Role of Modern Pharmacy Management System in the Health Sector

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Abstract

Pharmacy management systems have become a necessary component of providing efficient and safe health care in pharmacies, which are a critical element of the health segment. Despite advancements in the systems, numerous issues with optimal utilisation, interoperability, and data sharing might arise. The difficulties faced can be attributed to a variety of variables, including technology, the end user, regulation, and organisational constraints. The various aspects of pharmacy management systems are discussed. Although there are some deficiencies in the use of the pharmacy management system it is still a vital component in the pharmacy services.

1. Introduction

Technology has a significant impact on a variety of sectors and areas, affecting virtually every element of human activity. As a result, our societies gain significantly from modern technology, particularly in the medical field. Traditionally, pharmacy management has been accomplished through the storage of paper records in filing cabinets. Managing a pharmacy with paper records is time consuming and makes inventory management difficult in terms of the medications in the shop, their expiration dates, and the number of drugs available by category and function. The pharmacist must order medications to refill the pharmacy's already depleted supply. Additionally, medicine orders are placed manually. Significant time is allotted for drafting the order, as the pharmacist must review the stock balance and make an educated guess about the quantity to order based on the figures. Drugs are not to be utilised after their expiration dates. Additionally, the pharmacist is responsible for manually managing staffs and their information, such as personal information, job details, and attendance [1].

Pharmacy services have evolved into a necessary component of modern medical systems. A pharmacy management system automates more than just the delivery of medication to customers. It will automate the majority of a pharmacist's critical duties, from stock management through customer purchase management. The web-based solution is particularly useful for pharmacists since it provides visibility into the items in their possession, the pricing, and

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extremely simplified inventory management navigation. Numerous pharmacies worldwide employ web-based pharmacy administration systems. Online drug ordering is now also available via mobile applications, which is the latest trend. A pharmacy management system is a collection of detailed procedures used to handle pharmacy-related tasks such as invoice input, inventory management, expiration management, sales billing, and reordering, as well as a planned medicine index. All of the activities listed above can be automated or performed manually. By automating these operations, pharmacists can run their businesses more efficiently [2, 3].

An automated pharmacy management system (PMS) can be used to ensure the effective and clear storage and manipulation of data, as well as the neat handling of pharmacy medicinal items. Time and resource consumption are significantly reduced, allowing for the quickest retrieval of pharmaceutical data. Paperwork, manpower, and other resources are all being minimised. For monitoring purposes, a summarised list of drugs delivered to the patient can be seen. Additionally, PMS will be able to provide a report detailing the medications dispensed to the patient during a specified time period. Additionally, the user receives a message alert when the stock holding amount exceeds a critical level. As a result, the pharmacist will be required to supply the medications. Pharmacy management system is a user-friendly application that alleviates administrative burdens and assists in managing all aspects of the pharmacy, such as medication administration and billing, hence increasing processing efficiency [4].

In general, pharmacy management systems provide data entry, data retrieval, and inventory tracking capabilities, as well as monitoring and tracking medication dispensing patterns and generating reports based on the aforementioned functionalities. The pharmacy management system can be characterised as a computerised system that pharmacists utilise to efficiently perform everyday tasks and automatically monitor inventories. The system will analyse the inventory automatically based on usage trends and will make recommendations for obtaining prescriptions in advance. Automated pharmacy management in the pharmaceutical sector refers to the automated management of pharmacy-related daily routine tasks through the use of various types of technology such as the internet and others.

2. Modern Pharmacy Management System

In the majority of small and medium-sized pharmacies, traditional pharmacy management systems are used. Manual ordering and purchasing of medicines, inventory control, expiry management, and sales billing are all part of the process. The typical paper-based pharmacy management system is one of the most extensively used traditional pharmacy management systems. The primary disadvantage of this technique is that documents can easily become misplaced or damaged. Additionally, there is wastage of money, time, and paper. Paper-based systems are immobile. Even a minor modification necessitates the reprinting of full inventory lists. Additionally, much human labour is necessary, which is time consuming from a pharmacist's perspective [5, 6].

The fast rise of automatic systems and computer technology over the last few decades has had a significant impact on how humans manage various business-related operations. At the moment, this technology is also causing various sectors to rethink their entire management structure. Pharmaceuticals are one of the industries that incorporates modern technologies into their business processes, making them considerably more convenient and efficient. Numerous systems have been developed in the market for the goal of managing pharmacies [6].

Pharmacy management systems are critical for pharmacies to safely and successfully provide healthcare services. The system's main components include order entry for inpatient and outpatient therapy, inventory and purchase management, treatment management, response management, and clinical observations [7, 8]. It lowers medication errors, improves patient safety and service quality, controls costs, reduces effort, and saves time as a realistic and useable solution that is strongly integrated into company operations [9, 10]. Users reject and deactivate systems that are not designed to meet their requirements and expectations. As a result, it is vital to engage the end user in the creation of the system. On the other side, despite developments in pharmaceutical information

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management system technology, various obstacles involving effective utilisation, interoperability, and data sharing may arise [11]. The challenges faced can be attributable to a range of factors, including technology, the end user, legal regulations, and organisational concerns.

Interoperability with other systems may be restricted by law, complicating, costing, and delaying the process [12]. Concerns such as lack of IT support training, lack of coordination among healthcare personnel, and insufficient strategic planning for technology implementation can all lead to e-prescription difficulties [13]. Customer happiness and efficiency are lowered as a result of errors. To ensure the system's success and sustainability, a secure, interoperable infrastructure is required. This infrastructure must be able to provide uninterrupted power, internet, and network access. System security, data privacy, and confidentiality are all contingent on the supplier company's software, training services and technical support. The fundamental factor in establishing a system of free pharmacies is cost [14]. A substantial investment is necessary to acquire, develop, and operate a new system [15].

Several pharmacies have invested in automated pharmacy management systems in order to minimise service costs and improve user experiences. The pharmacy management system is used to manage a variety of functions, including inventory management and sales billing [5]. Following stock purchases, the pharmacist should enter the new stock data into the system. The system will automatically manage all inventory management activities. When a customer purchases medicine, the inventory is updated automatically and the data is retained for future stock analysis and to serve as a reminder for new stock orderings. Additionally, the system informed the pharmacist about the medications' availability. If a particular brand of medication is not available, the system will notify the pharmacist. Following the completion of the medication order, a bill was generated at the cash register in accordance with the customer's instructions. The management had complete access to all client information entered into the system.

At the moment, the industry offers two distinct categories of pharmacy management systems. There

are two types of pharmacy management systems: inpatient pharmacy management systems and outpatient pharmacy management systems [5]. These systems provide a range of functionalities. In the majority of pharmacy management systems, some essential features and functions are required to carry out the pharmacist's obligations. The most closely related process at a pharmacy is the dispensing of medication. When the pharmacist receives the prescription from the patient (inpatient/outpatient) or prescriber, the dispensing process begins.

Pharmacies collect basic information on patients such as their age, address, phone number, and allergies. Additionally, they document known health issues, prescriber information, and other pertinent factors pertaining to patient care management. Additionally, pharmacists maintain historical data on patients' previous medication regimens in order to avoid unfavourable drug interactions [16]. For patients who take many medications for various conditions, pharmacists should organise the medications on a certain timetable, minimising pharmaceutical interactions through medication synchronisation.

Numerous systems provide inventory management capabilities. These methods assist pharmacists in rearranging things, returning unused stock, and maintaining a clean inventory, which eventually saves money on medicinal products that remain on the shelves [17]. Certain pharmacy management systems facilitate electronic data interchange (EDI) between pharmacies and suppliers, which allows for the sharing of information about rapidly moving medications and pricing changes. There are technologies that streamline the medicine ordering process by automatically determining when stock counts are low for a particular medication based on dispensing trends.

Financial management is critical for any organisation. The same is true for the pharmacy industry. Pharmacy management systems should be capable of identifying and managing the business's financial flow by delivering real-time input to owners. Pharmacy management systems enable the development of reports based on historical data for use during audit processes, documenting patient information, and these reports can also be used for

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corporate intelligence and decision-making purposes.

The majority of these systems are dedicated to the management of medications. However, when it comes to retail, pharmacists sell a variety of different products. Thus, a tailored pharmacy management system should be capable of managing other inventory items while concentrating primarily on medication dispensing. Additionally, the system must be sturdy and dependable. Simultaneously, it should be simpler to use for the average user. To address the constraints of currently available systems, a smart online pharmacy management system utilising a web-based application is proposed as a solution.

3. Discussion

Inextricably intertwined are the pharmacy services and technology industries. The continuation of service is dependent upon the system's optimal operation. As a result, system infrastructure, technical support, and other systems must be integrated. To ensure the system's success, stakeholders must overcome conflicts and improve their cooperation.

According to pharmacists, the benefits of using a pharmacy management system include 'stock tracking', 'financial tracking', and 'simpler and error-free transactions'. The pharmacy management system's key aids to employee's included 'speedier and error-free processing', 'stock tracking', and 'prevents paper waste'. According to the research, various professional groups rank differently in terms of the parts where health information systems have been beneficial, according to their diverse expectations, obligations, and responsibilities, as well as their usage of distinct capabilities [18].

The biggest issues encountered during drug provisioning on the Medulla screen were 'disconnection', 'screen freezing', and 'system slowness'. Medula is a pharmacy management system that enables the administration and hospitals to collaborate on billing and payment processes [19]. Medulla is responsible for the majority of services provided by free pharmacies. The source of the live problems could be a combination of efforts to renew and develop the system, and upgrades and hardware

problems, as well as a huge number of concurrent users attempting to connect to the Medulla system. The biggest stumbling block to fixing these difficulties is a scarcity of technical infrastructure. The Medulla provisioning system was discovered to be frequently disconnected and operated slowly. It is vital to establish the infrastructure necessary for trouble-free, high-quality, and on-time service delivery.

The primary concerns of pharmacists were 'stock updates', 'programme adjustments', and 'invoice/receipt rectification'. According to pharmacy personnel, the biggest concerns were 'stock updating', 'invoice/receipt correction', and 'programme not responding'. According to Garfield et al., [20], difficulties with the inventory control and reimbursement module of the pharmacy system should be resolved.

In the vast majority of situations, pharmacists and pharmacy personnel felt that the supply firm's technical assistance was insufficient. Technical support is crucial to the successful integration of technology. Along with infrastructure, software, and hardware support, as well as archiving, recovery, and data backup, there is also data support and training to assure the system's integrity, as well as functional support for the system's numerous functions. Small firms have a greater need for technical support than major corporations because of a shortage of support personnel. As a result, the quality of technical support has an effect on system selection [21, 22].

When the pharmacy management system failed, pharmacists and pharmacy personnel claimed that patient relationships were impacted and patients were unwilling to wait. To ensure that customers aren't losing money and patients are satisfied, pharmacists and pharmacy staff are evaluated on their ability to resolve issues and communicate effectively. Garfield et al. [20] report that pharmacists occasionally confront disagreement with patients as a result of systemic challenges and attempt to persuade them by describing the situation. Communication is a highly successful method of promoting patient satisfaction in pharmaceutical services. According to Mehralian et al. [23], the pharmacist-patient relationship's quality has a direct effect on the patient's degree of satisfaction. Patients'

demographic characteristics, the pharmacy's medicine variety and wait time, as well as the pharmacy's layout and location, all had an effect on their satisfaction [24].

According to the greater segment of pharmacists and other pharmacy staff, regular in-service training is critical for efficient pharmacy management systems. White and Hohmeier's study [25] concluded that in order to boost productivity in free pharmacies, employees must be properly trained in the use of modern technology. In-service training is crucial for maintaining current with professional advancements, technological advancements, enhancing efficiency, and minimising errors. In their daily activities, pharmacists and pharmacy personnel rely extensively on pharmacy management systems. The educational qualifications, job experience, in-service trainings and courses all influence one's capacity to utilise electronic health records and other e-health tools. Effective health information system use greatly adds to patient safety and service quality, while also providing a strong defence against personal data and privacy issues. Additionally, trainings on the usage of information systems increase awareness of potential dangers [26]. Mac Lure and Stewart [27] found that there was a lack of proper training for pharmacy workers on how to use the pharmacy management systems. Courses and in-service training are therefore required to increase the ability of employees and patients to use the e-health applications securely and discreetly [28].

4. Conclusion

Pharmacy management systems are crucial for reducing mistakes and boosting productivity in the prescription drug manufacturing, drug distribution, and treatment management processes. As a result, it is vital to focus on the end user's required information, processes, and procedures during the system's supply and implementation. A fine-tuned pharmacy management system that complies with contemporary industry requirements leads in an increase in the quality of pharmaceutical services. The core structural challenges, on the other hand, include a lack of infrastructure, technical help, and user education. As a result, despite the system's use issues, pharmacists and pharmacy personnel strongly believe in the usefulness of pharmacy management systems and see them as an essential component of pharmacy services. Technical support provided by the supply firm should be improved in terms of quality. The infrastructure of the system should be improved. To guarantee that the system is used effectively, in-service training should be organised. Free pharmacies should be supported by incentives and supply and development expenses should be reduced.

Acknowledgement

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