



NAVIGATING CHALLENGES IN PHARMACY MANAGEMENT: WORKLOAD AND STAFFING ANALYSIS IN OUTPATIENT SERVICES

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ABSTRACT

1. Introduction:

The efficient operation of outpatient pharmacies is essential for guaranteeing that patients obtain prompt and proficient pharmaceutical care. At Prince Rashid Bin Hassan Military Hospital, these pharmacies are essential for delivering medications and counseling to patients; however, the rising demand for pharmaceutical services presents challenges concerning workload distribution and staffing. Comprehending the relationship between prescription numbers and staffing levels, along with their duties in each pharmacy, is crucial for enhancing operations and patient outcomes.

2. Objective:

This study seeks to assess the workload distribution and staffing efficiency of outpatient pharmacies at Prince Rashid Bin Hassan Military Hospital over a nine-month period, from January to September 2024. aiming to uncover opportunities for operational enhancement, guide resource allocation procedures, and improve the quality of pharmaceutical care for patients through the analysis of prescription trends and staff distribution.

3. Methodology:

A thorough analysis will be performed utilizing prescription data acquired from the hospital records department for six outpatient pharmacies: Monthly Medications Pharmacy (MP), Outpatient Clinic Pharmacy 1 (DP1), Outpatient Clinic Pharmacy 2 (DP2), Dialysis and Protocols Pharmacy (KP), VIP Pharmacy (VP), and Emergency Pharmacy (ERP). The data collection will include any prescription dispensed from the mentioned pharmacies during the study period. The study will evaluate staffing distribution, specifying the number of pharmacists and pharmacy assistants in each pharmacy. Statistical analyses using Excel Spreadsheet Software, including time series analysis, will assess prescription patterns, while workload analysis will examine the relationship between staffing levels and prescriptions volumes. This methodology seeks to determine operational efficiencies and possible avenues for resource optimization.

KEYWORDS: Outpatient pharmacies, prescription volumes, workload analysis, staffing levels, healthcare efficiency, patient care, pharmacy management, Prince Rashid Bin Hassan Military Hospital.

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1. INTRODUCTION:

The competent management of outpatient pharmacies is essential inside modern healthcare systems, where the rising demand for pharmaceutical services aligns with the necessity for appropriate resource distribution^[1]. At Prince Rashid Bin Hassan Military Hospital, outpatient pharmacies play a crucial role in delivering medications, counseling, and pharmaceutical care to a varied patient demographic. These pharmacies not only contribute to the overall health outcomes of patients but also facilitate the smooth operations of healthcare services within the hospital.

Outpatient pharmacies manage and dispense medications to patients who attend the hospital for consultations without requiring inpatient care. This domain of pharmacy practice is notably demanding due to the variable nature of patient attendance and prescription quantities, which can differ markedly dependent on factors such as seasonal diseases, hospital regulations, and patient demographics^[2,3]. As a result, comprehending the workload dynamics within these pharmacies is essential for enhancing their operations and guaranteeing that patients have prompt and appropriate pharmaceutical care.

The role of pharmacy personnel, encompassing pharmacists and pharmacy assistants, is crucial in overseeing the processing of prescriptions. Pharmacists check prescriptions, counsel patients, and ensure pharmaceutical safety, whereas pharmacy assistants facilitate these functions by maintaining inventories and performing administrative duties^[1]. The allocation of personnel within each pharmacy influences the overall efficacy and quality of services delivered. An appropriate staffing framework is essential to manage elevated prescription quantities, especially during peak times, while guaranteeing that each patient receives the needed attention and care^[4,5].

This study intends to assess the workload allocation and staffing levels of outpatient pharmacy at Prince Rashid Bin Hassan Military Hospital over a nine-month span from January to September 2024. This research aims to discover possible areas for enhancement in pharmacy operations by evaluating prescription trends and personnel allocation. Comprehending the correlation between workload and staffing enables hospital administrators to make informed decisions about staff allocation, training requirements, and utilization of resources, thereby improving the quality of patient care.

This study encompasses the following pharmacies: Monthly Medications Pharmacy (MP), Outpatient Clinic Pharmacy 1 (DP1), Outpatient Clinic Pharmacy 2 (DP2), Dialysis and Protocols Pharmacy (KP), VIP Pharmacy (VP), and Emergency Pharmacy (ERP), each catering to distinct functions and patient demographics, as the following: Monthly medications Pharmacy (MP): Provides chronic medications on a monthly basis. Outpatient Clinic Pharmacy 1 (DP1): Caters to general outpatient clinics; Outpatient Clinic Pharmacy 2 (DP2): Focuses on gynecology, ophthalmology, and other specialized clinics. Dialysis and Protocols Pharmacy (KP): Manages medications for dialysis patients, including both outpatients and inpatients, as well as particular treatment protocols. VIP Pharmacy (VP): Provides services to VIP outpatients and supports inpatient pharmacy responsibilities. Emergency Pharmacy (ERP): Attends to patients in the emergency department.

This diversity offers an opportunity to examine how various service models influence prescription patterns and the efficacy of pharmacy personnel in addressing patient requirements. This study's findings will offer essential insights to inform future staffing strategies and operational enhancements, aiding the continuous advancement of pharmaceutical services inside the JRMS framework.

2. METHOD:

Data Collection: Data were gathered from the hospital's records and consisted of prescription volume (The total number of prescriptions dispensed by each outpatient pharmacy from January to September 2024) and staffing distribution (The number of pharmacists and pharmacist assistants assigned to each pharmacy), as shown in the table (1) below:

Descriptive Analysis: Included calculating the overall prescription numbers for each pharmacy, therefore offering a preliminary insight into the workload across various pharmacy locations. To assess the workload distribution in relation to staffing, the workload per staff member was calculated by dividing the total number of prescriptions by the number of staff allocated to each pharmacy.

Time Series Analysis: The analysis was performed by visualizing monthly prescription data to identify trends and fluctuations in workload during the study period. This method facilitated the identification of seasonal trends and other variations in prescription volumes over time, providing insights for possible staffing modifications.

Table 1: The number of pharmacists and pharmacist assistants assigned to each pharmacy

Pharmacy	Number of Pharmacist Staff	Number of Pharmacist Assistants Staff	Total Number of Staff
Monthly Medications Pharmacy (MP)	14	5	19
Outpatient Clinic Pharmacy 1 (DP1)	11	3	14
Outpatient Clinic Pharmacy 2 (DP2)	9	5	14
Dialysis and Protocols Pharmacy (KP)	2	0	2
VIP Pharmacy (VP)	2	0	2
Emergency Pharmacy (ERP)	5	2	7
Total	43	15	58

Workload-Staffing Correlation: The workload per pharmacist and pharmacy assistant was analyzed to assess the equitable distribution of responsibilities across different positions. Particular consideration was devoted to KP and VP pharmacies, which additionally oversee inpatient treatments. The dual roles of personnel in these pharmacies were incorporated into the workload study to yield a more precise assessment of staff utilization and efficiency.

Performance Metrics: Included the mathematical calculation of a Workload Index, denoting the ratio of total prescriptions to staff number which functioned as an indicator of staffing sufficiency. Furthermore, Percentage Contribution was calculated for each pharmacy by assessing their

respective part of the entire prescription volume, thereby describing each pharmacy's comparative workload within the outpatient framework.

These assessments taken together provide an extensive perspective on workload dynamics, guiding future enhancements in staffing procedures and operational efficiency.

3. RESULTS:

The cumulative prescription volume for all outpatient pharmacies for the nine-month interval was 772,616. Table (2) illustrates the distribution of prescriptions alongside the associated staff member's levels.

Table (2): The distribution of prescriptions alongside the associated staff member's levels

Pharmacy	Total Prescriptions (Jan-Sept)	Number of Pharmacist Staff	Number of Pharmacist Assistants	Workload Index (Prescriptions /Staff)	Average per Month	% of Total Prescriptions
Monthly Medications Pharmacy (MP)	258,844	14	5	13,623	28,760	33.5%
Outpatient Clinic Pharmacy 1 (DP1)	209,308	11	3	14,951	23,256	27.1%
Outpatient Clinic Pharmacy 2 (DP2)	170,874	9	5	12,205	18,986	22.1%
Dialysis and Protocols Pharmacy (KP)	10,322	2	0	5,161	1,147	1.3%
VIP Pharmacy (VP)	18,132	2	0	9,066	2,015	2.3%
Emergency Pharmacy (ERP)	105,136	5	2	15,019	11,682	13.6%

The Time Series Analysis performed on monthly prescription quantities indicated significant fluctuations among the outpatient pharmacies. The Monthly Medications Pharmacy (MP) frequently

had the highest workload, with a notable increase in July. The increase most likely corresponds with patients preparing for prolonged vacations and being involved in seasonal medication refills. In

contrast, the Emergency Pharmacy (ERP) demonstrated stable and continuously high prescription volumes during the study period, peaking in April, which signifies a heightened patient flow that month.

On the other hand, the Dialysis and Protocols Pharmacy (KP) had the least outpatient prescription

volume among the pharmacies evaluated. Nonetheless, it is essential in handling medication requirements for inpatient dialysis care, a variable not reflected in outpatient statistics. The VIP Pharmacy (VP) exhibited reduced prescription volumes relating to its dual duties in inpatient services, thus impacting its outpatient workload (figure 1).

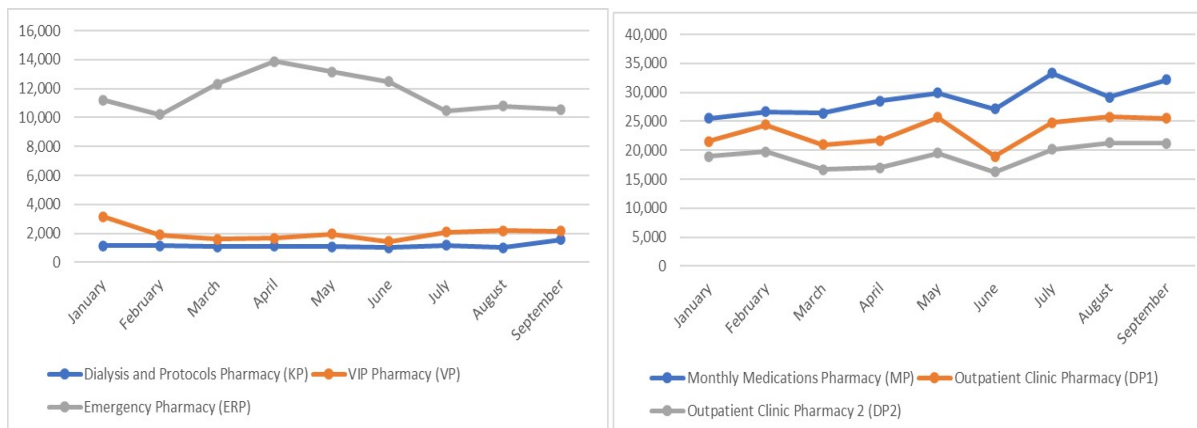


Figure 1: The VIP Pharmacy (VP) exhibited reduced prescription volumes relating to its dual duties in inpatient services, thus impacting its outpatient workload

The review of workload distribution among the pharmacies yielded additional insights into operational requirements. The personnel at the Emergency Pharmacy (ERP) handled an average of 15,019 prescriptions each, indicating a substantial workload that may necessitate increased staffing during peak times to maintain operational efficiency. At the Outpatient Clinic Pharmacy 1 (DP1), the average workload per staff member was 14,951 prescriptions, reflecting a substantial yet reasonable demand. Continuous evaluations will be essential to guarantee that this pharmacy preserves sufficient staffing levels.

The Monthly Medications Pharmacy (MP) had a workload of 13,617 prescriptions per staff member,

which is notably high, especially during peak refill times. Conversely, the Dialysis and Protocols Pharmacy (KP) processed merely 5,161 outpatient prescriptions. Despite the reduced volume, its dual role in inpatient necessitates a more sophisticated assessment of staffing needs to guarantee thorough care.

In the case of VIP Pharmacy (VP), staff issued an average of 9,066 prescriptions per member. Although this amount seems minimal, it is crucial to acknowledge the pharmacy's supplementary duties for inpatient care, which necessitates an extensive understanding of its operational demands.

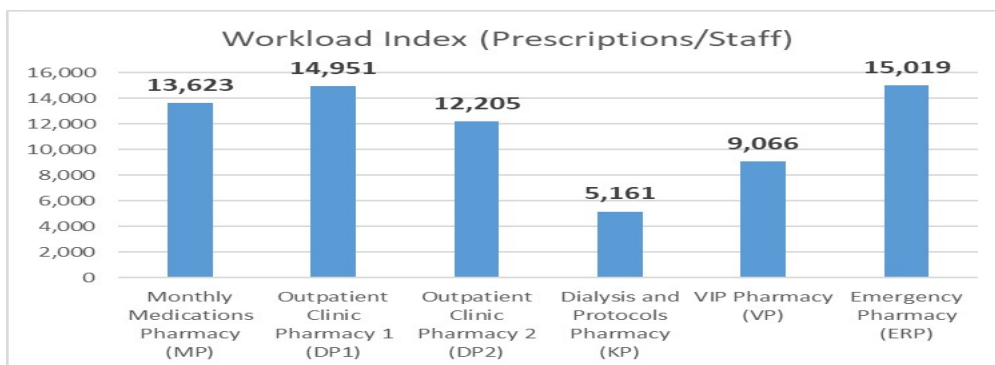


Figure 2: Workload index (prescription/staff)

The Performance Metrics demonstrated the contributions of each pharmacy to the total prescription volume. The Monthly Medications Pharmacy (MP) contributed for 33.5% of total prescriptions, while the Outpatient Clinic Pharmacy 1 (DP1) represented 27.1%, and the Outpatient Clinic Pharmacy 2 (DP2) accounted for 22.1%. The Emergency Pharmacy (ERP) accounted

for 13.6%, and the VIP Pharmacy (VP) and Dialysis and Protocols Pharmacy (KP) provided 2.3% and 1.3%, respectively. The percentages emphasize the paramount roles of MP and DP1 in total prescription volumes, while indicating that KP and VP, despite their substantial operational functions, contribute insignificantly to outpatient prescription totals (figure 3).

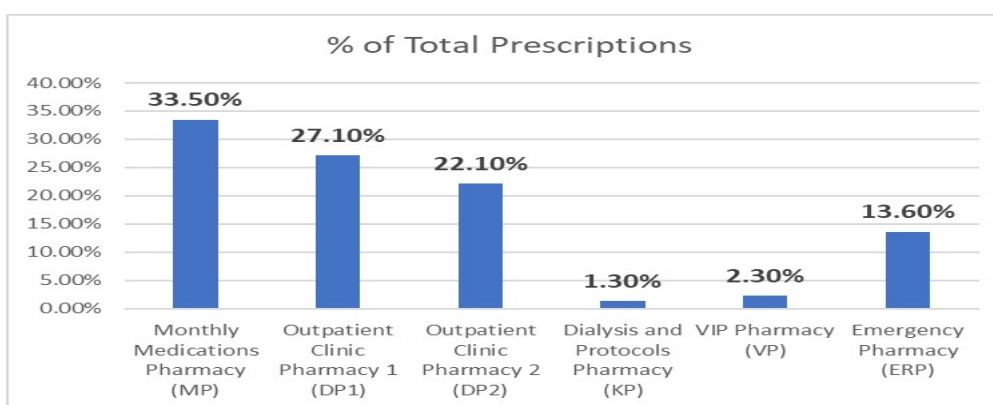


Figure 3: Performance metrics

4. DISCUSSION:

The examination of prescription data from the outpatient pharmacies at Prince Rashid Bin Hassan Military Hospital provides substantial insights regarding workload distribution and staffing efficacy. Comprehending these trends is crucial for enhancing pharmacy operations and maintaining superior patient care standards.

4.1 Workload Distribution across Pharmacies:

The results of this research demonstrate that the Monthly Medications Pharmacy (MP) consistently processes the greatest number of prescriptions, totaling 258,844 prescriptions over the study duration. This discovery indicates that MP is essential in maintaining long-term drug therapy for patients, requiring a strong staffing approach to guarantee prompt service delivery. The examination of prescription trends underscores the necessity for adaptable staffing structures in this pharmacy to address peak times, which may encompass seasonal variations or elevated patient volume resulting from managing chronic illnesses.

On the contrary, the Dialysis and Protocols Pharmacy (KP), despite handling a markedly reduced volume of prescriptions (10,322 in total), operates under distinct conditions, as it additionally serves as an inpatient pharmacy for dialysis patients. This dual obligation underscores the necessity for effective coordination of pharmacy resources to reconcile the requirements of both inpatient and outpatient care. The insufficient

personnel (two pharmacists) may inadequately manage the dual task during peak periods, thereby resulting in delays in pharmaceutical delivery and adversely affecting patient outcomes.

The VIP Pharmacy (VP) also represents a distinctive scenario, catering to both outpatient and inpatient demographics. The limited staffing of two pharmacists at this pharmacy highlights the potential for resource pressure, especially in the event of an influx of patients needing specialized prescriptions. The combined responsibilities of pharmacists in this pharmacy need careful workload management to properly address the demands of both inpatient and outpatient populations^[6].

4.2 Staffing Distribution and Efficiency:

The allocation of pharmacy personnel is crucial in assessing the efficiency with which each pharmacy manages its task. The Monthly Medications Pharmacy (MP) has the largest staff, totaling 19, which corresponds with its significant prescription volume. The mix of 14 pharmacists and five pharmacy assistants guarantees sufficient resources to oversee both the verification process and patient counseling, essential elements in upholding pharmaceutical safety and efficacy.

In contrast, the Dialysis and Protocols Pharmacy (KP) employs merely two pharmacists, lacking any pharmacy assistants. The deficiency of support

personnel may impede the proper management of prescription volume, especially during peak times. The lack of pharmacy assistants in KP may restrict pharmacists' capacity to participate in clinical activities, such as patient counseling, which is essential for optimizing therapy and ensuring adherence. Management needs to consider the expansion of the staffing model in KP to improve service delivery, especially with the management of intricate medication regimens for dialysis patients.

The VIP Pharmacy (VP) shares a comparable issue regarding its staffing levels, which may be inadequate to manage the dual obligations efficiently. The limited availability of two pharmacists may result in excessive workload from both inpatient and outpatient services, thereby causing burnout and decreased job satisfaction among pharmacists [6,7]. Considering the essential role of the pharmaceuticals dispensed at this pharmacy, changing the staffing model to incorporate pharmacy assistants might alleviate some of the burdens on pharmacists and elevate overall service performance [8].

4.3 Recommendations for Operational Improvements: This study's findings offer various recommendations to improve the efficiency and efficacy of pharmacy operations at Prince Rashid Bin Hassan Military Hospital. It is essential to implement a flexible staffing approach that adjusts to variations in prescription quantities. Employing data-driven methodologies to forecast peak times and modifying staffing accordingly can enhance service responsiveness and elevate patient care [9].

The incorporation of pharmacy assistants into positions at KP and VP could markedly improve operational efficiency. By assigning routine duties like inventory management and prescription filling to pharmacy assistants, pharmacists can allocate more time to patient-centered activities, thereby enhancing overall service quality.

Ultimately, consistent training and professional development opportunities must be provided to pharmacy personnel to guarantee they possess the most current information and abilities required to administer a varied array of pharmaceutical services. Ongoing education cultivates a culture of excellence and assists personnel in adjusting to the changing dynamics of pharmacy practice.

4.4 Future Research Directions: A further investigation is necessary to examine the effects of certain specific operational modifications on

pharmacy efficiency and patient outcomes. Longitudinal research evaluating the impact of personnel changes and workload management approaches may yield significant insights into optimal practices for outpatient pharmacy management. Furthermore, examining the different perspectives of pharmacy personnel concerning workload and operational difficulties may provide valuable insights for enhancing workplace circumstances and increasing job satisfaction.

5. CONCLUSIONS:

Throughout the nine-month study duration, the outpatient pharmacies at Prince Rashid Bin Hassan Military Hospital processed a total of 772,616 prescriptions. This amount presented considerable discrepancies in workload across staff members across the different pharmacies. The Emergency Pharmacy (ERP) and Outpatient Clinic Pharmacy 1 (DP1) experienced the greatest workloads, highlighting the necessity for efficient resource allocation and management in these sectors. Conversely, the Dialysis and Protocols Pharmacy (KP) and VIP Pharmacy (VP), despite having lower outpatient prescription volumes, were essential in delivering inpatient treatment, underscoring their significant contributions to the comprehensive healthcare service regardless of the decreased outpatient engagement.

To improve operational efficiency and elevate patient care in these pharmacies, multiple proposals are suggested. It is essential to consistently evaluate staffing levels. Continuous evaluations must be performed to guarantee that staffing corresponds adequately with prescription quantities, especially in high-demand areas such as ERP and DP1, where workload variations may require supplementary workers. The adoption of flexible staffing strategies is recommended. This tactic could include employing temporary personnel at peak periods to effectively handle increases in prescription volumes, especially in the ERP and Monthly Medications Pharmacy (MP), where patient demands frequently surge at particular times. A comprehensive assessment of dual roles within the KP and VP pharmacies is necessary. Examining the roles and staffing dynamics in these pharmacies may yield insights into operational efficiencies and assist in resolving any understaffing challenges, so assuring the effective fulfillment of both inpatient and outpatient requirements. The formulation and execution of workload management techniques will be essential. By developing methods that address the fluctuating prescription numbers encountered by pharmacies, the hospital can guarantee that all

pharmacy services uphold superior levels of patient care. These strategies could consist of optimal scheduling techniques, workload projections, and specialized training for personnel to improve their adaptability in dynamic operational contexts.

LIMITATIONS OF THE STUDY: This analysis is limited by its dependence on available hospital

records, which may not consider external factors affecting prescription volumes, such as seasonal diseases or alterations in hospital regulations. Additional studies could improve comprehension by incorporating qualitative evaluations of pharmacy operations and personnel viewpoints.

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