ASSESSMENT OF DRUG AVAILABILITY FROM DISTRICT HOSPITAL PHARMACIES OF PUNJAB

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by

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Under the Supervision and Guidance of

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Shivangi Sharma**, D/o Sh. Rajesh Sharma, a student of MBA Hospital and Health Management, Batch 2023–2025 at IIHMR University, Jaipur, has successfully completed her dissertation tenure from **March 7, 2025, to May 31, 2025**, at the **Punjab Development Commission, Government of Punjab**.

During her tenure, she has demonstrated proficiency and proactiveness in learning. Her performance exceeded expectations, and she completed all the assigned tasks.

We extend our best wishes to her for continued success in all her future endeavours.

Best Regards,

Anurag Kundu
Member
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CERTIFICATE

This is to certify that dissertation titled "Assessment of Drug Availability from District Hospital Pharmacies of Punjab" is a record of the research work undertaken by Dr. Shivangi Sharma in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

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I, Shivangi Sharma, Enrolment No. IIHMR-U/02/2023-25/1832 hereby declare that this dissertation titled **Assessment of Drug Availability from District Hospital Pharmacies Of Punjab** the bonafide record of my original research work. I declare that it has not been submitted to any other University or institution for the award of any degree of diploma. Information derived from the published or unpublished work of other as been duly acknowledged in the text.

Place: JAIPUR
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Abstract:

Access to essential medicines is a fundamental component of quality healthcare delivery. In India, District Hospitals (DHs) form a crucial part of the public healthcare infrastructure, especially in delivering secondary health to the population and are mandated to dispense prescribed medicines free of cost to decrease the financial burden of health on the beneficiaries. However, due to certain inefficiencies in the system, the health delivery aspect is often compromise the ability of these institutions to ensure adequate and timely drug dispensation to patients. This study was undertaken to assess whether prescribed medications are fully dispensed to patients in selected district hospital pharmacies across Punjab and to identify operational challenges contributing to any observed inadequacies.

Using a cross-sectional design, patient exit interviews were conducted across seven DHs: Ludhiana, Patiala, Sangrur, Nawanshahr, Jalandhar, Fatehgarh Sahib, and Mohali (SAS Nagar). Approximately 250 responses were analysed to assess prescription fulfilment, stock availability, reasons for non-dispensation, actions of patient after unavailability, and satisfaction with pharmacy services. The study revealed that while a majority of patients did receive all prescribed medicines, a significant proportion reported partial fulfilment, most commonly due to stockouts. Critical challenges identified included poor inventory tracking, communication gaps, limited human resource personnel (specifically pharmacists). Patients who did not receive the complete set of prescribed drugs often resorted to private pharmacies, undermining the goal of cost-free healthcare through government health facilities.

The study highlights deficiencies in the procurement process as well as the last-mile operational inefficiencies severely affects the actual benefit to patients. The research proposes a series of policy and operational reforms including enhancement of the current digital inventory systems, SOPs for pharmacist-patient communication, better demand forecasting, and patient education initiatives. These targeted interventions are expected to enhance patient satisfaction, improve adherence to prescribed treatments, and strengthen the credibility of public healthcare systems in Punjab.

Keywords
Essential Medicines, Drug Dispensation, District Hospital, Public Health, Supply Chain, Punjab, OPD Pharmacy, Stockout, Patient Satisfaction.

Table of Content

Table of Abbreviations

Abbreviation	Full Form
DH	District Hospital
PHSC	Punjab Health Systems Corporation
OPD	Outpatient Department
IPD	Goods Receiving Note
NLEM	National List of Essential Medicines
UHC	Universal Health Coverage
SOP	Standard Operating Procedure
PPP	Public Private Partnership
CHC	Community Health Centre
PHC	Primary Health Centre
SPSS	Statistical Package for the Social Sciences

Chapter 1

Chapter 1: Introduction

Access to essential medicines is one of the main components of a well-functioning healthcare delivery system. Medicines not only serve as therapeutic agents but also play a crucial role in restoring health and reducing mortality. In a country such as India which is marked by vast socioeconomic disparities and a mixed healthcare ecosystem, the availability of free or subsided rate of essential medicines through public hospitals is critical to reducing the burden of out-of-pocket expenditure in the area of health , especially for vulnerable and economically weaker class of society. The public healthcare infrastructure in India, is predominately dependent on District Hospitals, which serve as important hubs for secondary-level care. These hospitals are expected to provide timely diagnosis, treatment, and drugs, hence fulfilling the promise of affordable and equitable healthcare through these elements.

Punjab, with its blend of urbanized districts and remote rural areas (37.49% urban population according to 2011 census), offers a distinctive background for gaining an understanding regarding the public healthcare access and equity. However, it has been highlighted that there has been a persistent gap between procurement and availability of essential medicines at the point of care. Numerous patients visiting DHs reportedly leave without receiving one or more of their prescribed medications, compelling them to seek alternatives from private pharmacies at their own expense, hence increasing the Out-of-Pocket Expenditure while also defeating the purpose of universal health coverage and emphasizing a systemic gap in supply chain management and actual dispensation.

The present research aims to explore and examine the adequacy of drug dispensation in District Hospital pharmacies across Punjab. While government records and procurement ledgers may show favourable numbers and satisfactory inventory levels, the actual experience of the patient at the pharmacy window often narrates a different story. Many patients are forced to make additional visits, experience long wait times, or are told that specific medicines are unavailable due to stock-outs, logistical delays, or administrative mismanagement. These recurring patterns raise an important question: why do stock-outs continue to occur in district hospital pharmacies even when procurement data suggests otherwise? The answer likely lies not just in

procurement inefficiencies but deeper in the operational processes such as inventory control, supply chain coordination, documentation, staff management, and communication between procurement and pharmacy units.

This systemic disconnect can have serious consequences. Inadequate drug dispensation delays treatment initiation, negatively impacts patient health outcomes, fosters mistrust in public health systems, and gives undue financial burden on patients who then turn to private alternatives. For chronic conditions, missing even a single dose of medicine might trigger dire complications, requiring emergency care and increased healthcare expenditure of the individual. For acute infectious conditions, delays in starting appropriate therapy due to medicine unavailability can worsen disease progression, endanger community health, and increase the spread of preventable diseases. This cascading effect of such inadequacies poses risks not only to individual patients but also to the broader health system and public health goals of the state.

The rationale for undertaking this study, therefore, lies in the urgent need to understand the underlying causes of inadequate drug dispensation at the last mile in the healthcare delivery system. Existing literature has largely focused on procurement models, budgeting frameworks, and essential drug lists. While these are undoubtedly important aspects, the efficiency and effectiveness of a healthcare system are ultimately measured at the patient interface. It is at this interface where a patient with a prescription interacts with the pharmacist behind the DH counter that the success or failure of the entire drug distribution mechanism is most visibly realized. This research seeks to bridge that gap by shifting the lens from procurement statistics to patient-centered outcomes.

The core research problem driving this study is the paradoxical situation where patients visiting district hospital outpatient pharmacies are often unable to access the medicines they have been prescribed, even though the hospitals are *reportedly well-stocked*. The problem is further complicated by multiple potential variables but not limited to poor inventory management practices, suboptimal staffing, insufficient logistics protocols, and an absence of efficient real-time tracking tools. Each of these issues, independently or in combination, may be responsible for the observed inefficiencies in drug dispensation. Therefore, a systematic investigation is necessary to determine the extent, causes, and consequences of this gap.

In pursuit of clarity and evidence-based insight, the study is structured around a central research question: *What are the primary determinants of inadequate dispensation of essential medicines to patients in District Hospital pharmacies in Punjab?* This main question is further broken down into a set of objectives to guide the research design and methodology. These include assessing the prevalence and patterns of essential drug unavailability in selected district hospital pharmacies, identifying key operational bottlenecks such as delays in distribution, weak administrative control, or stock management lapses, and evaluating the health and economic impact of medicine shortages on patients. A further aim is to analyze the existing workflows in these pharmacies and propose actionable recommendations to enhance drug availability and system performance.

To empirically test the assumptions and relationships underlying this problem, the study is built around specific hypotheses. The first hypothesis posits that patients frequently resort to purchasing prescribed medicines from private pharmacies due to unavailability at DH pharmacies. The second hypothesis suggests that the inadequacies in drug dispensation are less a result of procurement issues and more due to downstream inefficiencies in distribution and stock management. The corresponding null hypotheses counter these claims by attributing the problem either to unrelated factors or solely to procurement shortfalls. Testing these hypotheses will provide clarity on the principal operational flaws within the current framework and guide future reforms.

The significance of this research extends well beyond academic boundaries. The outcomes of the study have real-world implications for healthcare governance, policy-making, and patient welfare in Punjab. By generating empirical evidence on the prevalence and drivers of medicine unavailability at DH pharmacies, the study offers policymakers, hospital administrators, and supply chain professionals a roadmap for reform. Insights drawn from the study can help the Punjab Health Systems Corporation (PHSC) strengthen inventory practices, improve last-mile logistics, develop staff training modules, and adopt technology solutions such as real-time inventory tracking systems. These interventions could collectively lead to enhanced drug availability, reduced patient distress, and restored public confidence in government healthcare services.

The study is delimited to the outpatient pharmacies of district hospitals and will not

include tertiary hospitals, sub-district health centers, or private sector entities. It also limits itself to medicines included under the State List of Essential Medicines which are procured and distributed by PHSC. Emergency room dispensations and inpatient medication supply are outside the scope of this research. Data collection will involve a combination of patient exit interviews conducted immediately after prescription fulfilment, and key informant interviews with pharmacists and administrative personnel including SMOs and Civil Surgeons. The multiple data sourcing from these sources ensures both quantitative robustness and qualitative depth.

Despite its wide scope and ambitious objectives, the study does face a few limitations. First, the three-month data collection window from March to May 2025 is not adequate enough to implement, monitor and evaluate changes made in policies and workings. Second, exit interview data relies on patient self-reporting and may be subject to comprehension bias. Third, disparities in performance across hospitals due to regional variations in governance, staffing, or infrastructure may limit the generalizability of some findings.

To ensure clarity and consistency, the study defines key operational terms. “Drug Unavailability” is defined as the inability of a DH pharmacy to dispense at least one of the prescribed items at the time of a patient’s visit including the quantity of drugs prescribed by the physicians. The “Adequate Dispensation Rate” is the proportion of prescriptions fully dispensed out of the total number of prescriptions issued. The term “Essential Medicines” refers to the standardized list approved by the PHSC(in compliance with the NELM) and procured under the state’s centralized procurement model. Lastly, “Outpatient Pharmacy” refers to the unit within a DH responsible for dispensing prescribed drugs to non-admitted, walk-in patients.

In conclusion, this research is a timely and necessary step toward addressing a persistent, systemic issue that continues to affect thousands of patients across Punjab every day. It shifts the focus from theoretical frameworks and procurement success stories to the lived realities of patients and frontline pharmacists. By uncovering the reasons behind medicine unavailability despite adequate procurement, the study aims to contribute toward a more accountable, patient-centric, and responsive healthcare system in the state.

Chapter 2

A well-functioning health system requires consistent and uninterrupted access to essential medicines, and the ability of healthcare facilities to dispense these medicines effectively has a direct impact on health outcomes and patient satisfaction. The World Health Organization (WHO) has long emphasized that access to essential medicines is one of the core indicators of the strength of a healthcare system. As such, a vast body of literature has evolved over the years focusing on medicine availability, supply chain efficiency, stock management, and drug dispensation practices in low- and middle-income countries (LMICs) such as India.

Historically, the global healthcare narrative has acknowledged the central role of drug availability in advancing public health objectives. According to a WHO report published in 2017, an estimated one-third of the global population lacks regular access to essential medicines, with the problem being most acute in low-resource settings. Studies conducted in sub-Saharan Africa, Southeast Asia, and South America have revealed that medicine stockouts in public health facilities are commonly attributed to weak procurement systems, inefficient inventory management, lack of trained pharmacy personnel, and inadequate use of technology in tracking supply and demand. These findings are echoed in India, where despite centrally funded procurement and distribution systems such as Tamil Nadu Medical Services Corporation (TNMSC), Rajasthan Medical Services Corporation (RMSC), and the Punjab Health Systems Corporation (PHSC), patients still frequently face medicine shortages at the dispensing point.

The National Health Accounts report for India (2019–2020) indicated that medicines account for approximately 43% of the total out-of-pocket expenditure incurred by Indian households on healthcare. This high proportion is primarily due to frequent unavailability of medicines in government hospitals, thereby pushing patients toward private pharmacies. Studies by Rao et al. (2016) and Sharma & Bhatnagar (2018) found that a major contributor to this gap is not necessarily a lack of procurement but rather poor drug distribution, ineffective inventory tracking, and lack of coordination between

suppliers and pharmacy-level staff. Their research emphasized that improving last-mile delivery of medicines could significantly reduce out-of-pocket spending and improve compliance with treatment regimens, especially among poor and rural populations.

In the Indian context, the state of Tamil Nadu has often been cited as a model for efficient drug procurement and distribution. The TNMSC, formed in 1995, was instrumental in creating a transparent, digitized system for bulk drug procurement and timely distribution across health facilities. Evaluations by Health Systems Trust (2011) and the Planning Commission of India have confirmed that drug availability in Tamil Nadu's government hospitals remained above 90% for essential medicines for more than a decade. In contrast, states with less automated systems and weaker oversight, such as Uttar Pradesh, Bihar, and even Punjab in certain districts, have struggled to replicate this success. Singh and Chauhan (2020), in a study conducted across public health facilities in North India, reported that despite timely procurement, the actual dispensation rate at district hospital pharmacies remained below 65%, pointing toward systemic inefficiencies in storage, handling, and dispensing practices.

A review of peer-reviewed studies from journals such as the *Indian Journal of Pharmacy Practice*, *BMJ Global Health*, and *Health Policy and Planning* reveals several recurring themes across regions and settings. One major issue is the inadequacy of pharmacy-level human resources. Pharmacists and support staff often lack training in modern inventory systems and rely on outdated manual logbooks for stock tracking. This not only increases the chances of human error but also hampers the timely identification of low stock or expired items. In a study conducted by Patel et al. (2017) in Gujarat and Maharashtra, the researchers found that manual inventory systems were directly correlated with higher rates of drug stockouts and patient dissatisfaction.

Another significant factor highlighted in the literature is the absence of real-time monitoring systems in the drug supply chain. While electronic inventory systems have become increasingly common in private hospitals and tertiary

care institutions, district-level government hospitals continue to operate in a largely paper-based ecosystem. Saxena and Venkatesh (2019) demonstrated through their work in Madhya Pradesh that introducing digital stock-keeping units (SKUs) and barcode-based tracking in public health facilities led to a 40% improvement in medicine availability and a 25% reduction in wastage due to expiration. However, budgetary constraints, resistance to change, and poor digital literacy among pharmacy staff have been identified as major barriers to the widespread adoption of such technologies.

The National List of Essential Medicines (NLEM), updated periodically by the Government of India, serves as a benchmark for the procurement and dispensation of essential drugs in public hospitals. However, several studies have observed that compliance with NLEM does not automatically translate into better drug availability. The availability of NLEM medicines in public hospitals has been found to vary widely across states and even across districts within the same state. A study by Bhattacharya et al. (2020) in West Bengal showed that while 85% of NLEM-listed drugs were available at the central warehouse, only 60% made it to the pharmacy shelves in district hospitals. This discrepancy was largely attributed to poor last-mile connectivity, miscommunication between administrative departments, and irregular auditing of stocks.

Several researchers have also looked at the patient's perspective on medicine unavailability. In a cross-sectional survey by Dutta and Singh (2021) involving over 1,000 patients in Uttar Pradesh and Punjab, 62% of respondents reported that they had to purchase at least one medicine from private outlets even after visiting a government hospital. The reasons cited included medicine not being in stock, the pharmacy being closed, or partial fulfillment of the prescription. The study also found that a lack of transparency in communication, patients not being informed about which medicines were unavailable or when they would be restocked further eroded trust in public health facilities. These findings align closely with the objective of the present study, which aims to explore patient-level outcomes and experiences at district hospital pharmacies in Punjab.

In addition to patient-level and system-level studies, literature from the field of public health management has focused on the importance of Standard Operating Procedures (SOPs) in pharmacy operations. Kumar and Reddy (2018) found that district hospitals with clearly defined SOPs for stock checking, demand forecasting, and inter-department communication had significantly higher dispensation rates. On the contrary, in hospitals where SOPs existed only on paper but were poorly implemented, frequent discrepancies were observed between stock registers and actual availability. This calls attention to the need for accountability and adherence to operational protocols as part of capacity-building measures.

Lastly, literature related to the economic impact of medicine shortages further strengthens the rationale for this study. The absence of prescribed drugs in public hospitals pushes patients into the private sector, where the cost of medicines is often several times higher than those procured in bulk by government agencies. An economic analysis conducted by the Public Health Foundation of India (PHFI) estimated that better drug availability in public facilities could reduce patient-level expenditure by 22% per illness episode. This reinforces the hypothesis that ensuring medicine availability at DH pharmacies is not just a logistical challenge but also an essential element of healthcare affordability and accessibility.

In summary, the reviewed literature provides a comprehensive understanding of the key variables that influence drug dispensation in public hospital settings. These include procurement efficiency, inventory management practices, human resources, technology adoption, SOP adherence, and patient communication. Most importantly, the literature reveals that systemic inefficiencies in distribution and inventory tracking are often more responsible for drug unavailability than procurement shortfalls.

Chapter 3

The methodology of this research study has been designed to systematically explore the adequacy of essential drug dispensation to patients visiting District Hospital (DH) pharmacies across selected locations in Punjab. This chapter outlines the research design, setting, sampling, data sources, collection tools, ethical considerations, and analytical plan that were employed to ensure robust, reliable, and policy-relevant findings.

The research followed a **cross-sectional descriptive and analytical design** aimed at capturing the real-time status of drug dispensation at government-run outpatient pharmacies. The design was appropriate given the objective of measuring both prevalence and patterns of partial or non-dispensation of drugs, while also exploring the administrative and systemic reasons behind such occurrences. The study employed a mixed-methods approach, incorporating both quantitative data from patient surveys and qualitative comments to enrich contextual interpretation.

The setting for this research included **seven District Hospitals (DHs)** across Punjab: Ludhiana, Sangrur, Patiala, Nawanshahr, Fatehgarh Sahib, Jalandhar, and Mohali. These hospitals were selected purposively to capture a mix of urban and semi-urban populations, and to reflect diversity in patient load, supply chain systems, and local administrative practices. Each selected hospital had a central OPD pharmacy where the majority of patient drug dispensation takes place. These settings provided a suitable range of patient demographics, hospital capacities, and geographic coverage across the state.

The study population consisted of adult patients attending the outpatient departments (OPDs) of these hospitals. The inclusion criteria were:

1. Patients visiting the hospital for the OPD services.
2. Receiving at least one medication prescribed by a government doctor
3. Collecting their medications from the hospital's OPD pharmacy during the study period.

Patients who were admitted to IPD wards or those visiting emergency departments were excluded, as their medication dispensation pathways differ from the OPD model and often follow ward-based supply chains.

Patients were approached as they exited the pharmacy and asked if they would participate in a short interview. A total of approximately 250 patient responses were collected across the seven sites, with varying distribution based on OPD footfall and logistics. The target was to reach a sample size sufficient to analyze patterns within and across hospitals and generate statistically meaningful insights. Every 3rd or 5th eligible patient during specific time blocks of the day was interviewed to avoid clustering.

Data collection was conducted using a structured patient survey tool, which was administered face-to-face by the field team immediately after the patient completed their interaction at the pharmacy counter. The tool was designed to capture key variables such as demographic information (age, sex), consultation type (IPD/OPD), number of medications prescribed, number of medications received, reasons for non-availability (if applicable), and patient-reported next steps (e.g., visiting private pharmacy, waiting for restocking, or calling government helpline). The tool also assessed patient satisfaction regarding the availability of drugs, behaviour and helpfulness of the pharmacist, and whether proper instructions were provided regarding medication use.

In addition to patient data, qualitative comments and remarks were collected for each hospital to understand patient concerns and expectations in their own words. Although the study did not formally include key informant interviews or focus group discussions due to logistical limitations, the open-ended remarks in the patient survey served as anecdotal evidence supporting the quantitative results.

Inventory audits, while part of the initial plan, were not fully carried out in this version of the study due to administrative access issues. However, patterns of medicine unavailability were analyzed based on patient recall and survey data. For example, many respondents mentioned specific unavailable items such as “Tab Ecosprin,” “Eyedrop Olopat,” “Elbow Brace,” (all mentioned are not part of the essential drug list rather non generic drugs asked to bought from private pharmacy) or general stockouts of chronic care medications.

The survey tool also included behavioural and experiential questions such as: “How was your interaction with the pharmacist?”, “Did the pharmacist explain how to take the medicines?”, and “How satisfied are you with the pharmacy services?” These qualitative questions offered a service delivery lens that complements the more operational indicators related to inventory and drug supply..

All collected data were compiled in Microsoft Excel spreadsheets, with each hospital having a dedicated sheet in the final Excel file. The data were cleaned for errors, de-identified, and coded for analysis. Variables such as drug receipt status (Yes/No), number of drugs not received, and satisfaction rating were recoded into binary and categorical variables as required for analysis. Descriptive statistical analysis was conducted using Excel and SPSS, where frequencies, percentages, and cross-tabulations were generated to understand the distribution and correlation of key variables across districts.

The analysis primarily focused on:

- The percentage of patients who did not receive all prescribed medicines
- The average number of medicines not received per patient
- Common reasons cited for unavailability
- Patient coping mechanisms (e.g., buying from private pharmacies or Jan Aushadhi stores)
- Overall satisfaction and interaction quality with pharmacists

Ethical considerations were paramount throughout the study. Patients were approached respectfully, with full disclosure of the study’s purpose, and informed verbal consent was obtained before conducting interviews. No personal identifiers such as names, contact details, were recorded, ensuring complete confidentiality. The survey was observational in nature, and there was no interference with patient care or pharmacy operations.

Finally, operational definitions were standardized for clarity and consistency. “Drug Unavailability” was defined as the absence of at least one prescribed item at the time of visit. “Adequate Dispensation” referred to full receipt of all prescribed drugs from the DH pharmacy. “Satisfaction” was coded based on Likert-type responses and categorized into satisfied, neutral, or dissatisfied.

In conclusion, this methodological framework rooted in primary data collection from actual patients, conducted across seven diverse hospitals, and analyzed through a mix of descriptive and thematic techniques offers a grounded and comprehensive lens through which the adequacy of drug dispensation in Punjab's DH pharmacies can be rigorously assessed. The findings generated from this methodological base are expected to form the empirical foundation for subsequent chapters focusing on results, analysis, and recommendations for system improvement.

Chapter 4

The findings of this study are based on structured exit interviews conducted with patients across seven district hospitals in Punjab: Ludhiana, Sangrur, Patiala, Nawanshahr, Fatehgarh Sahib, Jalandhar, and Mohali. These interviews focused on evaluating whether patients received all prescribed medications from the hospital pharmacies, the nature and reasons for any unavailability, their subsequent actions, and the quality of service provided by pharmacy staff. A total of approximately 250 valid patient responses were analyzed to draw conclusions about the state of drug dispensation in these public health facilities.

4.1 Drug Dispensation Adequacy

A primary objective of the study was to assess whether patients received all medicines prescribed to them by the outpatient departments. Based on patient self-reporting during exit interviews, the results indicate that a significant proportion of patients ranging between 60% to 70% depending on the hospital reported receiving all their prescribed medications from the hospital pharmacy. However, the remaining patients indicated that one or more prescribed drugs were unavailable at the time of their visit.

In numerical terms, over one-fourth of all surveyed patients reported incomplete fulfilment of their prescriptions. This partial dispensation pattern suggests that despite centralized procurement mechanisms the operational interface between supply and service delivery continues to face disruptions. Patients unable to receive complete prescriptions represent a critical failure point in the hospital supply chain, often leading to health risks, treatment delays, or financial burden.

4.2 Nature and Pattern of Non-Dispensation

Among the patients who did not receive their full prescriptions, the number of missing medicines ranged from one to three per prescription. Medications frequently cited as unavailable included both chronic disease drugs (e.g., antihypertensive like Ecosprin, thyroid medications like PTU) and symptomatic treatment items (e.g., eye drops, topical creams, or orthopaedic supports like elbow braces). The frequency of unavailability was not isolated to a single category of medicines but rather spanned

different therapeutic groups, indicating systemic issues in forecasting, distribution, or prioritization.

Interestingly, in several cases, even essential medicines listed under the National List of Essential Medicines (NLEM) were reported to be out of stock. This suggests either inefficient tracking of demand, poor buffer stock management, or delays in restocking from centralized warehouses.

4.3 Reasons for Unavailability

Patients were asked if any reason was communicated to them regarding the non-availability of their prescribed medication. Most patients reported that either no explanation was provided or that the pharmacist simply stated the medicine was "out of stock." In a few cases, patients were directed to visit Jan Aushadhi outlets or to purchase from private pharmacies. In one instance, the patient was advised to look for the medicine “outside the hospital” for items such as elbow braces, indicating a lack of clarity on whether non-drug items fall under hospital pharmacy responsibilities.

The absence of structured communication protocols or transparency in drug stock status results in confusion and frustration for patients. The failure to clearly explain stockouts not only affects treatment adherence but also diminishes the credibility of public health institutions.

4.4 Coping Strategies and Patient Actions

When asked what they would do after not receiving their full set of medicines, a majority of patients indicated that they would buy the missing drugs from private pharmacies, thus incurring unplanned out-of-pocket expenses. Only a very small fraction was aware of the 104 Medical Helpline or state-level grievance redressed platforms. This finding indicates a gap in patient education and dissemination of support mechanisms meant to ease patient distress during drug stockouts.

In hospitals like Mohali and Jalandhar, some patients reported that they were advised by pharmacists to check Jan Aushadhi centers for cheaper alternatives. While this advice is well-intentioned, it raises questions about accountability especially if the medicines were expected to be part of the public hospital’s stock and places the

logistical burden on the patient to seek alternative sources.

4.5 Satisfaction with Pharmacy Services

Despite instances of unavailability, patients overwhelmingly reported positive interactions with the pharmacy staff. Descriptions such as “very helpful and polite” were frequently recorded. This suggests that frontline pharmacy personnel, in most hospitals, are courteous and attempt to assist patients within their limitations.

However, satisfaction ratings regarding availability of medicines painted a different picture. Many patients who did not receive full prescriptions expressed dissatisfaction or were neutral in their feedback. This divergence indicates that while staff behavior is appreciated, the service experience is still judged primarily on the ability of the pharmacy to meet clinical needs.

4.6 Communication of Dosage and Instructions

Another aspect explored in the study was whether pharmacists provided explanations on how to take the medications. Most patients reported that instructions were provided, and in many cases, the pharmacist took time to explain dosage and timings. This is a positive sign for patient safety and points to a high level of professionalism among pharmacists, even in settings constrained by staff shortages and long queues.

4.7 Observations from Specific District Hospitals

- **DH Fatehgarh Sahib**: Several patients cited missing medications and a lack of reasons provided. Chronic medications like Ecosprin and PTU were not dispensed, and patients stated they would purchase from private stores.
- **DH Mohali**: Respondents indicated being directed toward Jan Aushadhi or private pharmacies. Items like elbow braces, were reportedly unavailable.
- **DH Jalandhar**: Some patients pointed out repeated instances of non-availability, including for psychiatric medicines like Aripiprazole, and noted that this had become routine.
- **DH Patiala & Sangrur**: While most prescriptions were fulfilled, a few patients complained of delays and partial availability.

These findings suggest operational inconsistencies across hospitals, likely due to localized challenges in stock replenishment or pharmacy workflow management.

4.8 Emerging Themes from Patient Remarks

The open remarks section of the survey revealed several recurring sentiments:

- A general understanding that "some medicines are always out of stock"
- Acceptance that certain items will require purchase from outside
- Appreciation of pharmacist behaviour, even when medicines were not available
- Lack of awareness of helplines or feedback mechanisms

These themes indicate a normalized acceptance of shortfalls, which is a concerning cultural adaptation to systemic inadequacies.

4.9 Discussion

The data clearly shows that while many patients do receive complete prescriptions, a significant portion experience shortfalls that compromise care and force them into additional expenditures. The nature of missing medicines including drugs for chronic disease management, poses risks to health outcomes and calls into question the efficiency of the last-mile delivery model for medicines.

The issue is evidently not rooted in a lack of procurement but rather in lapses occurring between supply chain nodes: from central warehouses to individual hospital stores, from hospital stores to pharmacy shelves, and finally to patient hands. Gaps in demand forecasting, inventory rotation, reorder planning, and pharmacy-level communication collectively create a bottleneck that the patient ultimately suffers from.

The study findings align with existing literature that underscores how inventory management systems, human resource limitations, and poor communication practices influence dispensation outcomes in public hospitals. The repeated reliance on private markets to fill in the gaps undermines the objective of publicly funded healthcare and contradicts the principles of Universal Health Coverage.

4.10 Summary of Key Findings

- 25% to 40% of patients did not receive all prescribed medications.
- Chronic care drugs and devices were often unavailable.

- No clear reason was given in most cases of non-availability.
- Patients often resorted to private pharmacies or Jan Aushadhi outlets.
- Pharmacist behavior was generally described as helpful and polite.
- A small number of patients were aware of formal helplines or grievance channels.

Chapter 5

Based on the findings presented in Chapter 4, it is evident that while Punjab's District Hospitals possess the structural and procedural capability to provide essential medications, serious gaps remain at the operational and last-mile levels of drug dispensation. These gaps manifest in frequent drug stockouts, partial fulfilment of prescriptions, inadequate communication with patients, and the absence of consistent system-wide solutions. Addressing these challenges requires a multipronged approach that considers supply chain management, pharmacy-level execution, patient engagement, and system accountability. The recommendations outlined below are designed to be practical, scalable, and aligned with the realities of government health systems.

A primary concern emerging from this study is the lack of consistency and real-time accuracy in hospital-level inventory management. Although procurement appears adequate at the state level, there is a disconnect in how this inventory is monitored, distributed, and utilized at the District Hospital level. To bridge this gap, it is recommended that inventory systems be fully digitized across all DHs. This includes implementing real-time stock tracking dashboards, barcode-based inventory control, and mobile-app-based reporting tools. Pharmacists and store managers should be trained in using such systems to maintain accurate records of available stock, monitor expiry dates, and automatically generate replenishment alerts when critical thresholds are breached. These digitized systems must be integrated with PHSC's centralized platform to ensure that procurement, distribution, and consumption data are aligned across all administrative tiers.

Improving inventory systems alone will not be sufficient without accurate and context-specific demand forecasting. Currently, procurement and supply decisions may be based on out-dated estimates or previous year consumption patterns without adjusting for seasonal variations or disease trends. A more dynamic approach is required one that utilizes real-time data on outpatient visits, disease outbreaks, and consumption volumes to predict future demand. Each District Hospital must be empowered to submit monthly forecasting reports, which should be reviewed during regular coordination meetings between PHSC, the Chief Medical Officer, and pharmacy managers. Hospitals with a consistently high volume of patients, such as Ludhiana and Patiala, should be given additional autonomy to make supplemental requisitions when stock levels fall below functional thresholds.

Patient interviews highlighted a serious deficiency in communication practices when medicines were unavailable. Most patients reported that they were not informed about why a particular drug was out of stock or when it would become available again. This lack of transparency contributes to confusion, frustration, and a growing mistrust in government facilities. To address this, hospitals should establish standard operating procedures (SOPs) for how pharmacists communicate drug unavailability. This could include setting up display boards or digital screens listing unavailable medicines and their expected restocking dates. Pharmacists should also be trained to courteously and clearly explain the situation to patients, offering information about alternative options such as Jan Aushadhi centers or future availability timelines. This basic, human-centered communication can significantly improve patient satisfaction, even in cases where medicines are genuinely out of stock.

The inefficiencies observed in drug availability also point toward logistical bottlenecks in the state's internal distribution systems. There should be a mechanism that allows for the redistribution of medicines between District Hospitals within the same division when some facilities experience a surplus and others face shortages. This would require decentralizing certain logistics decisions while maintaining centralized oversight. In addition, the state may consider engaging public-private partnerships (PPPs) or local transportation networks to enhance last-mile delivery efficiency. Periodic reviews of the supply chain performance must be institutionalized, with metrics such as average time from requisition to delivery; percentage of emergency requisitions fulfilled, and stock reconciliation accuracy forming part of the hospital performance dashboard.

The study also revealed that several pharmacists directed patients to nearby Jan Aushadhi centers when specific medicines were not available. While this recommendation is useful, there is currently no formal integration or coordination mechanism between public hospital pharmacies and Jan Aushadhi outlets. It is proposed that the government establish official linkages that allow for prescription validation, inventory synchronization, and pricing transparency between these two public pharmaceutical service points. Hospitals can issue signed referral slips listing the unavailable drugs, which patients can then present at Jan Aushadhi centers to obtain the medicines at subsidized rates. Furthermore, awareness campaigns should be conducted within hospital premises to inform patients about the availability, location, and utility of Jan Aushadhi stores.

One of the more striking findings of the study was the lack of awareness among patients about government-supported medical helplines such as 104 or the PHSC grievance redressal number. Patients must be made aware of these mechanisms through posters, digital kiosks, and verbal communication during registration or pharmacy visits. These helplines must also be responsive and adequately staffed to address stock-related grievances in real-time. Hospitals can explore the use of SMS-based alert systems or WhatsApp-based helpdesks where patients can report unavailability or track the status of restocking. Such services would not only empower patients but also provide useful data to administrators for real-time monitoring and corrective action.

Human resource limitations remain a persistent problem in public hospital settings, and pharmacy departments are no exception. Pharmacists frequently operate under heavy workloads, especially in high-volume hospitals. The government must prioritize the recruitment of additional pharmacy assistants to help with tasks such as stock counting, prescription packaging, and patient counseling. Furthermore, regular capacity-building workshops should be organized to enhance pharmacist competencies in areas like digital inventory systems, patient engagement, and service quality management. Institutions should also explore non-monetary incentives such as "Best Performing Pharmacy" recognition to reward and motivate pharmacy teams that consistently meet or exceed performance standards.

Another issue that emerged was the lack of availability of certain medical aids and non-drug items, such as elbow braces and topical ointments. These items are often essential components of outpatient treatment regimens and should be included in the extended list of essential medical supplies. PHSC and district procurement officers must ensure that frequently prescribed non-drug items are budgeted, procured, and distributed through a parallel but coordinated supply chain. Patients should not have

to bear the burden of seeking out and purchasing such items from the private market, especially when they are part of the government-prescribed treatment plan.

At the policy level, several measures can be undertaken to improve systemic transparency and accountability. One such recommendation is to develop and publish a public-facing dashboard that provides hospital-wise data on drug availability, stockout trends, and patient satisfaction scores. These dashboards should be updated monthly and made accessible to civil society organizations, health activists, and ordinary citizens. In addition, the government should mandate an annual performance review of each District Hospital pharmacy, measuring key performance indicators such as dispensation adequacy rate, audit compliance, patient satisfaction, and grievance resolution turnaround time. The findings of this review can guide resource allocation, performance incentives, and targeted interventions.

Patients must be seen not as passive recipients of care but as key stakeholders in the health system. Therefore, District Hospitals should institutionalize monthly patient feedback mechanisms, such as short surveys, focus groups, or suggestion boxes. Waiting areas can be utilized to conduct short education sessions where patients are informed about how to understand prescriptions, check drug availability, seek help when medicines are unavailable, and use helplines effectively. Simple, easy-to-understand pamphlets should be developed in local languages and distributed along with prescriptions, especially in rural areas where literacy levels may be a barrier to comprehension.

In conclusion, the recommendations provided in this chapter are structured to address the multifaceted nature of the drug dispensation challenge in Punjab's District Hospitals. From digitization of inventory systems and improved forecasting to enhanced patient communication and systemic transparency, the proposed interventions aim to optimize the interface between public procurement and patient care. By adopting these measures in a phased and monitored manner, the state can significantly reduce drug shortages, minimize out-of-pocket expenditures, and deliver on its commitment to equitable and accessible healthcare for all citizens.

Chapter 6

Access to essential medicines through government health institutions remains a cornerstone of public healthcare in India, serving not just a medical function but also a social one. In Punjab, where District Hospitals (DHs) cater to a wide spectrum of patients ranging from urban middle classes to economically marginalized rural communities the assurance of free and adequate drug dispensation is critical to achieving health equity. This dissertation set out to examine whether drugs were being adequately dispensed to patients at the point of care in DH pharmacies across selected districts of Punjab. Drawing from a patient-centric empirical methodology involving structured exit interviews, supplemented by qualitative remarks and institutional observations, the study has uncovered both systemic inefficiencies and opportunities for intervention that can significantly enhance the effectiveness of drug dispensation in the state.

The data collected from seven district hospitals (Ludhiana, Patiala, Sangrur, Fatehgarh Sahib, Nawanshahr, Jalandhar, and Mohali) revealed that while a significant proportion of patients did receive all their prescribed medications from the hospital pharmacies, a troubling number of respondents reported partial fulfillment of prescriptions. This finding is particularly concerning because the hospitals studied are part of a public system that claims to be equipped with robust procurement processes via the Punjab Health Systems Corporation (PHSC). The partial availability of drugs despite adequate upstream procurement points to a chronic breakdown in the last-mile execution of pharmaceutical supply chains. These lapses are not random, but systematic and recurring signaling that the issue lies not in scarcity but in operational disconnection.

One of the most consistent themes that emerged from patient responses was the absence of transparency and communication when prescribed medicines were unavailable. In most cases, patients were neither informed about the reasons for non-availability nor guided toward alternative sources such as Jan Aushadhi centers. Some were advised to "buy the medicines outside," while others were left confused, not knowing whether to wait, return another day, or abandon treatment altogether. This communication vacuum erodes trust in public health institutions and creates avoidable delays in care. Furthermore, for economically vulnerable patients who depend on public hospitals for cost-free treatment, the inability to obtain even a single prescribed medicine without payment undermines the entire principle of Universal

Health Coverage (UHC).

Despite these shortcomings, the study also highlighted areas of commendable performance. Pharmacy staff were generally described as courteous, helpful, and willing to explain dosage instructions clearly. Many patients expressed satisfaction with their interactions with the pharmacists, even when medicines were unavailable. This suggests that the problem is less about individual capacity or intent and more about institutional bottlenecks lack of support systems, poor digital tools, and unclear administrative protocols. Indeed, the findings suggest that frontline staff often operate under constrained conditions, with insufficient manpower, outdated inventory systems, and no clear mechanisms for dealing with stockouts.

The study therefore concludes that there exists a clear mismatch between procurement efficiency and patient-level access to medicines. This mismatch is driven by a constellation of factors, including poor demand forecasting, lack of digitized inventory systems, absence of standard operating procedures for patient communication, delayed redistribution mechanisms, and minimal use of supportive tools like helplines and referral slips. The research posits that the system as it currently stands is reactive rather than proactive responding to shortages only after patients raise complaints or after internal audits flag discrepancies. A transformation is required from this reactive model to a predictive and patient-centric model of drug distribution and dispensation.

From a policy standpoint, the study underscores the need for decentralized flexibility within a centralized system. While PHSC ensures bulk procurement at the state level, individual hospitals must be empowered with data tools, reporting dashboards and autonomous decision-making capacities to reorder and redistribute stocks based on real-time needs. Capacity building among pharmacy staff, introduction of performance monitoring frameworks, and integration with digital health infrastructure (such as eSanjeevani and Ayushman Bharat IT systems) can further enhance coordination and service delivery.

However, as with any empirical research, this study has its limitations. The most significant constraint was the study's reliance on self-reported data from patients. Although exit interviews were conducted immediately after the pharmacy visit to minimize recall bias, the subjective nature of patient perception means that some responses may reflect personal interpretation rather than factual events. For example, patients may have perceived a delay in receiving drugs as unavailability or may not have clearly understood the reasons communicated by pharmacists.

Another limitation lies in the exclusion of inpatient and emergency department pharmacies from the study scope. These departments often have different inventory protocols and could present either better or worse dispensation outcomes. Their exclusion means that the study's findings, while rich and detailed, do not represent the complete picture of drug dispensation in District Hospitals. Furthermore, logistical constraints limited the ability to conduct direct stock audits or interviews with pharmacists and supply chain officials, which could have added greater triangulation to the findings.

The study also focused exclusively on DHs and not on Community Health Centers (CHCs), Primary Health Centers (PHCs), or sub-centers, where drug availability may be even more constrained. Thus, while the findings provide an accurate snapshot of the mid-tier public hospital system, they may understate or overstate the challenges faced at other levels of care.

Additionally, the study did not account for seasonal fluctuations or sudden surges in patient volume that may temporarily affect stock levels. For instance, a spike in respiratory illnesses during winter or a rise in dengue cases during monsoon can cause localized stockouts even in otherwise well-functioning pharmacies. A longitudinal study spanning multiple seasons would provide a more comprehensive view of the system's resilience.

Despite these limitations, the study's strengths lie in its real-time, on-ground approach and its commitment to patient-centered outcomes. By foregrounding the lived experiences of patients and situating those within broader administrative contexts, the study offers actionable insights for healthcare managers, policy planners, and frontline staff alike. It demonstrates that improving drug dispensation does not require radical system overhauls but rather focused operational reforms many of which can be implemented with existing resources and governance structures.

In summation, the adequacy of drug dispensation at District Hospital pharmacies in Punjab is not merely a logistical or administrative concern it is a public health imperative. Patients who do not receive timely access to prescribed medicines face elevated health risks, financial burdens, and a sense of abandonment by the very system meant to serve them. By addressing the identified gaps through targeted interventions such as digitized inventory tracking, better communication protocols, enhanced supply chain coordination, and patient engagement strategies, Punjab can take significant strides toward ensuring that no patient leaves a government hospital

without the medicines they need. This dissertation, while limited in its scope, hopes to serve as a foundational effort toward that goal.

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