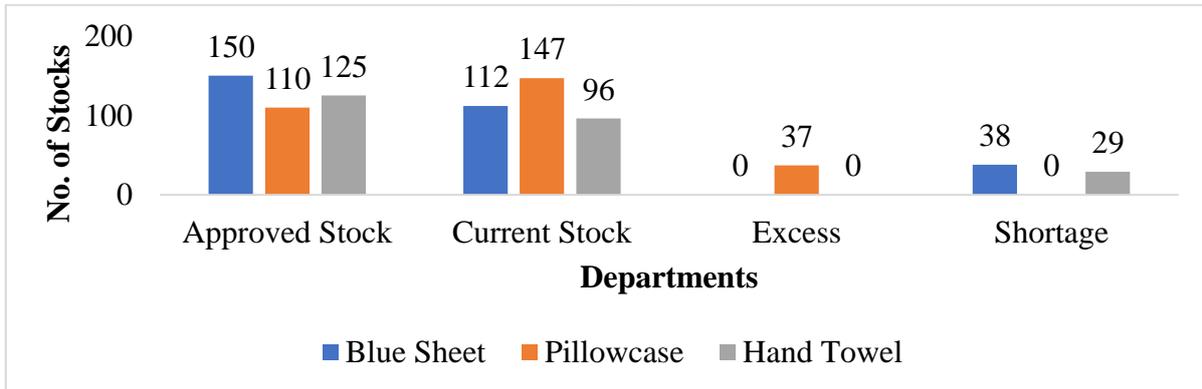
Items	Approved Stock	Current Stock	Excess	Shortage
Blue Sheet	150	112	0	38
Pillowcase	110	147	37	0
Hand Towel	125	96	0	29
<b>Total</b>	<b>385</b>	<b>355</b>	<b>37</b>	<b>67</b>

Source: Primary data

**Interpretation**

From the above table 4.6 it is observed that 38 shortage in Blue Sheet, 37 excess in Pillowcase, 29 shortage in Hand Towel.

**Chart 4.6 Excess or Shortage of stock in Ortho OPD**



**Stock in Dressing Room**

Items used: Blue sheets, Hand towel, Pillowcase.

Frequently used items: Blue sheets, Hand towel, Pillowcase.

04 beds are there and each bed needs 1 Pillowcase, 1 Sheets and 1 Towel.

**Table 4.7 Excess or Shortage of stock in Dressing Room**

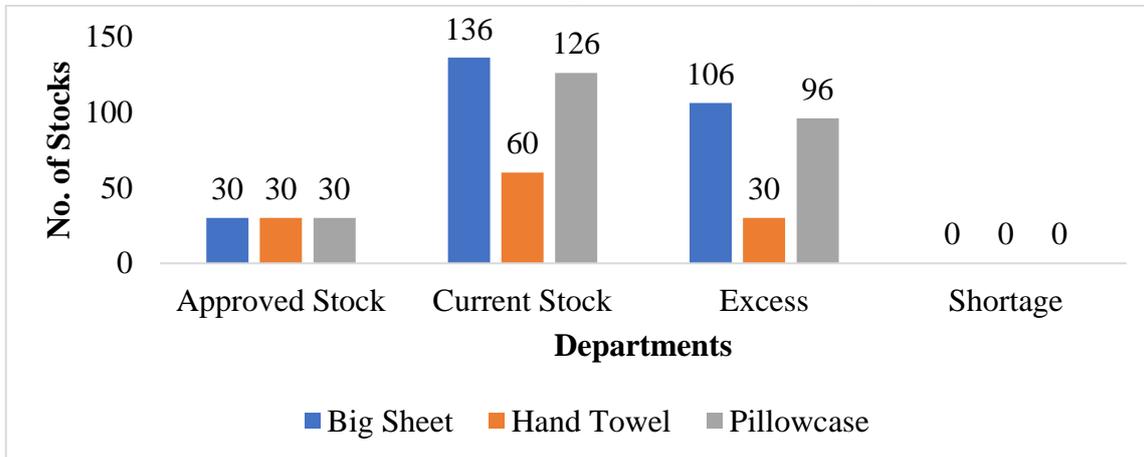
Items	Approved Stock	Current Stock	Excess	Shortage
Big Sheet	30	136	106	0
Hand Towel	30	60	30	0
Pillowcase	30	126	96	0
<b>Total</b>	<b>90</b>	<b>322</b>	<b>232</b>	<b>0</b>

Source: Primary data

**Interpretation**

From the above table 4.7 it is observed that 106 excess in Blue Sheet, 30 excess in Hand Towel, 96 excess in Pillowcase.

**Chart 4.7 Excess or Shortage of stock in Dressing Room**



**Stock in Endocrinology OPD**

Items used: Blue sheets, Hand towel, Pillowcase.

Frequently used items: Blue sheets, Hand towel, Pillowcase.

10 beds are there and each bed needs 1 pillowcase, 2 sheets and 1 towel.

**Table 4.8 Excess or Shortage of stock in Endocrinology**

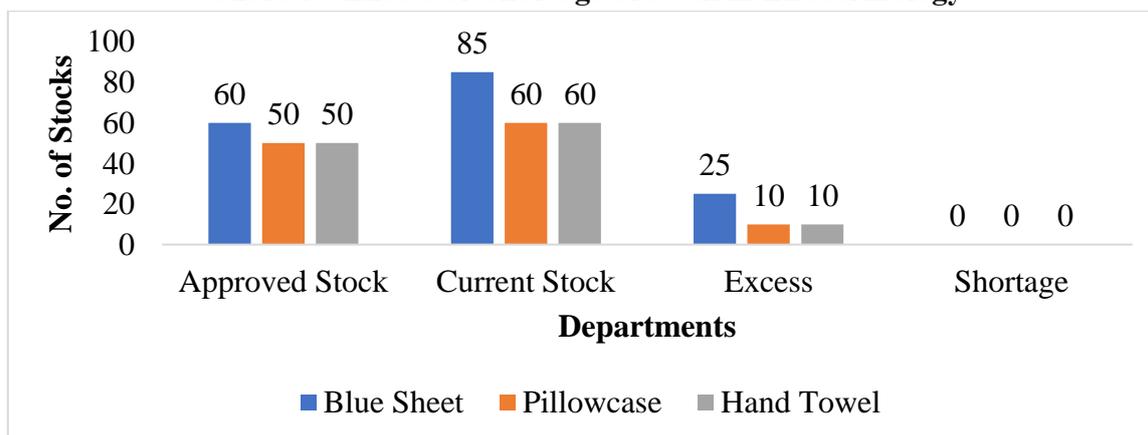
Items	Approved Stock	Current Stock	Excess	Shortage
Blue Sheet	60	85	25	0
Pillowcase	50	60	10	0
Hand Towel	50	60	10	0
<b>Total</b>	<b>160</b>	<b>205</b>	<b>45</b>	<b>0</b>

Source: Primary data

**Interpretation**

From the above table 4.8 it is observed that 25 excess in Blue sheets, 10 excess in Pillowcase and 10 excess in Hand Towel.

**Chart 4.8 Excess or Shortage of stock in Endocrinology**



**Stock in IDRC**

Items used: Blue sheets, Hand towel, Pillowcase.

Frequently used items: Blue sheets, Hand towel, Pillowcase.

10 beds are there and each bed needs 1 pillowcase, 2 sheets and 1 towel.

**Table 4.9 Excess or Shortage of stock in IDRC**

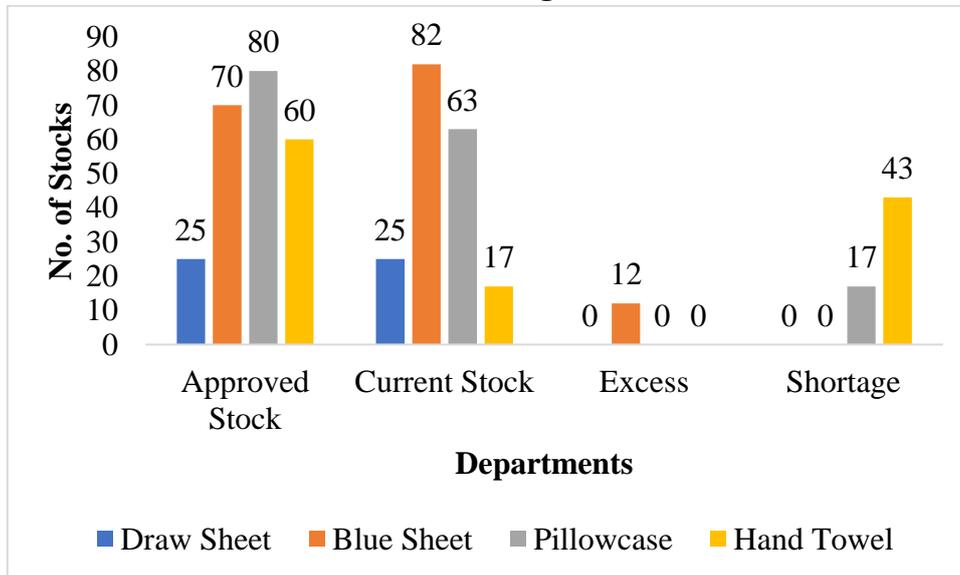
Items	Approved Stock	Current Stock	Excess	Shortage
Draw Sheet	25	25	0	0
Blue Sheet	70	82	12	0
Pillowcase	80	63	0	17
Hand Towel	60	17	0	43
<b>Total</b>	<b>235</b>	<b>187</b>	<b>12</b>	<b>60</b>

**Source:** Primary data

**Interpretation**

From the above table 4.9 it is observed that there is no excess or shortage in Draw Sheet, 12 excess in Blue sheets, 17 shortage in Pillowcase and 43 shortage in Hand Towel.

**Chart 4.9 Excess or Shortage of stock in IDRC**



**Stock in Dental I**

Items used: General sheets, Green towel, Bath towel, Pillowcase.

Frequently used items: Green towel, Bath towel .

06 beds are there and each bed needs 04 or 07 Green towel, 01 Bath towel.

**Table 4.10 Excess or Shortage of stock in Dental I**

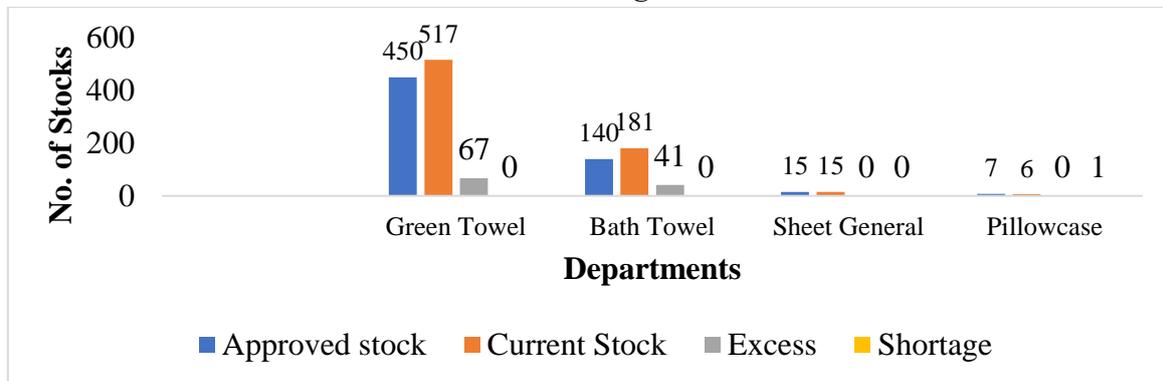
Items	Approved Stock	Current Stock	Excess	Shortage
Green Towel	450	517	67	0
Bath Towel	140	181	41	0
Sheet General	15	15	0	0
Pillowcase	07	06	0	01
<b>Total</b>	<b>612</b>	<b>719</b>	<b>108</b>	<b>01</b>

Source: Primary data

**Interpretation**

From the above table 4.10 it is observed that 67 excess in Green Towel, 41 excess in Bath Towel, there is no excess or shortage in Sheet and 01 shortage in Pillowcase.

**Chart 4.10 Excess or Shortage of stock in Dental I**



**Findings**

- **Overall Stock Levels:** There are fluctuations in stock levels across different floors and departments, with both excess and shortage observed.
- **Ortho Department:** Having an shortages in blue sheets and hand towels, and an excess of pillowcases.
- **Dressing Room:** Getting excesses in blue sheets, hand towels, and pillowcases.
- **Endocrinology and IDRC:** Receiving excesses in blue sheets, pillowcases, and hand towels, along with shortages in pillowcases and hand towels.
- **Dental I and Dental II:** Getting an excess of green towels, bath towels, and shortages in pillowcases.
- **SSHS:** There is a shortage of patient towels and pillowcases.
- **Medicine and Dermatology:** Experiencing shortages in big sheets, pillowcases, and excesses in hand towels.
- **ENT and Surgery:** Having a mix of shortages and excesses in various items like blue sheets, pillowcases, surgical towels, and draw sheets.
- **Plastic Surgery:** Getting excesses in big sheets and towels, along with a shortage of pillowcases.
- **OR I and OR II:** There is a shortages in patient gowns, pillowcases, and green towels.
- **Scopy:** Receiving excesses in pillowcases and draw sheets, with shortages in blue sheets and hand towels.

- **RT OPD, Alpha Clinic, PCF, OG, Geriatric, Rheumatology:** Having a mix of excesses and shortages in various items like sheets, pillowcases, hand towels, and draw sheets.

### Suggestions

- Introduce inventory management software to improve tracking and ordering efficiency.
- Create clear communication channels between departments for stock sharing and redistribution as needed.
- Train staff on proper inventory management practices to reduce errors and discrepancies.
- Regularly review stock levels and usage patterns to identify trends and make informed decisions for ordering and stocking.

### Conclusion

The study found that in order to make sure a sufficient supply of linens for patient care, healthcare facilities must have effective inventory management systems. It emphasized that in order to prevent shortages or excess supply, inventory records must be regularly checked and updated.

I learned more about the difficulties in analysing consumption trends, storing OPD linen inventory properly, and simplifying the buying procedure through this study. Additionally, I studied the effects of efficient inventory control on overall hospital operations, including reduced costs and better patient outcomes.

All things considered, our experience demonstrated how important it is to apply best practices in inventory management to improve productivity and treatment quality in medical facilities such as Christian Medical College, Vellore.

### Reference

1. Akomaning, E. L., Ondigi, A., & Mugambi, R. (2024). Care Strategies of Linen and Guest Satisfaction among Hotels in Upper East Region of Ghana. *Journal of Hospitality and Tourism*, 4(1), 1-18.
2. Sarla, G. S. (2023). Environmental Implications of Hospital Laundry Services. *Toxicology*, 13(2), 39-43p.
3. Nerona, G.G., Bohol, J.R., Decena, K.N.R., Jose, J.N., De Guzman, A.N., Rodriguez, J.C.R., Abiado, K.S.M., Aquino, M.C.O., Antolin, S.N.L., Kalaw, N.I.G., & Paulino, A.C.N. (2023).
4. Rao, H. F., Shah, R., & Rehman, F. (2023). From Fabric Consumption to Warehouse Optimization: Unravelling the Strategic Journey of Gul Ahmed. *International Journal of Trends and Innovations in Business & Social Sciences*, 1(2), 56-59.
5. Hendi, H., & Susanti, S. L. (2023, March). Designing an Accounting Recording System Using the Microsoft Access Application at the Center Laundry. In *Concept-Conference on Community Engagement Project* (Vol. 3, No. 1, pp. 748-756).