

Medication Dispensing Time and Prescription Volume at the Pharmacy Counter

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Abstract— To find the correlation between the work load at the pharmacy counter and efficiency in dispensing the medicines in “Jay Arogyam Hospital, Nestiva, Patna, Bihar” a study was conducted with this title “Medication Dispensing Time and Prescription Volume at the Pharmacy Counter”. To analyze the impact of higher prescription orders on dispensing time, waiting time of patients and efficiency of overall service in the Pharmacy. Descriptive research design was used and the respondents were collected as 60 persons by the use of structured questionnaire. Data was analyzed using the statistical tools like percentage analysis and Tabular interpretation. Results indicated there was a high correlation between greater prescription volumes and larger dispensing times, which, in turn, was correlated with the overcrowding, and operational strain observed during peak hours, especially the morning hours. Operational issues like inadequate staff, human effort and manual processes also came up as a surface area holding back pharmacists from efficiency in the study. Proven recommendations were proposed to optimize the process, minimize waiting times and increase patient satisfaction.

Keywords— Medication Dispensing Time, Prescription Volume, Pharmacy Counter, Patient Waiting Time, Pharmacy Workflow, Hospital Pharmacy, Dispensing Efficiency, Patient Satisfaction

I. INTRODUCTION

A. Background of the Study

Hospital pharmacies are critical to quality healthcare delivery and patients' satisfaction. Pharmacy counter is the last stage where the patients encounter healthcare providers where prescribed medicines are given to patients based on the advice of the healthcare providers. With the growing influx of patients, the scale and number of prescriptions in hospitals have considerably increased, particularly in OPDs, in recent years. This has put a strain on the handling of medicines by staff in pharmacies and has also led to longer medicines dispensing times and longer waiting time for patients. Medication dispensing time is the total time that is required to verify the prescription, prepare medicines, label the medicine and deliver the medicine to the patient. Efficient dispensing systems are crucial as delays in medicine deliveries could impact on adherence to treatment, the satisfaction of the patient and the quality of healthcare provided.

Prescription volume is a key determinant of dispensing efficiency, an emerging field of healthcare management research. Many times during rush hours, excessive patient volumes at counter points in pharmacies cause improper working conditions, work fatigue and delays in the service that the counter personnel provide. Hence, hospitals are now seeking to press for workflow optimization, manage their employee's tasks, and install dispensing system using different method of technology so as to increase their operations effectiveness and decrease the patients waiting time. The current study analyzes dispensing time and dispensed prescription numbers of the Jay Arogyam hospital nestiva, Patna in Bihar to highlight the problems and hurdles faced by the hospitals regarding activity controls and the factors influencing the dispensing effectiveness.

B. Statement of the Problem

Screening and educational components are consistently undeveloped and fail to impact the majority of the weeding-out process. Hospital pharmacies often face operational challenges related to workflow problems with rising prescription volume and crowding during outpatient hours. However, when the medications are not dispensed in time, it leads to dissatisfaction among patients and inefficiency in services. During peak times, many prescriptions have been ordered from Jay Arogyam Hospital, which have led to waiting times and a lot of pressure on the hospital's pharmacists. Poor workflows in coordination, a shortage of labor and manual dispensing activities also cause delays in the dispensing process. The study thus attempts to examine if any significant difference in time to dispense medicines and the efficiency of patient services at the dispensing section of the pharmacy definitely exists because of the prescription volume.

C. Objectives of the Study

The main aim of the study is to determine the correlation between the number of prescriptions and the time to dispense the drugs in the pharmaceutical counter. Other goals are to examine patient waiting time, compare the busiest periods, investigate aspects that impact upon dispensing efficiency, and recommend improvements for both the management of the pharmacy workflow, as well as patient satisfaction.

D. Research Questions

The questions the study hopes to address include average dispensing time, how increased prescription volume impacts dispensing time, when are the busiest point-in-time periods at the counterpart, what factors affect dispensing at the pharmacy, and what are potential strategies to reduce delay and enhance dispensing.

E. Significance of the Study

The study findings are meaningful for the Hospital administrators, Pharmacy employees and health care managers to know the operational inefficiency in the performance of Pharmacy. These results could contribute to better workflow planning and staff scheduling as well as better patient care. In addition to this, the study has also made a contribution to the realm of the academic books related to healthcare operations and Management of Pharmacy in health care premises in India.

F. Scope and Limitations

The scope of study is outpatient drug dispensing activities for one hospital (Jay Arogyam Hospital) in the wards of Nestiva in Patna in Bihar. It only considers dispensing times, number of prescriptions dispensed, and waiting experiences in connection with customer/patient transactions during the period studied in medication dispensing. Study does not include any inpatient pharmacy services or emergency cases. The results reflect the opinions of a reduced sample size, and may not represent all health care institutions in general.

II. LITERATURE REVIEW

The hospital pharmacy is one of the most crucial operational departments in health care centers, which plays a direct part in the standard of care, the safety of medicines, healthcare efficiency, and patient satisfaction. Things like population growth, awareness of healthcare, urbanization, and expansion of medical services have not only boosted the inflow of patients in the hospitals in recent years but continue to do so. This influx of patients has definitely impacted outpatient pharmacy operations with regards to the load of prescriptions and time to dispense medicines. Dispensing medicines to patients does not simply mean just holding the protocols for providing medicines to the patients; it is a systematic process including validation of the prescription, selection of medicines, process of labeling, confirmation of dosages, counseling of patients and maintaining their records. A speedy dispensing mechanism is crucial as delays in providing medication can impact patient satisfaction, adherence to treatment, workflow, and healthcare outcomes. Due to the establishment of extended waiting times by patients as one of the most reported service quality issues in health care institutions, the study on operational efficiency in hospital pharmacies has been increasingly studied by researchers and health care administrators. During high peaks of outpatients' hours, the number of prescriptions dispensed is often high, which can cause prescription counters and leaves to become too busy, causing increased pressure on the pharmacists and support staff. This workload can lead to work inefficiencies, fatigue, communication issues, decreased dispensing accuracy and increased risk of medication related errors. Even if patients usually need to wait for a medicine immediately after consultation, some studies noted that the waiting time for pharmacists is an indicator of the quality of the services provided, as well as on time responsiveness in the healthcare systems. Instability at drug counters may cause dissatisfaction among patients and decrease the trust of the hospital services. Billion of dollars have also been spent to increase the importance of workflow management in healthcare, specifically in the area of pharmaceutical processes, as inadequate workflow management can lead to delays and service bottlenecks. Pharmacy workflow includes a number of tasks that go together: receiving prescriptions, screening the prescriptions, checking the inventory, preparing the medications, filling the medication container, billing, dispensing and explaining with patients. As you can see, the rate at which you dispense can depend on the efficiency of all these stages, so if anyone of them falls behind, it can have a detrimental impact on how well the business is performing. A computer-based pharmacy system, ATM dispensing systems, queuing systems and electronic prescriptions are therefore becoming more and more common in modern health institutions to speed up dispensing time and minimize manual efforts. The importance of technology interventions in the healthcare management field has been demonstrated to vastly improve the efficiency of pharmacy practices, minimize dispensing errors and decrease patient wait times. Staffing levels and workload distribution are also important, with these factors affecting dispensing performance identified. During some of the busiest times in the hospital, staffing shortages can lead to longer lines, sluggish dispensing times and higher stress levels. Studies have also pointed to a strong relationship between the overall satisfaction of patients and the timeliness and the quality of the services received from pharmacies. Timely availability of medicines and appropriate counselling are associated with more positive health care experiences by

patients. Thus, it is clear from existing literature that prescription volume, workflow organization, staffing efficiency, patient flow management and technological support, all influence dispensing time and work performance in the pharmacy. Thus, the present study has been initiated to study the above relationship in details in context of the hospital pharmacy services in Jay Arogyam Hospital, Patna, Bihar.

III. RESEARCH METHODOLOGY

Research methodology is actually a systematic approach used in carrying out a research in a scientific and in an organized manner. It offers an overall structure for data collection, analysis, interpretation and presentation consistent with the overall goals of the research. To find the correlation between the work load at the pharmacy counter and efficiency in dispensing the medicines in "Jay Arogyam Hospital, Nestiva, Patna, Bihar" a study was conducted with this title "Medication Dispensing Time and Prescription Volume at the Pharmacy Counter". These research was chosen to be descriptive research because the main research was to find out the situation of operational conditions in hospital, patients experiences, dispensing delay in hospital, and the management of the pharmacy's work in the hospital. A descriptive research design was thought to be appropriate as it was to investigate the current situation in detail rather than to make any changes or manipulate the variables in the experimental situation. This study was quantitative and analytical because the data collected was quantitative, referring to dispensing time, waiting experience, volume of prescriptions dispensed, patient satisfaction and this data was analyzed with statistical methods. The study was conducted in a cross sectional manner as there was no enrolment of respondents over a number of years. The population to be covered was patients coming to the OPD medicine counter and the patient getting medicines dispensed during the period of study. Due to impracticality of collecting data from the entire population, two hundred respondents were sampled from which 60 were randomly drawn. Convenience sampling technique was used as the respondents were readily available, accessible and wanted to participate in the study. Based on the time required for data collection of the study, and operation time within the hospital setting, this sampling technique was deemed appropriate as it would allow the data to be collected in a practical and efficient way. Specifically, the outpatient pharmacy area of Jay Arogyam hospital, Patna, Bihar has been selected for the study area, as high number of patients visit the OPD area of the hospital and there is heavy workload at the Pharmacy counter during the working hours of the OPD. Inpatient pharmacy services and emergency cases were not included in the study as they would not support the consistent and relevant information obtained throughout the study. The study period lasted over several weeks, with systematic approach of the respondents to take part in the research process. The careful development of methodology aimed to guarantee the reliability, objectivity and validity of the results associated with the efficiency in medication dispensing and operational flows conditions.

There were both primary and secondary sources of data that were used to effectively attain the research objectives. The primary data was obtained by using structured questionnaire which was given to the respondents coming to the pharmacy counter. The questionnaire included closed questions that covered aspects on waiting time experience, workload in prescription handling, satisfaction with the dispensing

services, efficiency in the operation of the pharmacy, peak hour periods of crowd and factors that impact the flow in the work of a pharmacy. The respondents were asked to give sincerely made answers according to their real experiences during getting medicines from the Pharmacy counter. A survey of secondary data sources like research journals, abstracted ideas from academic papers, books, healthcare reports, hospital records, and prior research in the field of pharmacy management and healthcare operations were conducted. Using both primary and secondary source for the study enabled the development of understanding in the theory and strengthens conceptual foundation of the study. Collected Primary data were classified, coded, tabulated, and analyzed statistically with the help of Percentage analysis and Frequency distribution, Mean interpretation and Tabular presentation technique. It was also recommended that techniques such as graphical representation be used to improve the understanding and for better visual interpretation of the findings. Prescription volume was taken as the independent variable of the study and dispensing time as the dependent variable of the study. Throughout the research process, ethical issues were adhered to. Before the respondents started the informed about how to the study would usage and goals become, and confidentiality of their information was ensured. The respondents were not compelled or induced to give information, and everyone's participation was voluntary. Researcher ensured honesty, transparency and academic integrity in collecting and analysing data. There were also some restrictions of this study. This study took place in one hospital and with a small number of samples; it thus cannot be directly applied in other hospitals. There were also time constraints and considerations for data collection. This adopted methodology yielded adequate and valid data for the comprehension of the association of prescription volume and medication dispensing time even though it had some of the above listed drawbacks. Thus, the methodology proved useful for analysing the operational efficiency of the pharmacy, the patient waiting experience and the problems of the hospital liquor dispensing, in the selected hospital site.

IV. RESULTS AND DISCUSSION

Data analysis and interpretation are among the vital processes of any research enterprise since they convert a huge collection of information to some meaningful findings and conclusions that are practical to implement. In this chapter self-reported responses of 60 respondents in relation dispensing of medicines time and prescription volume at Jay arogyam Hospital, Nestiva, Patna, Bihar are analysed. The goals of the analysis are to gain understanding around patient wait experience, workload pressure, dispensing efficiency, operational challenges and correlation between number of prescriptions and dispensing delays. Data collected were analyzed through percentage analysis and tabular presentation techniques as this helps in the systematic interpretation of data. It further provided proposed graphical representation of the operational trends and perception of the respondents about the pharmacy services for visual understanding.

Table 4.1. Respondents' Opinion Regarding Waiting Time at Pharmacy Counter

Waiting Experience	Time Number Respondents	of Percentage (%)
Very Short	4	6.67
Short	10	16.67
Moderate	18	30.00
Long	20	33.33
Very Long	8	13.33
Total	60	100

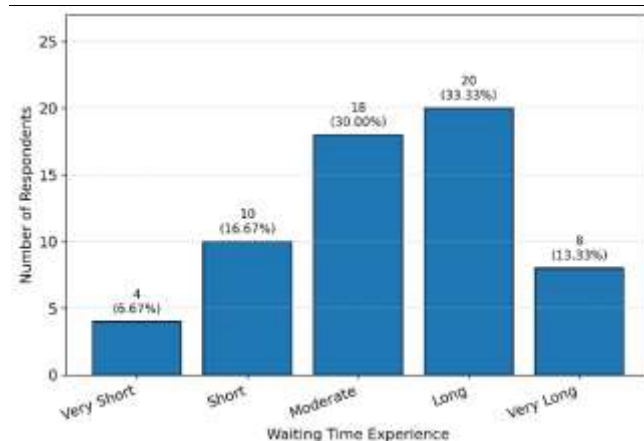


Fig. 4.1. Waiting Time Experience at Pharmacy Counter (Bar Graph)

Interpretation

Respondents' perceptions on wait-time at the medicine counter have been included in the above table. Since it can be seen that out of 60 respondents 20 people (33.33%) said that the waiting time was long and 18 people (30%) said that it was moderate. The number of respondents (6.67%) who indicated very short waiting time was 4. Results show that a substantial number of patients note delays in getting their medicines at the pharmacy counter. Almost half of respondents experienced 'long' and 'very long' waiting times, suggesting that the system in the pharmacy department was inefficient and that a lot of work was being done. Results also indicate that a higher number of prescriptions and a high volume of patient visit during the outpatient hours is a significant factor in dispensing delays. With patient satisfaction being of paramount importance, and overall patients' experience with health services, the waiting time in delivering medicines having undergone medical consultation may lead to poor patient satisfaction. The analysis thus point to need of improving the workflow, managing the queues and working out the optimum staff utilization pattern to ensure a shorter waiting period for patients and efficient dispensing.

Table 4.2. Respondents' Opinion Regarding Highest Crowd at Pharmacy Counter

Peak Timing	Crowd Number Respondents	of Percentage (%)
Morning Hours	28	46.67
Afternoon Hours	18	30.00
Evening Hours	8	13.33

Throughout the Day	6	10.00
Total	60	100

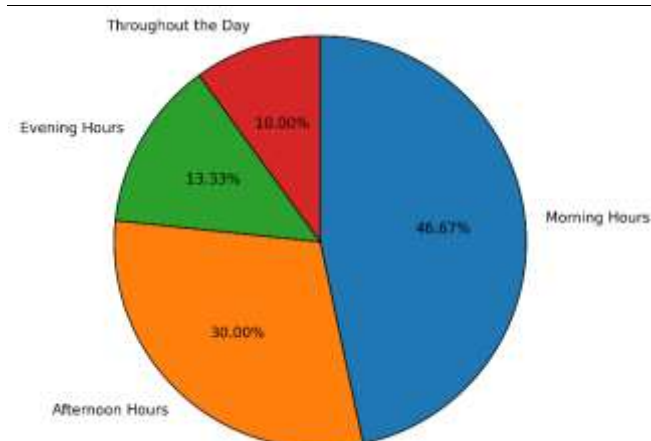


Fig. 4.2. Peak Crowd Timing at Pharmacy Counter (Pie Chart)

Interpretation

The table above shows the answers dealing with the respondents' perception on the time when the highest number of people are coming to the pharmacy counter. From 28 respondents (46.67%), the highest overcrowding at the pharmacy counter is experienced during morning hours. Approx. 30% observed afternoon hours as a period of maximum operation pressure and only 13.33% observed that the evening hours are at its peak. The results conclusively suggest that the morning time is the most critical in the operation of the pharmacy department. This can happen, as most outpatient consultations and doctor appointments take place during the morning, causing the number of prescriptions to be submitted over a short period of time. The results also highlight that operational morning hours of the Health Facility are causing the highest workload for the Pharmacy Staff tend to create a direct impact on the dispenser's speed and the waiting time of people seeking medicine. More crowd during peak time may also lead to increased work stress, work flow problems and even decreased quality of service. The findings highlight the need to optimize patient flow, workload distribution, and the availability of more personnel during specific periods to effectively manage the flow of patients and prevent overcrowding at the pharmacy. Efficient scheduling and workflow management can have a huge impact on how well dispensing is done and how happy patients are with the services in a hospital pharmacy.

Table 4.3. Satisfaction Level Regarding Medication Dispensing Service

Satisfaction Level	Number Respondents	of Percentage (%)
Very Satisfied	6	10.00
Satisfied	16	26.67
Neutral	14	23.33
Dissatisfied	18	30.00
Very Dissatisfied	6	10.00
Total	60	100

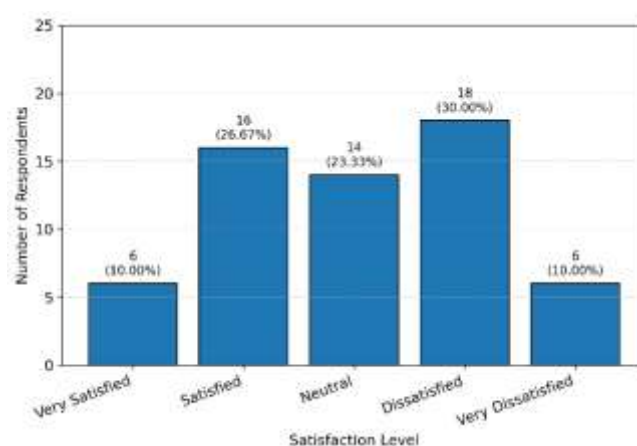


Fig. 4.3. Satisfaction Level Regarding Dispensing Service (Bar Graph)

Interpretation

The level of satisfaction of the respondents towards the dispensing of medicine at the pharmacy counter is given in the above table. It can be noticed that out of them 18 (30%) were dissatisfied with the dispensing services in the Pharmacy, and 16 (26.67%) were satisfied with the dispensing services received by the Pharmacy. Approximately 23.33% had a neutral view on the performance of dispensing and operating. Results from the findings showed that there is a higher proportion of respondents that are unhappy with the overall services provided by the pharmaceutical institutions as compared to those who are happy, therefore implying that the overall services offered by pharmacies are inefficient. High wait duration, crowds, insufficient staffing and workflow delays can be huge factors that add to patient dissatisfaction. The percentage of very dissatisfied respondents combined with the percentage of dissatisfied respondents is high which suggests that there's a need for the service quality improvement in the Pharmacy department. Study shows strong link between patient satisfaction and healthcare responsiveness and delivery of medication on time. Time delays in dispensing of medicines can cause patients to become frustrated and less inclined to trust the hospital's management systems. The results reveal the need for operational enhancements in the dispensing system including computerization, queue system and better work flow practices to boost the service of Pharma and in turn improve patient's experience.

Table 4.4. Opinion Regarding Impact of Prescription Volume on Dispensing Time

Response Category	Number Respondents	of Percentage (%)
Strongly Agree	24	40.00
Agree	20	33.33
Neutral	8	13.33
Disagree	5	8.33
Strongly Disagree	3	5.00
Total	60	100

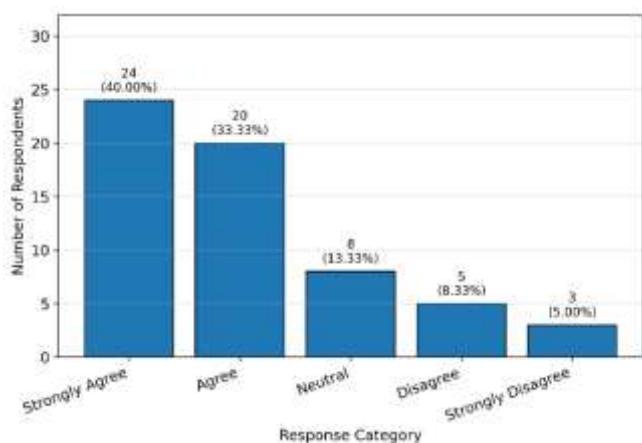


Fig. 4.4. Impact of Prescription Volume on Dispensing Time (Column Graph)

Interpretation

The above table shows that when the respondents were asked if there is any impact that the increase in volume of prescription medications has on how long they take to get their prescriptions dispensed at the pharmacy counter they were asked the following. The results show that the 24 respondents (40%) strongly agreed that there is an increase in dispensing time with greater prescription volume while 20 respondents (33.33%) agreed with the statement. A small fraction of them disagreed to that while 13.33% were neutral. The results show that most of them think that a major reason for delays in dispensing and waiting time for patients is prescription workload. When more patients are prescribed a medicine, this adds to the burden on the pharmacist and support staff, especially during the peak trading hours during the outpatient. High workload can lead to decreased dispensing efficiency and greater employee burnout, which can reduce the productivity of the pharmacy area. The findings are strong indicators that there is a relationship between the number of prescriptions and dispensing time. The results also highlight the need for workload management and staffing arrangement, and technology support system for enhancing efficiency of the pharmaceutical operations. Implementing computerized dispensing systems and structured workflow management practices can help minimize delays in dispensing and enhance patient satisfaction, which can be especially beneficial for hospitals. The research thus highlights the importance of strategic operational improvements to improve efficient pharmacies and timely delivery of medicines in healthcare institutions.

V. CONCLUSIONS AND FUTURE WORK

To find the correlation between the work load at the pharmacy counter and efficiency in dispensing the medicines in “Jay Arogyam Hospital, Nestiva, Patna, Bihar” a study was conducted with this title “Medication Dispensing Time and Prescription Volume at the Pharmacy Counter”. The study demonstrated a significant influence of medication volume dispensed on dispensing time and waiting period of the patient in the hospital setting. The results showed that a good proportion of the respondents faced moderate to longer time waiting to collect medicines especially in the morning peak time. The analysis also revealed that overcrowding, high patient volume, lack of staff, manual workflows and

inefficiency are significant factors affecting dispensing delays and patient satisfaction. Respondents were also negative about speed and efficiency of the pharmacy; hence, the need to improve the functioning in the pharmacy department. The study found out the connection between the workload of the prescription and efficiency in dispensing work and quality of health services. Thus, effective Pharmacy Workflow Management can significantly alleviate wait times, boost patient satisfaction, and ensure smooth hospital operations. The study suggests that the dispensing performance should be improved by implementing the computerization dispensing system, further suggested to improve the allocation of queuing practices, optimizing it during peak periods and redesigning the workflow process as suggested by the study. These monitoring systems can also play a role in reducing delays and improving patient-driven healthcare services through proper management of the flow of prescriptions and workload distribution. Academically, study findings can be used in the literature pertaining to healthcare management as it concerned with the operations of a hospital, especially in the area of dispensing. While the study was valuable in the identification of challenges related to the workflow of the pharmacy, there were some limitations linked to the study conducted as it involved a single hospital and a limited number of samples. Future studies could thus be expanded in number of respondents, to more health care institutions, with comparison between public and private hospitals, and using automated technologies for dispensing the medications which would help in reducing waiting time at the health care centers.

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